I'M NOT YOUR SUPERWOMAN: EXAMINING THE HOLISTIC WELL-BEING OF BLACK WOMEN GRADUATE STUDENTS IN STEM

Shanalee Shenagay Gallimore

Submitted to the faculty of the University Graduate School in partial fulfillment of the requirements for the degree
Doctor of Philosophy
in the School of Education, Indiana University
September 2022

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Doctoral Committee

Lucy LePeau, Ph.D.
Chairperson

Barbara Dennis, Ph.D.

Megan Palmer, Ph.D.

Ellen Vaughan, Ph.D.

Kerrie Wilkins-Yel, Ph.D.

September 16, 2022

Acknowledgements

When I decided to pursue my doctoral degree, two of my mentors, Dr. Maurice Edington and Dr. Lewis Johnson encouraged me to enjoy the journey because this is the one time I will have to fully dedicate to accomplish a task uninterrupted. Their words of wisdom I kept with me throughout the years and words I often come back to when I needed inspiration.

Over the past five years, I have met so many people who have inspired and motivated me on my journey to pursuing my doctoral degree. Over 20 years ago, my high school guidance counselor, Dr. Jeraline Johnson mentored me to become the woman I am today. Her unwavering support and words of encouragement allowed me to be the best version of myself. I admired the way she interreacted with and counseled her students. Her work ethic instilled in me some of the values I still hold today.

To my committee chair, Lucy LePeau, thank you for your guidance and support throughout the process. On days where I did not feel like I was good enough, you made me feel like I could. You encouraged me and supported me from day one. Thank you also for helping me land an internship with the American Association of Colleges and Universities (AACU), my current employer. To Dr. Wilkins-Yel, thank you for your mentorship, for exposing me to qualitative research, and for allowing me to be a part of the I CAN PERSIST STEM Initiative. Those were some memorable years. To the rest of my committee members, Megan Palmer, Barbara Dennis, and Ellen Vaughan thank you for supporting me in finishing my dissertation and providing thoughtful feedback to ensure my project was successful.

To my Bloomington friends otherwise known P.A.C. Plus (Angel, Blair, Glo, and Quinton) you all have enriched my life in so many ways. Quinton, you brought us together at the Mustard Mansion and shared your space with us without ever a second thought. I miss the days

of showing up to your home, sitting on the swing, or for any other random gathering that you were hosting. The Mustard Mansion will forever be the place where we build community because those random outings and work sessions will forever be a part of my memories in Bloomington. Blair, our food exchange program during the pandemic was what dreams are made of. You dubbed us as "sister in comfort" because we shared comfort food during trying times. I enjoyed the randomness of it all. Being able to cook a meal and then dropping by your home was comforting, plus your amazing jalapeño and cheddar bread is something I always looked forward to when you baked. To Glo and Angel, words are inadequate for me to express how you made me feel loved and a part of a community of Black women who not only kept me accountable, but also served as my sounding board and confidant when I needed it. We were truly a force to be reckoned with, especially with all the events we planned while we were in Bloomington.

Developing my skills as a qualitative researcher was not easy; however, working with an interdisciplinary group of Black women provided me with a support system that was unmatched. To my ICP research team (Dr. Dionne Cross-Francis, Dr. Kerrie Wilkins-Yel, Dr. Christen Priddie, Dr. Francesca Williamson, Jasmine Davis-Randolph, Kairsy Grasty, and Karyn Housh), thank you for creating a space where I could be myself and be comfortable with not knowing everything. The environment we cultivated together allowed me to grow as a researcher and build my confidence. To Francesca Williamson (affectionately known as FW), thank you for your patience and meeting with me weekly to help me think through my dissertation and sharing different resources with you. Your mentorship and support allowed me to gain further understanding about the qualitative process, especially during the data analysis process.

To Emily Meanwell, my mentor from the Graduate Mentoring Center (GMC), thank you for volunteering to read my dissertation chapters and giving me feedback. I always looked

forward to our bi-weekly check-in sessions and our catching up. I would also like to thank my friends who are external to Indiana University, (Jamie, Cindy, Alicia, Sadé, Winter-Summer-Spring, Shontelle, Brittany, B-Rausha, Vincia, Andrew, and UK) for the ways you all rallied around me as I complete my degree. Your unwavering support fueled me.

To the Kelly's (Trenton Harvey, Kofi Barko, and Tony McNeal), you have supported me in so many ways, and for that I thank you. Your many texts checking in on my progress and cheering me on from a distance gave me the fuel and motivation I needed to carry on during the tough times. To Trenton, although you left this earth unexpectedly and at such a young age, you will forever be remembered for how you showed up for me personally and professionally. It is tough writing these words knowing that you will never get to read them, however, I am comforted that you were able to celebrate with me during my graduation. Our years on the executive board in BGSA will be cherished and celebrated because of the work with did that brought the Black community together. Thank you for your friendship and I hope that you are resting in heaven.

To Lauren (Affectionately known as L. Renée), my B-Line and cooking partner, thank you for all the lighthearted conversations and talks about cooking and fashion. Our conversations brought me joy. Jos, my journey was that much better because I was able to share it with you. Although we were in different cohorts, we shared a bond where we never competed against each other but instead challenged each other to be better. To my virtual writing friends (Jordan and Amy) thank you for the frequent writing accountability sessions where we encouraged and shared advice with each other.

To my family, my brother Peter, my sister-in-law Ann Marie, my niece Marie, Emily, and my nephew Dameian, I am so happy you were able to see me walk across the stage. To

Marie and Dameian, thank you for the care packages you have sent me over the years with all the Jamaican staples I could not find in Bloomington. To my brother, Peter, you stepped in and stepped up when our father passed away as my number one supporter and encourager throughout the years. It has been a journey, and I am thankful that you came along with me for the ride.

Time is something we all wished we had more of but can never seems to find. To my boss, Dr. Kelly Mack, thank you for giving me time to finish my dissertation. Ever since we met, your number one priority was my finishing my degree. You modeled an ethic of caring and patience towards me that I could never repay.

Lastly, I would like to thank the different funding sources I received at Indiana University Bloomington that supported my research. My project was partially funded by the Center for Research on Race and Ethnicity in Society at Indiana University, the President's Diversity Dissertation Fellowship, and the office of the Vice President for Diversity, Equity, and Multicultural Affairs.

Shanalee Shenagay Gallimore

I'M NOT YOUR SUPERWOMAN: EXAMINING THE HOLISTIC WELL-BEING OF BLACK WOMEN GRADUATE STUDENTS IN STEM

This study aimed to explore the meaning-making process of Black women graduate students in STEM and their holistic well-being. The literature on Black women graduates' experience in STEM is limited and often emphasizes their negative experiences without reporting the other sides of their stories. Furthermore, the literature on graduate students' well-being is limited because scholars tend to highlight their stressors and what they lack rather than their strengths and how they thrive. As such, this dissertation sought to explore the holistic well-being of Black women graduate students in STEM, particularly those who attend historically Black colleges and universities (HBCUs). This study is mainly concerned with how Black women graduate students in STEM strategize and make meaning of their holistic well-being and how the STEM environment at HBCUs influenced their well-being.

This study's conceptual framework included the Psychological Framework for Radical Healing, which foregrounded Black women graduate students' strengths and how they engaged in radical healing and liberation by centering on their wellness. The study centered on Black women graduate students' in STEM experiences that were not saturated in negativity but uplifting experiences. The study emphasized how the women pushed against the grain to achieve holistic well-being. The study's methodology included narrative inquiry with a Black feminist epistemological approach. The storytelling format of the narrative inquiry methodology coupled with the Black feminist epistemology highlighted how Black women's experiences are a valid source of knowledge. Each participant engaged in two semi-structured focus groups and blogged

over five weeks about their STEM journey, experiences with community building, HBCU experiences, and well-being.

The study's findings encompassed two central themes that gave insight into how they define holistic well-being, the internal and external processing they engaged in to achieve and enact holistic well-being, and how the STEM environments at HBCUs contributed to or detracted from their holistic well-being. Each theme demonstrated how Black women graduate students in STEM made meaning of their holistic well-being and the multiple ways their lived experiences served to recreate a narrative where they are thriving. Implications for Black women graduate students in STEM provided ways to create boundaries in their lives so they can care for themselves. Implications for research and academia explored how Black women graduate students' in STEM strengths can be incorporated throughout the socialization process, including how they prepare them for the workforce, how their well-being can be foregrounded, and how advisors and faculty members can incorporate an ethic of caring when they interact with their Black students. These implications focused on how to improve the holistic well-being of Black women graduate students in STEM.

Table of Contents

Chapter One: Introduction

When the Bough Breaks: My Lightbulb Moment

Summer 2019 started just like my previous summers, with me making final preparations for the STEM Summer Scholars Institute (STEM SSI). Like the summers before, I was one of the coordinators for this program. The STEM SSI is an eight-week research-intensive science summer program with most students coming from different minority-serving institutions (MSIs) (e.g., historically Black colleges and universities, HBCUs). As the coordinator, I was responsible for planning the participants' social activities (e.g., reflection dinners, day-long excursions trips). Each participant lived in campus housing for the duration of the program. I assisted with the apartment move-in and move-out logistics and other administrative tasks as needed. I had access to the participants' building, but not their rooms, in case there was an emergency.

I regularly checked in with the students to share pertinent information about the program and other upcoming activities when required. During the eight weeks, the students focused on their assigned science research projects, worked with their research mentors, and prepared for their research symposium at the end of the summer. My experience this summer was life-changing, and the events that transpired transformed the work I wanted to do for my dissertation. The main character in this story is Chasity (a pseudonym), a Black woman[1] undergraduate student who majored in a science discipline and who attended an HBCU in the south.

Help me, Chasity said in a soft voice as she grabbed my hand. Those two words hit me at my core. As tears began to form in my eyes, I fought hard to hold them back. I mirrored Chasity's voice, held on to her hands, and asked, how can I help? Chasity's asking for help was a

[1] Black woman is a cis-gendered woman who represents ethnicities spanning the African Diaspora and not just synonymous with African American.

slight breakthrough because she had not been responsive to previous questions about what she needed. However, within seconds, Chasity reverted to her prior state of silence as she laid back down in her bed.

A week prior, Chasity's research mentor informed my supervisor that Chasity was not showing up to her research lab. At my supervisor's request, I checked on Chasity. After checking on her, she informed me she was tired and would return to the lab the next day. Chasity spent the next week in bed without communicating with her suitemates or research mentor instead of returning to the lab. Over the next two weeks, until she departed from the STEM SSI, I became heavily involved with a crisis that was beyond the scope of my day-to-day duties. Within a few days, Chasity's situation quickly escalated, where the director of the campus psychological services and other campus administrators became involved. I did not realize how these events affected me until months later when I began to solidify my dissertation topic.

Many questions arose as I tried to comprehend how, within a few days, Chasity's situation escalated to crisis management. Were there signs when Chasity was in her research lab that were ignored? Did something trigger her? Did she have a pre-existing condition, and had this happened previously? These questions circulated in my mind as I worked with others on campus to get Chasity help. Unfortunately, because of the extent of her condition, Chasity left mid-way through the program. This experience was my lightbulb moment and how I settled on my dissertation topic: Black women graduate[2] students (BWGS) in STEM and their holistic well-being[3].

[2] The term graduate student is inclusive of anyone who is pursuing either a doctoral or a master's degree in a STEM field.

[3] Holistic well-being is defined as the ways in which one sets boundaries in their daily lives by centering their culture, race, gender, and other salient identities that allow them to show up authentically and holistically.

Once Chasity left the program, I was not privy to any additional information or updates about Chasity or what caused her breakdown that subsequentially led to her isolation and departure from the STEM SSI. The answers to those questions, and whether this was a health issue or a well-being issue, may never be answered. With that thought in mind, I decided to forge ahead with this topic about the holistic well-being of BWGS in STEM. The goal of my dissertation project is to understand the ways in which BWGS in STEM make meaning of their holistic well-being while pursuing their degree.

The environment can make it impossible for BWGS in STEM to seek help when they need it, and BWGS in STEM may struggle to take care of themselves. Although Chasity was an undergraduate student, her story could have been about BWGS in STEM. In my opinion, Chasity was missing essential strategies that could have benefited her in this crisis. Chasity's story can be so many other women's stories because she suffered in silence. Her roommates, who were also Black women in the program, tried to assist the best way they could; however, they were limited in what they could do. This begs the question: how would Chasity's experience be different if Black women were encouraged to prioritize their holistic well-being and take days off to rest when needed? How could Chasity's experience be different if she had strategies or had outlets she could use if she encountered a crisis such as this? How can the STEM culture normalize the talk around self-care for students of color? And finally, what does it look like for Black women in STEM to thrive, show up holistically, authentically, and prioritize their well-being?

Background of Study

The composition of the people in the fields of science, technology, engineering, and mathematics (STEM)[4] is not diverse, and Black women are grossly underrepresented on all levels. Talks of increasing the diversity and inclusion in STEM fields are missing the voices of Black women. The lack of a diverse STEM workforce and learning environment perpetuates the long-standing narrative that STEM is only for the elite, typically White heterosexual men. Moreover, Black women's representation in STEM and their degree attainment is not reflective of the population at large.

The National Science Foundation (NSF) reported that women and persons with disabilities from three racial and ethnic groups – Black or African American, Hispanic or Latino, and American Indian or Alaska Native – are underrepresented in science and engineering (S&E) fields and occupations (NSF, 2019). In 2016, these students received 22% of all S&E bachelor's degrees and 9% of doctoral degrees (NSF, 2019). Disaggregating the data by gender and race shows the percentages of Black women's degree attainment at the graduate level are much lower. For example, during the 2018-2019 academic year, 138,200 master's degrees were conferred in STEM with 48,083 being awarded to women (NCES, 2020). Of those degrees awarded to women, 11% (2,779) were awarded to Black women in master's programs (NCES, 2020). Additionally, during the 2018-2019 academic year, 29,900 doctoral degrees were conferred in STEM with 10,164 being awarded to women (NCES, 2020). Of the degrees awarded to women, 5.4% (338) degrees were awarded to Black women in STEM doctoral programs (NCES, 2020). Similarly, of practicing scientists and engineers employed full-time, 7.7% are African American,

[4] The NSF definition of STEM includes social sciences (e.g., political science) and psychology as well as subjects in the physical and life sciences and engineering (e.g., chemistry, biology, physics, mathematics) (NSF, 2019). This broader definition of STEM allows the inclusion of other sciences.

and 2% are Black women (NSF, 2014, 2019). These trends are concerning because they show Black women's underrepresentation despite discussions about the need to increase diversity and inclusion in STEM. This low representation is attributed to the STEM learning environment and other problematic experiences that are hostile toward Black women graduate students (McGee et al., 2019).

Scholars have highlighted some sub-disciplines in STEM (e.g., computer science, physics, engineering) that need better recruitment strategies because they are White male-dominated (Blackburn, 2017; Carlo & Wagner, 2019; Cheryan et al., 2017). This messaging of *who* is classified as a scientist permeates the scientific community and puts forth the imagery of Whiteness and maleness. More research is needed to understand BWGS in STEM experiences, and the barriers that prevent them from enrolling and graduating. Furthermore, the low enrollment of BWGS in STEM forces them to take on the labor of addressing problematic policies and procedures about their racialized and gendered experiences that are supposed to be addressed by their institutions and programs.

BWGS in STEM programs have a history of both struggle and success. They are confronted with a myriad of challenges that threaten their holistic well-being. Although extant literature focuses on the doctoral experiences of Black students (Dortch, 2016, 2020; McGee et al., 2019), or on the experiences of women of color (WOC)[5] in STEM both on the graduate and undergraduate level (Johnson, 2009; Kachchaf et al., 2015; Ong, 2005; Ong et al., 2011, 2018; Wilkins-Yel et al., 2019), few studies have examined the experiences of BWGS in STEM programs (Alexander & Bodenhorn, 2015; Alexander & Hermann, 2016; Joseph, 2012), and to my knowledge, none have focused on their holistic well-being.

[5] WOC is define as Black/African American, Latina/Hispanic, Native American/American Indian, Asian Pacific American, and multiracial women.

Although no studies have focused on the holistic well-being of BWGS in STEM, some existing research has explored well-being among other types of graduate or professional students. For example, scholars within the medical field have studied the well-being of medical students and developed a 7-item scale for the Medical Student Well-Being Index (MSWBI) that enumerates the different types of psychological distress faced by medical students (Dyrbye et al., 2010). The MSWBI includes burnout (emotional exhaustion and depersonalization), stress, fatigue, mental quality of life (QOL), physical quality of life, and depression, and was developed to assess the psychological distress of medical students early in their careers because of the cumulative effect of these distresses. Further, Dyrbye et al. (2007) found that the added stress of discrimination, prejudice, or isolation related to their skin color contributed to higher levels of psychological distress among minority students[6]; minority students were five times more likely than nonminority students to report that race adversely affected their training experience. Dyrbye et al. (2010) used the term distress broadly to represent "depression, anxiety, burnout, and related mental health problems" (p. 1).

This existing research points to the challenges to well-being that graduate and professional students face. Unfortunately, though, these indexes only measure one side of students' experiences. Specifically, these indexes measure the negative sides of students' lives without mentioning the strengths that student brings to their environment, and how their strengths contribute to their overall well-being. Taking an intersectional and strengths-based approach to studying Black women graduate students in STEM well-being would mean also

[6] Racially minoritized will be used instead of the term minorities. Instances where the terms minority/minorities are used is to reflect what was written in the literature. Racially minoritized consists of Students of Color, such as African American, Latinx/Hispanic, and Native Americans (Haynes & Patton, 2019). Minoritized is used instead of minorities because this term reflects how different racial groups are rendered as minorities in certain contexts and institutional settings that have an overrepresentation of whiteness. Choosing to use the term minoritized over minority problematize the system instead of the individuals.

incorporating the experiences that make students thrive and be their authentic selves while matriculating through their programs. In Chapter Two, I deeply examine some of the positive approaches to well-being and how they are beneficial to Black women graduate student in STEM.

Using a definition of well-being that centers students' strengths can be another way to operationalize the term holistic well-being. For my study, holistic well-being is defined as the ways in which an individual sets boundaries in their daily lives by centering their culture, race, gender, and other salient identities that enable them to show up authentically and holistically. However, my discussion chapter reveals how the women define holistic well-being. Operationalizing well-being in this way connects with the thinking of positive psychologists who have studied different types of well-being (Goodman et al., 2018; Keyes, 1998; Ryff, 1989; Seligman, 2018). More detail about positive psychologists' views on well-being is provided later in this dissertation. Researching the holistic well-being of BWGS in STEM creates a different narrative about their STEM journey. Thus, taking a strength-based approach to studying BWGS in STEM is another way of telling their stories. In addition, taking this approach highlights BWGS in STEM more authentically.

The available research on BWGS in STEM highlights the STEM learning environment, specifically on predominantly White campuses, as a barrier to their success. For example, STEM learning environments contribute to Black women's experiences of racial microaggressions (Alexander & Hermann, 2016; Dortch, 2020), feelings of isolation (Dortch, 2020; McGee & Bentley, 2017; Morton & Parsons, 2018), gendered stereotypes (Ireland et al., 2018), and loss of sense of belonging. These negative experiences further marginalize Black women because of the

toxic learning environment that erases their most valued and salient identities (Black *and* woman).

Black women experience unique stressors and stereotypes that are at the intersection of their race and gender (Lewis & Neville, 2015). In their quantitative study, Lewis and colleagues developed the Gendered Racial Microaggression Scale (GRMS) to assess both the frequency and stress of racial microaggression on Black women. The initial participants comprised 265 women with the final participants being 259. The participant pool included Black women students and community members who self-identified as Black or African American (82%), who represented different geographical regions in the United States. In addition, a majority of the women self-identified as heterosexual (93%), self-identified as middle class (55%), and had at least a bachelor's degree (17.5%) or a master's degree (47.5%). Lewis and Neville's (2015) study highlighted four core factors, (1) Assumptions of Beauty and Sexual Objectification (2), Silenced and Marginalized, (3) Strong Black Woman Stereotype, and (4) Angry Black Woman Stereotypes, as ways in which gendered racial microaggressions are experienced by Black women, which can, in turn, be detrimental to their well-being. These core values, when internalized, can be catastrophic to BWGS in STEM and their well-being due to the additive effects of race and gender affecting Black women in interlocking ways.

Moody and Lewis' (2019) research investigating the relationship between gendered racial microaggressions (GRM), gendered racial socialization, and traumatic stress reported that Black women experienced greater levels of traumatic stress when they encounter different forms of gendered racial microaggressions. In addition, Lewis and Neville's (2015) study exploring the effects of subtle forms of racism and sexism on Black women reported that GRM was related to greater levels of psychological distress.

The term gendered racial microaggression is an extension of Essed's (1991) work on gendered racism and Sue et al.'s (2007) work on racial microaggression. Gendered racial microaggression is "subtle and everyday verbal, behavioral, and environmental expressions of oppression based on the intersection of race and gender" (Lewis et al., 2013, p. 51). Black women's lived experiences with gendered racial microaggressions contribute to their overall psychological distress (Lewis & Neville, 2015). The literature base on BWGS in STEM consistently reports them being silenced and marginalized, reduced to cultural stereotypes like the SBW, and an array of other GRM that leads to their psychological distress. Thus, taking a different approach to studying BWGS in STEM by focusing on their holistic well-being can promote another way of telling the stories of BWGS in STEM, stories where they are empowered to live a life where their well-being is an integral part of their day-to-day routine.

Considering the amount of time graduate students spend obtaining their degrees, they need an environment that is welcoming and supportive, not one that creates added stress and anxiety. Research suggests campuses classified as MSIs might have a positive effect on the success of minority students in science. MSIs produce many racial and ethnic minority college graduates in STEM (NSF 2019). Fries-Britt et al. (2010) posited that more research should be conducted on HBCUs to understand what HBCUs can do with limited resources. They believed there are lessons to learn from HBCUs and how they create environments that "nurture, support and cultivate student achievement in science" (Fries-Britt et al., 2010, p. 81). Taking Fries-Britt and colleagues' suggestion, HBCUs are being used as the site for my data collection to interrogate the holistic well-being of BWGS in STEM. More details about my rationale for selecting HBCUs are provided in the subsequent chapters.

An HBCU is "any historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of black Americans" (Brown et al., 2001; White House Initiative on Historically Black Colleges and Universities, n.d), and were made possible due to Morrill Act of 1890 (Holfester, 2019; Jackson & Nunn, 2003). They were created because of the exclusionary and discriminatory laws and practices that permeated society (Jackson & Nunn, 2003). Most HBCUs were established between 1876 and 1964 in the United States during the Jim Crow era of "separate but equal" (Holfester, 2019). In general, HBCUs 1) provide educational opportunity and access, 2) promote the perpetuation of Black culture, and 3) create a synergy that focuses on interdisciplinary intellectual and training skills development for future employment and race advancement (Holfester, 2019). This mission represents what HBCUs have continued to be for Black students, including Black women, throughout history, and how institutions like these are instrumental in the Black community (Jackson & Nunn, 2003).

HBCUs, more than any other institutional type, graduate Black women with bachelors' degrees in STEM who then goes on to pursue a graduate degree in STEM (Perna, Lundy-Wagner, Drezner, et al., 2009; Perna, Gasman, Gary, et al., 2010). At the same time, HBCUs have been criticized by scholars for perpetuating a culture of segregation; however, those critics fail to realize the importance of HBCUs and why they were created (Brown et al., 2001). Understanding the holistic well-being of BWGS in STEM at HBCUs, within their supportive and nurturing environment provided valuable insight; specifically, into how they prioritized their holistic well-being and why. Providing information such as this is monumental for BWGS in STEM programs and how they reconceptualize their holistic well-being.

Understanding what Black women have done to succeed despite the cultural and institutional barriers they face is crucial (Alexander & Bodenhorn, 2015). It is already known that BWGS in STEM use different support systems as resources to make it through their programs (Alexander & Bodenhorn, 2015; Dortch, 2016). It is also known that Black women use the strong Black woman (SBW) stereotypes (Abrams et al., 2019; Donovan & West, 2015; Liao et al., 2020; Watson & Hunter, 2015) and the Superwoman (SW) stereotypes (Woods-Giscombe et al., 2016) to cope with racial trauma. Rooted in Black womanhood and originated during slavery, the SBW and the SW stereotypes characterize Black women as self-reliant, strong, and self-sacrificing (Carter & Rossi, 2019). Though these stereotypes can be empowering, they marginalize Black women further because of the message that they should put forth strength and resilience in an environment that is lethal to their holistic well-being.

Strength and resilience are not necessarily negative when they are used to motivate people to attain their dreams, and not to the detriment of their well-being. But, when strength and resilience are used to mask the problematic treatment BWGS in STEM face due to varying forms of racism, and when they are framed as individual-level solutions or responses to larger structural, environmental, and cultural problems, that is when being strong and hardworking becomes problematic. The women in the study reframed how the SBW and the SW stereotypes were perceived and used which proved revolutionary for their well-being. Dismantling the structures that perpetuate the marginalization of BWGS in STEM and forcing BWGS in STEM to adhere to the SBW and the SW cultural stereotypes, created a new way of knowing, and living for the women. Furthermore, this new framing gave BWGS in STEM agency to choose when they decided to use the SBW and the SW stereotypes.

Thus, research about Black women's complete journey in STEM is needed, and not only about their negative experiences. Scholars who study positive psychology argue that there is more to human life than negative experiences (Keyes, 1998; Ryff, 1989; Seligman, 2018). Research that emphasizes Black women's negative experiences straddles the line of deficit orientation because it tends to report what Black women are lacking instead of the strengths Black women bring to their programs. Throughout history, people of color have been studied using a deficit orientation lens (Harper, 2009). A deficit-based approach places the blame on the individual rather than on the systems that causes these deficits, and focuses on what they are lacking, instead of what they have done to achieve their success.

Taking a strength-based approach that focuses on the holistic well-being of BWGS in STEM is how I am pushing back on this narrative of lack. Choosing to focus on their holistic well-being is a strength Black women embody because they are redefining themselves both as Black and as women and as scientists. The lived experiences of BWGS in STEM are not solely filled with heartaches and pain. Consequently, telling Black women's complete stories, including stories about their strengths is necessary, so they, and other BWGS can show up authentically and holistically.

Problem Statement

There are few research studies that focus on BWGS' experiences in STEM (Alexander & Hermann, 2016; Joseph, 2012), and to my knowledge, none that study the holistic well-being of BWGS in STEM. The exclusion of BWGS in STEM's narratives about their holistic well-being perpetuates a one-sided approach to understanding their experiences. Further, the holistic well-being of BWGS in STEM should not be considered an "add-on," but as an integral part of their education and their future success. The available studies examine Black women's negative racial

and gendered experiences within STEM, the different support systems they cultivate to succeed, and their self-efficacy, coping mechanisms, socialization, and transitioning from institutional types (Alexander & Bodenhorn, 2015; Alexander & Hermann, 2016; Dortch, 2016, 2020; Joseph, 2012; McGee et al., 2019). Another side of BWGS in STEM stories should be included, and this is where my research adds value to the literature based on well-being, and BWGS in STEM.

BWGS in STEM face problematic issues in their programs that connect to their race and gender, which affect them in many different ways (Alexander & Bodenhorn, 2015; Dortch, 2016; McGee et al., 2019; Williams et al., 2005). These matters take a toll on Black women's overall well-being because BWGS in STEM must deal with both academic and non-academic issues. For example, STEM learning environments continue to be toxic for those with marginalized identities (e.g., women of color, Black women) (D. Johnson, 2009; Kachchaf et al., 2015; Ong, 2005; Ong et al., 2018; Wilkins-Yel et al., 2019). These environments negatively impact BWGS' in STEM overall well-being because of the different systems they are fighting against on top of being a student. The chilly and hostile learning environments in STEM contribute to Black women's experiences of racial microaggressions (Alexander & Hermann, 2016; Dortch, 2020), feelings of isolation (Dortch, 2020; McGee & Bentley, 2017; Morton & Parsons, 2018), gendered stereotypes (Ireland et al., 2018), and loss of sense of belonging. These systems should be addressed and dismantled so BWGS in STEM can make their holistic well-being a priority.

The current literature available on well-being is missing the voices of Black women (Keyes, 1998; Ryff, 1989; Seligman, 2018; Witmer & Sweeney, 1992). Goodman et al.'s (2018) study comparing two models of well-being highlighted that happiness and positive emotions result as a single converging factor of well-being. The narratives reported about Black women do

not address their happiness but instead emphasize their pain and sacrifices. Continuing to report one part of their lived experiences toes the line of Black women being labeled the "*angry Black woman*" by their peers when they talk about the oppressive environments they have experienced as Black women or try to create change. Black women deserve to read about their strengths, and how those strengths are translated in a positive way to enrich their learning environments and uplift other Black women and people.

It is time for a change. BWGS in STEM are pushing back on the stereotypical rhetoric that renders them inferior and reduces them to brokenness. In general, BWGS in STEM are finding alternative ways to thrive by focusing on their well-being, creating boundaries, and living authentically. In doing so, they are helping to eradicate the maladaptive coping mechanisms BWGS in STEM have used to persist. This research provides insight into the success strategies BWGS in STEM use and the meaning-making processes that support their holistic well-being. Lastly, although this research is situated in the realm of higher education, it has a place in other settings where Black women work and occupy.

Purpose and Research Questions

The purpose of this study was to explore the meaning-making processes of BWGS in STEM programs and their holistic well-being. Although BWGS in STEM face negative experiences that are threats to their well-being, there are BWGS in STEM programs who are prioritizing their well-being despite these threats. This is important to note because the voices of BWGS are generally left out of the literature on well-being. To address the erasure of BWGS in STEM's well-being, my study highlights the stories of Black women who are pursuing graduate degrees in a STEM area at HBCUs and the strategies they use to intentionally prioritize their

well-being. This study centers and amplifies BWGS' voices while providing them with a platform to share their stories. The following research questions guide this study:

1. How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being?
2. In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being?
3. What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

Conceptual Framework

I used French et al.'s (2020) *Toward a Psychological Framework of Radical Healing in Communities of Color (*henceforth referred to as the PFRH or the radical healing framework). The PFRH was developed by an interdisciplinary team of scholars of color consisting of academicians and practitioners who represent counseling psychology, clinical psychology, and educational psychology. French and colleagues' purpose for creating this framework was to move beyond the individualistic approach People of Color and Indigenous individuals (POCI) use to cope with racial trauma. The PFRH helps POCI move from coping to healing. Healing works best for POCI because (1) they will shift from just surviving to thriving, and (2) coping uses an individualistic approach whereas healing uses a collectivistic approach (French et al., 2020). The authors integrated elements from liberation psychology, Black psychology, ethnopolitical psychology, and intersectionality theory to create a more intersectional approach when studying POCI (French et al., 2020). Their new framework integrated the different identities POCI hold and moved away from the traditional Eurocentric models that focus on only one axis of their identity (Black *or* Woman). The PFRH addresses critiques of older frameworks

such as the lack of cultural and identity integration, and the erasure of POCI's race and gender experiences.

I chose this framework because the PFRH puts forth People of Color and Indigenous individuals rich and varied voices and the strengths they embody instead of viewing them from a perspective of lack. In addition, the PFRH is a useful framework to study the holistic well-being of BWGS in STEM because the authors intentionally highlight POCI strengths as opposed to their weaknesses. Liberation from racial trauma inflicted by their negative experiences is needed for BWGS in STEM, thus, to be liberated from racial trauma, radical healing must take place (French et al., 2020). Choosing to use the PFRH to report BWGS' in STEM experiences helped to reframe their stories and dispel some of the narratives that have been previously reported that position Black women's well-being as an either-or narrative when it comes to them being scientists and taking care of themselves.

Ginwright's (2010) work on radical healing suggested that to heal from the trauma of oppression caused by various isms (e.g., racism, sexism), political action is needed where the blame is shifted from the individual to identifying systemic oppression. Thus, building upon Ginwright's (2010) suggestions, French et al. (2020) defined radical healing as "being able to sit in a dialectic and exist in both spaces of resisting oppression and moving toward freedom" (p. 24). BWGS in STEM need to heal from the trauma caused by racial and gendered microaggressions and other stereotype threats. Stereotype threat is "the event of a negative stereotype about a group to which one belongs becoming self-relevant, usually as a plausible interpretation for something one is doing, for an experience one is having, or for a situation one is in, that has relevance to one's self-definition" (Steele, 1997, p. 616). Experiencing a stereotype threat can be damaging to the holistic well-being of BWGS in STEM because of the negative

messaging it holds about their race and gender both as Black women and as future scientists. Radical healing provides BWGS in STEM with a new way of thinking about their holistic well-being. When BWGS in STEM are liberated through healing, they can prioritize themselves by focusing on their holistic well-being. The components of the framework are explained in detail in the following chapter.

Black Feminist Epistemology

Collins' (2000) Black Feminist Thought (BFT) is a critical social theory committed to justice for Black women and groups that are similarly oppressed. BFT promotes Black women's empowerment and social justice and highlights the diversity and richness of their experiences (Collins, 2000). BFT can be used epistemologically to understand the lived experiences of Black women maneuvering a racist and sexist academic environment. Within this epistemology, Black women's lived experiences are the center of knowledge creation. Black women's unique standpoint on the interplay between race, gender, and class as interlocking systems of oppression helps them visualize how these systems of oppression are a part of the overarching structure of domination (Collins, 1993). Acknowledging this power dynamic gives Black women a new perspective to deal with the many levels of oppression. Their unique standpoint allows Black women to rearticulate who they are more authentically.

Crenshaw (1989) coined the term *intersectionality* to show how Black women experience specific oppression that is unique to their race and gender. Crenshaw also further stated that single-axis frameworks that focus only on their race or gender erase Black women "in the conceptualization, identification and remediation of race and sex discrimination by limiting inquiry to the experiences of otherwise-privileged members of the group" (p.140). In other words, single-axis frameworks contribute to the marginalization of Black women and their

experiences. Thus, using BFE helps counter Black women's marginalization by prioritizing their full and unique experiences.

BFE helps to create a new narrative for Black women by placing Black women's experiences and ideas at the center of this analysis. BFE helps Black women gain a new understanding of their lived experiences. Consequently, this consciousness becomes the impetus Black women need to embark upon their personal freedom and empowerment. When they become empowered, Black women can share with other Black women strategies they have used to attain their freedom. This empowerment, however, cannot occur in the context of oppression and social injustice (Collins, 2000).

As this study aims to empower BWGS in STEM, using an epistemology that emphasizes Black women's empowerment and lived experiences is necessary. I used BFE as an epistemology and its specific components, lived experience as a criterion of meaning, the use of dialogue in assessing knowledge claims, the ethics of caring, and the ethic of personal accountability are explained in detail in the methodology chapter.

Study Significance

This study is significant for three reasons. First, I studied the holistic well-being of BWGS in STEM, yielding insights into Black women's experiences in STEM at the graduate level. This approach centers Black women's experiences as a source of knowledge by reporting a narrative that highlights their strengths. Since I used the radical healing framework and narrative inquiry methodology in this study, storytelling was at the forefront of this research study because it is central to Black women's culture (Collins, 1989, 2000). The use of storytelling by BWGS in STEM, and the valuable information their stories provide, may improve the experiences of current and future graduate students from marginalized backgrounds.

Secondly, my research employed a strength-based approach to studying BWGS in STEM. The growing literature on BWGS in STEM signifies that more extensive research is needed to support and amplify BWGS' in STEM strengths instead of their weaknesses. For BWGS in STEM, prioritizing their well-being is a strength. This strength-based approach helps create a new narrative about BWGS' experiences in STEM without focusing on negativity and pain. The information the BWGS in STEM shared about the meaning-making process of their well-being allowed other BWGS in STEM to show up authentically without compartmentalizing their different identities.

Lastly, I used a culturally relevant framework to report the strategies BWGS in STEM used to reconceptualize their holistic well-being. Using the radical healing framework coincides with the strength-based approach of this research study and can improve future research practices for BWGS in STEM. The PFRH provides People of Color and Indigenous individuals (POCI) with different ways to move from coping to healing. Regarding BWGS in STEM, using a culturally relevant framework like the PFRH helped the women redefine their relationship with the SBW and SW stereotypes Black women have been using. Further, the PFRH allowed for an intersectional approach that considered the different identities BWGS in STEM embody. Understanding how BWGS in STEM move from coping to healing can be a liberatory process, and when it is shared with others may help to liberate other BWGS in STEM.

The conclusion and implications of my study is helpful for graduate STEM programs to create interventions that are tailored specifically for BWGS in STEM and their different identities. Graduate STEM programs need to develop interventions, and they need to hear from Black women to create effective ones. Furthermore, programs should recognize that BWGS' in STEM strengths is not contingent upon their use of the SBW and the SW stereotypes. Including

research about the holistic well-being of BWGS in STEM can help change the one-dimensional approach that focuses on their negative experiences in STEM.

Dissertation Terminology

There are several terms that are important for the context of this study as it pertains to Black women in STEM: *Black woman*, *graduate student, STEM, counterspace, racial and gendered microaggression, strong Black woman, superwoman, and well-being, Women of Color (WOC)*. Clarifying the terms being used is important to frame the stories being told about Black women in STEM and how they have navigated their environment.

Black women. The term *Black women* refers to cis-gendered women who ethnically represents those from the African Diaspora and African ancestry. Black women represent a multiplicity of ethnicities, and the term is not just synonymous with African Americans.

Minoritized. Haynes and Patton (2019) used this term to include students of color, specifically African Americans, Latinx/Hispanic, and Native American students. Minoritized is used instead of minorities because this term reflects how different racial groups are rendered as minorities in certain contexts and institutional settings that have an overrepresentation of whiteness.

Graduate student in STEM. This term includes individuals who are obtaining either a doctoral or master's degree in STEM. Depending on the STEM field, a master's degree may be pursued instead of a doctoral degree. The term, doctoral student, will be used when needed to stay true to the participant's self-classification.

Science, technology, engineering, and mathematics (STEM*)*. There is no clear consensus on the definition of STEM. Using the National Science Foundation's broader definition of *STEM* allows me to include additional sciences, like the health sciences and public health. The NSF definition of STEM includes social sciences (e.g., political science) and psychology as well as

subjects in the physical and life sciences and engineering (e.g., chemistry, biology, physics, mathematics) (NSF, 2019).

Racial and Gendered Microaggression. Racial and gendered microaggressions are mechanisms that assign people of color a subordinate status. Dortch (2020) defined racial microaggressions as "intentional and unintentional verbal and behavioral insults that communicate derogatory and often hostile racialized slights aimed at a person or group through human and environmental encounters" (p. 4236). Other scholars define racial microaggressions as daily verbal, behavioral, and environmental slights and indignities directed towards Black people unintentionally and intentionally (Solorzano et al., 2000; Sue et al., 2008). Microaggressions create a high degree of stress for Black people because of their denigrating messages. What is currently written about the Black women graduate experiences in STEM attests to how the different forms of microaggression contribute to their negative experiences in STEM.

The Strong Black Woman (SBW) and Super Woman (SW) stereotypes. The SBW and the SW are stereotypical images used to characterize Black women as self-reliant, strong, and self-sacrificing (Donovan & West, 2015; Woods-Giscombe et al., 2016). They originated during slavery and were used by enslaved Black women as a survival mechanisms for the atrocities during that time (Carter & Rossi, 2019). These terms provide context to the Black women's experiences while explicating how using these stereotypes promote maladaptive coping mechanisms which takes a psychological toll.

Well-being. A comprehensive definition of what constitutes well-being is not available in the literature. Social and behavioral scientists' approaches to well-being include indicators like stress, loneliness, social support, self-esteem, psychological distress, and depression (Cotten, 2008). In this study, holistic well-being is operationalized to mean the ways in which one sets

boundaries in their daily lives by centering their culture, race, gender, and other salient identities enabling them to show up authentically and holistically. Operationalizing well-being in this way connects with the strength-based approach I used in this dissertation that prioritizes the holistic well-being of BWGS in STEM as a strength they embody. In Chapter Six, I share how the participants determined the final definition of holistic well-being that is used based on their narratives.

Women of Color (WOC). WOC is defined as Black/African American, Latina/Hispanic, Native American/American Indian, Asian Pacific American, and multiracial women recognizing that although they may share common experiences with race, oppression, and discrimination, each ethnic group has its own unique histories that contribute to their oppression.

Organization of the Dissertation

This dissertation is organized into six chapters. Chapter One, the introductory chapter, consists of the background of the study, including the problem and purpose statement, conceptual framework, Black feminist epistemology, and definition of terms used throughout the dissertation. Next, Chapter Two includes a review of relevant literature that is organized into the following areas: the radical healing conceptual framework; the campus environment; and the graduate experience including the campus racial climate found on Predominantly White Institutions (PWIs) and historically Black colleges and universities (HBCUs). Next discussed is the intersectionality of race and gender, prominent models of well-being, well-being of graduate students, and well-being of Black women graduate students in STEM. Lastly, I call attention to the socialization in graduate programs, graduate students support systems, and I close the chapter with discussing some of the coping mechanisms Black students have used including the strong Black woman (SBW) and the superwoman (SW) stereotypes. Following the literature review is

Chapter Three, the methodology. This chapter consists of my positionality statement as the researcher, my philosophical underpinnings, the research design, and the data collection summary. Chapter Four features the study participants' narratives. Chapter Five discusses the study's findings, and Chapter Six includes the study's discussion and conclusion in addition to recommendations for Black women graduate students in STEM and implications for research and the Academy.

Chapter Two: Literature Review

The purpose of this chapter is to provide a review of empirical and relevant studies related to the experiences of Black women graduate students (BWGS) in STEM programs and their holistic well-being. Using the existing literature as support, I suggest that the narratives of BWGS in STEM programs are articulated from a deficit perspective, emphasizing why BWGS struggle rather than why they succeed. Failure to take a holistic approach when studying BWGS in STEM contributes to the erasure of their stories and lived experiences.

Taking a holistic approach means researching the whole self and not just the parts that are about BWGS in STEM negative experiences. Illuminating only one side of the experiences of Black women graduate students in STEM could lead to the normalization of their negative experiences in academia instead of the affirmation of the strengths they bring to their respective disciplines. Because literature on the holistic well-being of Black women graduate students in STEM is nonexistent, I drew upon literature from psychology and education for context about well-being and how it is covered in the literature.

First, in this narrative review of the literature, I describe the psychological framework for radical healing (PFRH) that serves as the conceptual framework for this study. To spotlight Black women, I begin by describing the PFRH, a framework that centers People of Color and Indigenous individuals' (POCI) strengths and how they move from coping to healing.

I then recast the literature through the conceptual framework to demonstrate how Black women graduate students in STEM may incorporate the radical healing framework to center their well-being. I address the campus environment and the graduate experience, including the campus racial climate commonly found at predominantly White institutions (PWIs) and historically Black colleges and universities (HBCUs) and the intersectionality of race and gender. Next, I

discuss some of the prominent models of well-being developed by psychologists but argue why the PFRH is better for this study, the well-being of graduate students, and well-being of Black women graduate students in STEM. Next, I discuss graduate students' socialization and graduate students support systems. Lastly, I close the chapter by addressing some of the coping mechanisms Black graduate students have used or are currently using including the strong Black women (SBW) and the Superwoman (SW) stereotypes that using the radical healing framework can counter and can illuminate information higher education does not know about BWGS in STEM.

Using the PFRH provided a blueprint for sharing the success stories of BWGS in STEM stories as opposed to only those stories that center negative experiences. The PFRH provided a platform for sharing those experiences that allow BWGS in STEM to thrive and prioritize care for themselves. In the next section, I explain the PFRH tenets and why this framework is fitting for studying the holistic well-being of BWGS in STEM.

Conceptual Framework

To explore the holistic well-being of BWGS in STEM, I used French et al. 's (2020) Psychological Framework of Radical Healing (henceforth referred to as PFRH or radical healing framework) for this study. The PFRH was developed in 2020 by scholars of color in psychology who wanted to introduce a new approach to study how People of Color and Indigenous individuals (POCI) cope with racial trauma that was beyond the individualist approach. The radical healing framework is useful to ground this study about the holistic well-being of BWGS in STEM because the framework focuses on POCIs strengths rather than their weaknesses. The strength-based approach that is used in this framework allowed BWGS in STEM to show up authentically so they can be liberated from the oppressive systems they face in STEM to achieve

radical healing. The STEM learning environment oppresses Black women graduate students when they are viewed as intellectually inferior and as affirmative action cases (Williams et al., 2005) or when their racialized and gendered experiences make them question their academic abilities leading them to view themselves as imposters (McGee et al., 2021). Imposter phenomenon or imposter syndrome "is used to designate an internal experience of intellectual phoniness that appears to be particularly prevalent and intense among a select sample of high achieving women" (Clance & Imes, 1978). This means that high achieving Black women may find it difficult to internalize their success by doubting their intellectual capabilities because of their racially hostile environment. These experiences potentially become detrimental to BWGS' in STEM well-being and why radical healing instead of coping is necessary. Centering radical healing over coping positions BWGS in STEM to thrive within a system that is oppressive to them.

Moving from coping to healing is the main foundation of the radical healing framework. Coping can either exacerbate or protect people from stress and adversity given its wide range of responses (Loyd et al., 2022). Furthermore, because of the wide variability in an individual's perception of the different stressors (e.g., general stress or stressed caused by racism), it is difficult to ascertain which coping responses are most effective (Loyd et al., 2022). Healing works best for People of Color and Indigenous individuals because (1) they will shift from just surviving to thriving, and (2) coping uses an individualistic approach, whereas healing uses a collectivistic approach (French et al., 2020). Radical healing is "being able to sit in a dialectic and exist in both spaces of resisting oppression and moving toward freedom" (French et al., 2020, p. 24). Focusing on the holistic well-being of Black women graduate students in STEM is one way of seeing how BWGS in STEM achieve radical healing in an environment that

continues to oppress them and understand the role their communities play in their well-being and freedom. Communities of color value collectivism, and they are not defined by the oppression they face (French et al., 2020).. They can heal and be liberated through critical consciousness, which brings them an awareness of the different types of oppressive systems (French et al., 2020).

The components of the radical healing framework align with the values and beliefs Black women hold. Black women graduate students in STEM value harmonious relationships, which is a central focus of collectivism, one of the components of the PFRH. Their racial and cultural identities are central to their lived experiences including their ability to make their well-being a priority, and BWGS in STEM are hopeful about their future in STEM.

Radical healing is needed for BWGS in STEM because of the wounds inflicted by the strong Black women (SBW) and the superwoman (SW) stereotypes that mischaracterize them both as Black women and as scientists. Additionally, the radical healing framework help BWGS in STEM create a new narrative about their well-being by underscoring their well-being as a strength and as an important part of their lived experience through storytelling. Lastly, BWGS in STEM who choose to share their stories can help build solidarity with other Black women by sharing pertinent information that can benefit their well-being. The radical healing is suited for this study on BWGS in STEM for three reasons: (1) it centers People of Color and Indigenous individuals cultural experiences; (2) it uses a strength-based approach to understand how people heal from trauma; and (3) it provides a useful framework to make sense of how Black women deal with forms of discrimination. French et al.'s (2020) PFRH includes components that are relevant to this study. The components of the framework are (1) critical consciousness, (2) radical hope, (3) strength and resistance, (4) cultural authenticity and self-knowledge, and (5)

collectivism. Each component is discussed below and will be referenced in each section of the literature review to foreground why this framework is essential for this study.

Critical consciousness is the first step toward radical healing in communities of color. French et al. (2020) noted that critical consciousness is "an individual's capacity to critically reflect and act upon their sociopolitical environment" (p. 25). This awareness allows POCI to recognize the oppressive systems that subjugate them due to their race, gender, class, and other intersecting identities. Once this awareness occurs, POCI can begin to strategize about the very systems that prevent them from healing to live a life of authenticity. Critical consciousness help BWGS in STEM identify the barriers to their holistic well-being and respond to those barriers with strategies and tools that allow them to prioritize their well-being.

Black women gain critical consciousness through their lived experiences. Both Collins' (1993) Black Feminist Thought (BFT) and Crenshaw's (1989) seminal work on intersectionality provide a lens for examining how the experiences of BWGS in STEM are affected by power dynamics, particularly in relation to how STEM experiences promote or detract from their well-being. Intersectionality is rooted in Black feminist scholarship (Collins, 2000). Crenshaw (1989) coined the term *intersectionality* to articulate the unique position of Black women in antidiscrimination law, which often excludes Black women's racial and gendered experiences. Failure to take an intersectional approach that simultaneously studies the effects of race and gender or considers race and gender as mutually exclusive tends to erase Black women's experiences. Thus, intersectionality problematizes how Black women are studied in the literature. Taking this approach to studying Black women where both their race and gendered experiences are included shows how Black women are subordinated (Crenshaw, 1989). Intersectionality

addresses the interconnectedness of particular oppressions and how the cumulative effects of those experiences influence Black women's daily lives (Collins, 2000).

Black women's unique standpoint on the interplay between race, gender, and class as interlocking systems of oppression helps them see how these systems of oppression are a part of the overarching structure of domination (Collins, 1993). Acknowledging this power dynamic gives Black women a new perspective on dealing with the many levels of oppression. In addition, their unique standpoint allows Black women the ability to redefine who they are in a more authentic way which can affirm and empower other Black women (Collins, 2000). Crenshaw's (1989) intersectionality helps BWGS in STEM recognize how the power dynamic in different spaces, when accumulated, can potentially be detrimental to their well-being. Furthermore, intersectionality can be a catalyst for affirming BWGS in STEM including their different social identities and how those identities influence their well-being positively.

The second component of the PFRH is *radical hope*. Radical hope allows people to change things for the greater good and the strength to resist oppression. Radical hope transcends one's vision of the future and its possibilities (French et al., 2020). Hope requires an act of courage when fighting the cumulating injustices in a system that prevents POCI from attaining liberation. In other words, radical hope fuels POCI to consider a future that is better than their current reality, and that their struggles will not be in vain. Studying the holistic well-being of BWGS in STEM means envisioning a new way of living where their needs are emphasized instead of being cast aside.

A large part of Black womanhood is showing strength and resilience despite racial trauma without the acknowledgment of how strength and resilience affect Black women psychologically (Carter & Rossi, 2019; Watson & Hunter, 2015). For example, the strong Black

woman (SBW) and the superwoman (SW) tropes are ways strength and resilience have been viewed despite the marginalization of Black women (Carter & Rossi, 2019; Woods-Giscombe et al., 2016). Collins' (1986, 2000) self-definition and self-valuation concepts provide Black women with hope for their future by challenging the status quo within the different systems of oppression. Challenging these systems moves the blame from the individual to the actual systems that marginalize them. Radical hope can be used to challenge the ways in which the holistic well-being of BWGS in STEM has been neglected. This newfound way of thinking allows BWGS in STEM to reimagine a future where their well-being is an integral part of their narratives.

The third component of the PFRH is *strength and resistance*. Strength and resistance reflect "POCI's commitment to living joy-filled lives despite a critical awareness of racial trauma and oppression" (French et al., 2020, p. 27). Strength and resistance are materialized in different ways. Oppressed people show strength and resistance by coming together to reduce the barriers that prevent them from fully healing from different traumatic experiences. Resistance is a strength oppressed people embody because they believe in the human capacity to change. Most oppressed groups' (e.g., Black women) voices are listened to only if their ideas are framed in a way that pleases the dominant group (Collins, 2000). Reframing how BWGS in STEM think about their well-being is a necessary topic of conversation because they deserve to read stories about Black women scientists who are thriving and who are intentional about promoting a lifestyle that centers wellness and joy. The PFRH helped with this new framing by providing BWGS in STEM with new and innovative ways of reconceptualizing their holistic well-being.

When Black women become empowered, they can share with other Black women some strategies they have used to attain their freedom from the oppressions they faced both as Black women and as scientists, and the PFRH is useful for the empowerment of BWGS in STEM. This

empowerment, however, cannot occur in the context of oppression and social injustice (Collins, 2000). Self-definition is key to group or individual empowerment. This occurs when Black women can speak for themselves and craft their own agenda that represents them authentically. Self-definition is a powerful tool because it amplifies Black women's ability to value themselves by resisting oppression. Resistance is a form of social justice because it gives Black women agency to enact change that may lead to radical healing. BWGS in STEM benefit from self-definition by resisting the STEM culture that celebrates productivity that can be costly to their well-being. Productivity is not always positive because when programs expect graduate students to be productive in environments that are hostile towards their race, gender, and culture, productivity then becomes another form of oppression.

The fourth component of the PFRH is *cultural authenticity and self-knowledge*. These components require POCI to return to their ancestral roots, and "radical healing requires a sense of self-definition and cultural authenticity" (French et al., 2020, p. 27). This is important to note because POCI (e.g., Black women) use many different cultural practices by "resisting colonized knowledge and practices as the only way of knowing" (French et al., 2020, p. 27). Black women's culture is important to their womanhood and is central to their lived experiences. Through their social relationships with other Black women, they can pass down self-definitions and self-valuations that are essential in helping them to cope with different oppressive experiences (Collins, 1986).

Furthermore, French et al. (2020) posited that radical healing requires “self-definition and cultural authenticity in which POCI are not defined by their oppressors” (p. 27). Since culture is a large part of Black womanhood, the PFRH highlighted how BWGS in STEM use cultural practices to promote a life that centers their holistic well-being, and how seeing their social

identities represented helped them thrive and increase their productivity in STEM. Productivity is nuanced because it can have positive and negative effects on the well-being of BWGS in STEM. Productivity can be harmful when BWGS in STEM are expected to produce or learn in spaces that oppress them based on their different identities. On the other hand, when BWGS' in STEM needs are centered and their learning environments are equitable, being productive can be viewed positively because they can contribute their scientific expertise and knowledge more freely and without being subjugated.

The final component of the PFRH is *collectivism.* POCI value collectivism because it is an important part of their culture and how they foster support within their communities to achieve radical healing and liberation. Moreover, collectivism connects personal liberation with the broader POCI community (French et al., 2020). For example, collectivism supports radical healing through the comradery formed as communities of color take refuge in a space where they can flourish due to ongoing racism. Radical healing prioritizes POCI racial and ethnic cultural values which is evident in the connections and social support found within their communities. Collectively, Black women's culture gives them the opportunity to be creative when solving problems while engaging with their community (Collins, 1986). This is seen in the diaspora and how Black women come together via a sisterhood to support each other and be their authentic selves. Thus, seeking and finding support in one's community are essential to radical healing. BWGS in STEM have benefited from collectivism when they use their support systems as a sounding board to process their feelings or help them to maneuver difficult situations they have encountered in their programs. Collectivism is also useful to help BWGS in STEM create opportunities for reframing how they support each other toward success.

In the next sections, I focus on the campus environment and the graduate experiences of Black women graduate students in STEM. Some of the explorations are more general and are not focused on BWGS in STEM specifically because of the limited research available on their graduate experiences. This section underscores the different barriers Black women graduate students in STEM encounter in relation to the campus racial climate at predominantly White institutions (PWIs) and historically Black colleges and universities (HBCUs) and the intersectionality of their race and gender.

Campus Environment

The literature I reviewed provides evidence of why my study relating to the holistic well-being of Black women graduate students in STEM is needed. Additionally, the radical healing framework addresses how BWGS in STEM may re-envision their lifestyle from a physical and emotional perspective. The STEM learning environment can be taxing on Black women's psyche and their bodies. The systemic racism and sexism BWGS in STEM and other disciplines are subjected to, along with the academic rigor of their programs, illustrate why their well-being suffers (Alexander & Bodenhorn, 2015; Alexander & Hermann, 2016; Shavers & Moore, 2014).

Moreover, the pandemic created another barrier for Black women scientists and their well-being. During the pandemic, the hashtags #ShutDownAcademia and #ShutDownSTEM began trending as a sign of solidarity with the Black Lives Movement (BLM) and Black in STEM (Shutdownstem, 2020). Black in STEM referred to Black scientists needing to rest and prioritize their needs (Shutdownstem, 2020). Furthermore, the pandemic served as a double-edged sword (Shavers & Moore, 2014), meaning in this context, the pandemic unearthed and revealed the deep-rooted effects of racism on Black scientists' well-being while simultaneously allowing them time to refocus and prioritize rest. In STEM, resting is not often discussed and

should be a topic of conversation, especially for minoritized students including BWGS in STEM who may choose to neglect resting to the detriment of their well-being. The PFRH and its tenet serve as a springboard for having a conversation about rest and the holistic well-being of BWGS in STEM.

Studying the holistic well-being of BWGS in STEM produced valuable information about the inequities that prevent them from focusing on their well-being, the barriers they encounter in their programs and other campus environments that prevent them from prioritizing their needs. It is important for scholars and researchers to broaden the scope of how well-being is defined, going beyond a single focus on mental health but considering other types of well-being that are valued by graduate students. When the well-being of graduate students from minoritized backgrounds is not studied or discussed, it becomes difficult for future graduate students to initiate a conversation about their needs or properly take care of themselves. Additionally, defining well-being by solely talking about stress levels and exhaustion does not accurately depict the other features of well-being that explore the conditions, experiences, and moments that bring graduate students joy and help them thrive in their programs.

Campus Racial Climate

Like many of the studies conducted about Black women in STEM, the undergraduate experiences of Black women and Black students are reported the most. Graduate students spend a substantial amount of time completing their degrees. Some graduate programs require five or more years, depending on the discipline. On average, a graduate degree in STEM can take seven years or more before the degree is completed. Thus, an environment conducive to learning while preparing graduate students for their professional careers is crucial. The culture and climate of STEM learning environments plays a significant role in BWGS' in STEM successes and failures.

Kuh and Whitt (1988) defined campus culture as “the collective, mutually shaping patterns of norms, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in higher education” (pp. 12-13). On the other hand, campus climate is the “current perceptions, attitudes, and expectations that define the institution and its members (Museus et al., 2011, p. 65). Structural racism and sexism are deeply entrenched in STEM culture and continues to marginalize Black women and Black students in STEM.

Black women, more than any other minoritized group, experience covert forms of prejudice and discrimination known as racial microaggressions. Racial microaggressions are “verbal, behavioral, and environmental indignities that communicate derogatory or hostile racial slights and insults to the target person or group” (Sue et al., 2008, p. 329). These types of slights lead to high stress in Black people because they communicate denigrating messages that make Black people feel intellectually inferior and promote feelings of invisibility where they feel like they do not belong (Sue et al., 2008). BWGS in STEM who experience different forms of microaggressions may lead to a decline in their well-being.

Overall, Black women experience a more hostile racial climate and less educational satisfaction in STEM than women from other racial and ethnic groups (D. R. Johnson, 2012; Leath & Chavous, 2018). They are more likely to encounter discrimination because of their race and gender. The additive effects of both racial and gendered experiences cause Black women to experience greater levels of psychological distress. Lewis and Neville's (2015) Gendered Racial Microaggression Scale (GRMS) points to instances where Black women are more likely to experience gendered racial microaggressions (i.e., subtle forms of gendered racism). In addition, Moody and Lewis' (2019) study is one of the first to explore the relations between gendered racial microaggression, gendered racial socialization, and traumatic stress. They concluded that

there is a link between gendered racial microaggression and traumatic stress and that the intersection of racial and gender socialization plays a complex role in the lives of Black women (Moody & Lewis, 2019). Their study builds upon the previous work done by Essed (1991) on gendered racism and Sue et al.'s (2007) research on racial microaggressions. These assaults may cause BWGS in STEM to withdraw socially and academically. Additionally, Black women's constant fight with racism, sexism, stereotyping, and microaggression increases their chance of racial battle fatigue, which is "the sheer exhaustion people of color face" (Quaye et al., 2018, p. 4).

Black women graduate students in STEM often experience the racially chilly and racially hostile climate marked by an unwelcoming environment that perpetuates the long-standing narratives of Black women being labeled inferior in STEM, preventing them from fully integrating themselves into their community and programs, and contributing to their feeling of discouragement and isolation (McGee et al., 2021; Museus et al., 2011). Scholars report that the racially chilly and racially hostile STEM learning environment is a barrier to Black women's success (Alexander & Hermann, 2016; Blackburn, 2017; McGee et al., 2019; Museus et al., 2011; Ong et al., 2011; Wilkins-Yel et al., 2019). This type of environment also prevents Black women graduate students in STEM from being fully integrated in their programs or contribute to the knowledge being generated in STEM.

McGee and Bentley (2017) asserted that the STEM learning environment is a fertile ground for bias against Black women for two reasons. They are tokenized in STEM fields where women are less represented and in fields that are considered highly meritocratic (e.g., science and engineering). When students from a minoritized background are not properly represented in their programs and on campus, they internalize this message as needing to assimilate to the

dominant culture to be successful. Tinto's (1987, 1993) cultural framework equates students' success with assimilating to the dominant culture and severing their ties to their own culture, a concept that has been critiqued and problematized by other scholars (Tierney, 1999; Winkle-Wagner, 2009, 2015). Black students receive negative messages that to be successful on predominantly White campuses, they must sever ties with their communities and assimilate to the dominant culture. This occurs when their race, culture, gender, and other social identities are not represented on campus and in their respective programs. Further, this long-standing narrative that permeates society has normalized White standards and culture as the norm.

Tierney's (1999) and Winkle-Wagner's (2009) research on minority students and African American college students concluded that parental attachment and their community contribute to their success in college instead of assimilating as Tinto's theory of college student persistence suggested. Additionally, Winkle-Wagner's (2009) study about African American women and their college experiences also showed that severing ties with their communities to be successful is counterproductive for Black women in college. Being in a community is essential to radical healing, which is "existing in both spaces of resisting oppression and moving towards freedom" (French et al., 2020, p. 24) because it allows Black women to stand in solidarity with each other and share their stories which can serve to pass down self-definition (Collins, 2000). French et al. (2020) shared, "Collectivist communities allow POCI to create a counter-space for radical healing where authenticity and comradery can flourish and offer refuge in the context of ongoing racism" (p. 28). Thus, asking African American women and students from minoritized backgrounds to sever ties with their communities is counterproductive.

Based on the current research, BWGS in STEM need more welcoming and inclusive spaces of support as the inequities they face are addressed by the institution. Creating that type of

environment should not be the responsibility of BWGS in STEM. Institutions and programs are responsible for ensuring that the students they recruit are successful and whole when they graduate and throughout their graduate school tenure.

French et al.'s (2020) cultural authenticity and self-knowledge tenet of the PFRH supports this idea of racial and ethnic authenticity, which allows People of Color and Indigenous individuals to not only resist these oppressive ideologies but also to exhibit pride in their heritage. Their framework is helpful to studying the holistic well-being of BWGS in STEM because the framework centers on People of Color and Indigenous individuals identities and points to areas where POCI thrives, which is beneficial when discussing the graduate STEM experience for minoritized students like BWGS in STEM.

For instance, because minoritized students come from a collectivistic culture where helping each other is how they make sense of the world they live in, using the collectivism tenet of the PFRH is useful for interrogating the campus racial climate. Programs can start by promoting community building and cross-collaboration with other programs. They can also be more proactive to ensure BWGS in STEM receive the adequate resources they need to thrive. The strength and resistance tenet of the radical healing framework can help shift how we think about STEM as being “chilly and hostile.” The strength and resistance tenet could counter this type of learning environment by ensuring that BWGS in STEM narratives are told from a different perspective by centering on joy and fulfillment to counter their hostile environment. The cultural authenticity and self-knowledge tenet of the PFRH illustrate how BWGS’ in STEM fields cultural practices help them thrive in their programs by creating an environment that allows them to be their authentic and unapologetic selves. Radical hope amplifies BWGS’ in STEM courage to reimagine a campus climate where they do not have to assimilate. Overall, the

radical healing framework provides academic programs with concrete ideas for restructuring STEM programs to create a more favorable learning environment for their Black women graduate students in STEM where they feel a sense of belonging.

Allowing BWGS in STEM the space to be their authentic selves is how I envision my study countering what is said in the literature. When BWGS in STEM are allowed to be their authentic selves without repercussion or segmentation, this affects their well-being positively. So, instead of assimilating to the dominant culture, BWGS in STEM sees the value in their own culture, which reduces the stress of assimilation by empowering them to bring their genuine and unapologetic self to every space they occupy.

In the next section, I give an overview of historically Black colleges and universities (HBCUs), an institution where Black women have been successful in STEM because of their deliberate efforts to establish an infrastructure that recruits and retains Black women in STEM. Despite limited resources at HBCUs, the research on Black women in STEM at these institutions provides an example of an environment where their presence is culturally affirmed (Lockett et al., 2018; Perna, Lundy-Wagner, Drezner, et al., 2009; Perna, Gasman, Gary, et al., 2010). In alignment with the radical healing framework, HBCUs serve as examples of institutions where Black women graduate students in STEM are thriving because they are represented beyond the racial and gender binary, which allows them to be affirmed in their different identities.

Historically Black Colleges and Universities (HBCUs)

Although there are research studies that address the negative experiences Black women face at predominantly White institutions (PWIs) in their attainment of STEM degrees, there is another body of literature that sheds light on environments where they are motivated to complete their degrees. In their research study at a single-sex HBCU, Spelman College, Perna et al. (2010)

recommended that institutions conduct similar case studies of other institutions that are succeeding in graduating Black women in STEM. HBCUs disproportionately produce African Americans with bachelor's degrees in STEM. They are credited as the number one producers of Black women with bachelors' in STEM degrees who then pursue a graduate degree in a STEM field (Perna et al., 2009). For example, of the 20 leading institutions that produce African Americans bachelor's degrees in STEM, all but three were HBCUs (Borden & Brown, 2014). This is important because, despite their limited resources, HBCUs are at the forefront of producing Black women in STEM. Further, the research also points to the supportive and family-like community cultivated at HBCUs as reasons why their students have been successful in STEM (Lockett et al., 2018; Perna, Lundy-Wagner, Drezner, et al., 2009; Perna, Gasman, Gary, et al., 2010).

Despite the limited research on the graduate experience of Black women in STEM, HBCUs illustrate the importance of a culturally, socially, and racially inclusive environment for Black women's academic success in STEM. Moreover, those who attend an HBCU feel less isolated, alienated, and experience less overt racism (Perna et al., 2009). HBCUs are important producers of African American faculty in STEM fields, and they provide greater social support to address barriers that limit persistence in pursuing an engineering degree (Perna et al., 2009). Having an environment that provides BWGS in STEM the space to fully express themselves without apology is central to their well-being. The community support students receive at HBCUs gives Black women hope and a renewed self-confidence in their knowledge when they were not valued by other institutions.

Since their inception, HBCUs have supported Black women's knowledge production and success. Wilberforce University, founded in 1843 by the African Methodist Episcopal (AME)

church was the first to admit Black women and offered free Blacks education in liberal arts and science (Holfester, 2019). This is significant because when Black women were not being considered as contributors in STEM, HBCUs created a blueprint for Black women in STEM. The safe and supportive environment of HBCUs fosters an inclusive and thriving space for Black women that is free of racial discrimination and tension (Jackson & Nunn, 2003), and notably, Black women's culture is represented, and their social identities affirmed.

Campus culture, practices, and characteristics play an integral role in students' academic success by alleviating the added pressures that would otherwise deter them from persisting in STEM. Some factors attributing to Black women's success at HBCUs include cultural representation, an increased sense of belonging, and access to mentors with similar social identities (Perna, Lundy-Wagner, Drezner, et al., 2009; Perna, Gasman, Gary, et al., 2010). Researchers have found that motivating factors like mentoring, peer support, faculty support, and advising played a fundamental role in the success of students of color in STEM (Palmer et al., 2011). Data has shown that the family-like environment at HBCUs in which faculty, staff, administrators, and students support one another contributes to students' success in STEM (Lockett et al., 2018).

Lockett et al.'s (2018) study examined 71 Black women STEM students across ten HBCUs about their motivation to persist in STEM. The women participants concluded that their interactions with senior-level administrators and the family-like atmosphere played an integral role in their success. The senior-level administration's influence was felt through simple words of encouragement or intentional academic support. Similarly, Joseph's (2012) study about six African American women in years one and two in a graduate STEM program also supported the

importance of an open and encouraging campus culture that was cultivated at their HBCU. Thus, BWGS in STEM can benefit from this type of environment.

In addition to the supportive environment, racial inclusion, support systems, and other policies and programs, BWGS' in STEM journeys need to be examined further at HBCUs to include research on their well-being. In a research study at a single-sex HBCU, Spelman College, the women reported that the cooperative rather than competitive peer culture, easy access to faculty, smaller class sizes, and faculty encouragement were some ways that helped Black women thrive within their programs (Perna et al., 2009). The women in the study also indicated that their shared interest in STEM yielded a supportive environment instead of competition. Competing with one another was not their focus because it was more important for them to dispel the narrative about Black women not achieving or persisting in STEM fields by completing their degrees.

Including studies on the holistic well-being of BWGS in STEM at HBCUs and using the radical healing framework to frame their stories adds richness to their narratives and the HBCU experience. The framework is useful to expand the narratives about HBCUs and their role in graduating Black women in STEM. The cultural authenticity and self-knowledge and the collectivism tenet of the radical healing framework illustrates how HBCUs create a non-competitive environment that focuses on their students' salient identities. HBCUs view their students as part of a larger family, and HBCUs affirm BWGS' in STEM identities which have implications for their well-being. French et al.'s (2020) cultural authenticity and self-knowledge tenet discuss how People of Color and Indigenous individuals identities are affirmed, which is suitable to report how HBCUs cultivate their family-like atmosphere that is valued by the students and the role their cultural and racial identity plays in the process. Similarly, French et

al.'s (2020) collectivism tenet of the PFRH prioritizes community, which is essential for radical healing, and POCI's ability to thrive, aligns with the family-like environment that is cultivated at HBCUs. Having a familial atmosphere is one way students at HBCUs build comradery to thrive in their programs. The radical healing framework collectivism tenet delineates how building different types of relationships help People of Color and Indigenous individuals create “counter-space for radical healing” and “building solidarity” (p. 28).

Obtaining a degree from an HBCU seems to not carry the stories of trauma and segmentation of self because of how HBCUs intentionally center their students’ identities and needs. Furthermore, using a strength-based framework like the PFRH provides additional insight into BWGS in STEM attending HBCUs. Based on the research presented, HBCUs provide a familial space where BWGS in STEM are not only thriving but are also represented beyond the gender and racial binary. In the next section, I discuss the intersectionality of race and gender in STEM.

Intersectionality of Race and Gender in STEM

Efforts to broaden Black women’s participation in STEM often focus on single identity issues (e.g., Black students or women in STEM), thus promoting the erasure of individuals who are simultaneously raced and gendered in STEM (e.g., Black women). Ireland et al. (2018) regarded Black women in STEM as “hidden figures” given their continued erasure, which undermines their contributions to STEM research and careers. Because Black women belong to two historically and socially stigmatized groups, they are more at risk for discrimination than White women or Black men, a condition referred to as "double jeopardy" (Leath & Chavous, 2018, p. 126) or double consciousness (Carter-Sowell & Zimmerman, 2015). Additionally, Black women in STEM are treated as second-class citizens and sexually objectified due to their gender

(Leath & Chavous, 2018). This means Black women must navigate and balance their two identities despite the discrimination they face. These discriminatory experiences prevent Black women from being authentic in STEM spaces, perpetuating the hegemonic view of the prototypical White male scientist, and decrease Black women's self-efficacy.

Collins (2019) and Crenshaw (1989) used intersectionality to examine Black women's experiences with racism and sexism and how the different systems of oppression overlap among intersecting systems of power. Collins (2019) posited that "racism and sexism marginalized individuals and groups that did not fit comfortably within race-only, gender-only mono-categorical frameworks" (p. 26). As a result, Black women remain marginalized and excluded because of their lived experiences. As discussed in the previous sections, intersectionality is a useful tool to uncover the different dimensions of the campus racial climate and its effects on the holistic well-being of BWGS in STEM because intersectionality reveals how Black women are subordinated due to their racial and gendered experiences (Crenshaw, 1989). Coupled with the radical healing framework, intersectionality delineates how BWGS' in STEM different identities and their additive effects influence their holistic well-being and the strategies they enact to achieve holistic well-being.

The PFRH uses intersectionality to studying People of Color and Indigenous individuals experiences and highlights through its critical consciousness tenet "why power relations are structured and maintained" (French et al., 2020, p. 25). This approach recognizes that POCI, (e.g., Black women) have multiple identities that should be included when reporting about their experiences. French et al.'s (2020) incorporation of intersectionality in the PFRH points to a new perspective for studying the holistic well-being of BWGS in STEM that includes all their identities.

For instance, the critical consciousness tenet of the framework helps Black women graduate students in STEM become aware of the cumulating effects of their intersecting identities and how they promote their well-being. Critical consciousness allows POCI to recognize the oppression they face and empowers them to move forward to envision a future that liberates them from being subordinated because of their race and gender. With this awareness, BWGS in STEM can move towards critical action to reduce their oppression despite their realities. Taking this stance not only helps BWGS in STEM to redefine their future but also allows them to critically reflect on the injustices and how those injustices affect their well-being. Using the radical healing framework to contextualize BWGS in STEM stories could remove them from being classified as "hidden figures" because this framework places value on promoting People of Color and Indigenous individuals racial and cultural identities, which can be transformative for BWGS in STEM and their well-being.

Next, I discuss some of the prominent models of well-being developed by psychologists but argued why PFRH is better for this study, the well-being of graduate students, and the well-being of Black women graduate students in STEM.

Well-Being

Well-being is a complex topic of study in various disciplines; however, there is no standard definition (Schmidt & Hansson, 2018; Seedhouse, 1995; Sherman, 2021). Furthermore, well-being is a broad term used as a catch-all phrase, and its ambiguity can lead to more confusion. The field of positive psychology began researching well-being as a topic because, for decades, psychologists focused on the negative parts of human life and positive psychologists decided to take a different approach. In doing so, social and behavioral scientists began to examine well-being differently (Diener, 1984).

Scholars have taken different approaches to study well-being including a health approach and a social and behavioral science approach (Cotten, 2008). A health approach measures one's physical conditions, illnesses, and disease, and a social and behavioral science approach measures stress levels, social support, psychological distress, and self-esteem (Cotten, 2008). These approaches continuously measure the negative parts of people's lives instead of highlighting the areas where they thrive and what they have done to promote that type of lifestyle.

Given the limited research available on Black women graduate students' well-being in STEM disciplines, I highlight some existing literature that has explored the well-being of other professional and graduate students such as medical students (Dyrbye, Thomas, Eacker, et al., 2007; Dyrbye, Szydlo, Downing, et al., 2010; Dyrbye, Schwartz, Downing, et al., 2011) and pharmacists (Skrupky et al., 2020). The scholarship available on the well-being of medical students discusses the different types of psychological distress they experienced as medical students (Dyrbye et al., 2010) and how the added stress of discrimination, isolation due to skin color, and prejudice were contributing factors that increased medical students psychological distress (Dyrbye et al., 2007). The Medical Student Well-Being Index (MSWBI), a 7-item scale developed by medical professionals to assess medical student well-being including burnout, stress, fatigue, mental quality of life, physical quality of life, and depression (Dyrbye et al., 2010). Similarly, Skrupky et al. (2020) reported that pharmacists also experience a high level of distress using the Well-Being Index (WBI). The WBI is a 9-item instrument which was originally created as a 7-item instrument (Dyrbye et al., 2010) and is used to measure multiple dimensions of distress (Skrupky et al., 2020). The new addition to the scale includes the "evaluation of meaning in work and work-life integration" (Skrupky et al., 2020, p. 908).

Although the WBI provides useful information about the well-being of other graduate and professional students, the index mainly focuses on distress.

Prominent Models

Amongst the psychologists who study well-being (e.g., Diener, 1984; Keyes, 1998; Ryff, 1989; Seligman, 2018; Witmer & Sweeney, 1992), there is some consensus about the components that should make up well-being. Those components consist of life satisfaction, positive and negative affect, and their distinction (Ryff, 1989; Seedhouse, 1995). In other words, an individual's life satisfaction may be influenced or affected by certain macro-level social changes (e.g., employment, education) and subsequently, their psychological well-being is impacted (Ryff, 1989). Yet, despite the psychologists call to action regarding the scope of well-being, the literature that has been used to report graduate students' well-being continues to be one-sided instead of integrating other types of life satisfaction such as the good part of their journey.

Additionally, some of the popular models that address well-being include elements like psychological well-being which was operationalized as positive psychological functioning (Ryff, 1989). Subjective well-being (Diener, 1984) is likened to one's life satisfaction which relies on the standards individual holds to measure what is considered a good life. According to the scholars Diener referenced, there are three hallmarks to subjective well-being. It is subjective, meaning it is based on the individual and their experiences, it includes positive measures, and a "global assessment of all aspects of a person's life" (Diener, 1984, p. 544). Keyes (1998) defined her concept of social well-being as "the appraisal of one's circumstance and functioning in society" (p. 122). In addition, Keyes (1998) proposed several social challenges (social integration, social contribution, social coherence, social actualization, and

social acceptance), that may affect one's social well-being. For example, social integration assesses how well a person is integrated into their community and society, meaning, when they integrate into their communities, they feel like they have something in common with others.

Similarly, Seligman (2018) listed five domains, positive emotions, engagement, relationships, meaning, and accomplishment (known as PERMA), as components to consider when exploring one's well-being. Lastly, the Wheel of Wellness model (Hattie et al., 2004; Witmer & Sweeney, 1992) offers a holistic approach to well-being and incorporates life tasks such as friendship, love, self-definition, spirituality, work and leisure, and self-direction. The models above illustrate the many ways well-being can be defined including integration into one's community and underscoring the positive aspects of life. While BWGS in STEM could benefit from some of the ideas discussed above, the models lack an incorporation of people's social identities like racial, gender, or cultural components when discussing well-being. This limitation however is addressed by French et al.'s (2020) psychological framework of radical healing (PFRH) that centers on the identities of People of Color and Indigenous individuals (POCI).

Scholars have critiqued the well-being models because they lack integration despite their commonalities (Ryff, 1989). For example, Agteren and Iasiello (2020) addressed the oversimplification of scientific research on well-being and mental health. They critiqued the current well-being and mental health models for not providing a comprehensive overview of the exact building blocks for mental health and mental well-being or their relationships with one another, concluding that the lack of integration of these models impedes professionals from advancing the understanding of well-being and mental health. Keyes (1998) and Ryff (1989) critiqued other models because the literature on psychological well-being was not strongly guided by theory, and mostly centered on "negative and positive affect and life satisfaction"

(Ryff, 1989, p. 1069). Although the scholars' critiques of the earlier well-being models are valid, we should also recognize people are unique individuals, and how they define what constitutes well-being will be different depending on their lived experiences. Thus, having the flexibility to choose their own definition is necessary. My study on the holistic well-being of BWGS in STEM adds to the literature on well-being by demonstrating how BWGS in STEM define holistic well-being, including the specific components they incorporate.

Despite critiques from scholars in the field, the well-being models developed by psychologists provide pertinent information when the topic was not being discussed in other disciplines. Although the models are not integrated, they offer details about the components of well-being despite not having a standard definition. Nevertheless, their general approach to studying well-being make it challenging to understand what components POCI like Black women value the most or consider to be important. With higher education evolving and becoming more diverse, models developed to study well-being should address race, gender, and other social identities instead of taking a general approach. More inclusive models can illuminate the needs and components that are favored in communities of color and can help graduate programs be innovative in the services they provide their students of color.

Including marginalized groups' identities as a component when studying well-being is necessary to understand how they navigate oppressive systems, how those oppressive systems affect their well-being, what part of their well-being they concentrate on the most, and how are they defining well-being. Each group is unique and has their own lived experiences that should be a part of their story. The challenges they face and how those challenges affect their well-being, when studied, provide a holistic picture of their lives. When models such as the ones

discussed above use a one-size-fits-all approach, it is difficult to understand how marginalized groups make meaning of their well-being and the components they utilize the most.

Using culturally relevant frameworks like French et al.'s (2020) radical healing framework to study the holistic well-being of Black women graduate students in STEM addresses the limitations of the current models of well-being. French et al.'s (2020) strength-based framework is inclusive of POCI's intersecting identities which are necessary when discussing how they attain radical healing. Because I am interested in studying the holistic well-being of BWGS in STEM, using a framework that is strength-based is necessary. Taking this approach to studying the holistic well-being of BWGS in STEM underscores the specific areas of their well-being they prioritize, why, and in what settings.

The critical consciousness tenet of the radical healing framework helps Black women graduate students in STEM become aware of the barriers to their well-being. Being aware of those barriers helps BWGS in STEM recognize the different power structures and how they influence their daily lives. Focusing on the holistic well-being of BWGS in STEM is a strength they embody and another part of their story that can be informative and transformative by providing a different outlook on their lived experiences. Like the psychologist who wanted to study a different part of the human experience, the radical healing framework allows me to do the same for BWGS in STEM by focusing on their strengths and how they move towards radical healing. The cultural authenticity and self-knowledge tenet provides evidence of how BWGS in STEM choose to live a life where their culture dictates how they move through the world and the role their culture plays in their well-being. Radical healing for BWGS in STEM is the catalyst they need to envision a new possibility for their future like the radical hope component of the PFRH suggests. Thus, my study provides additional insight into the lives of Black women

graduate students in STEM and how they make meaning of their holistic well-being by underlining the strategies they have enacted to live a life that is not saturated in pain and negativity. The human lived experience consists of more than just negativity because happiness and joy also contribute to Black women graduate students in STEM life satisfaction.

Well-Being of Graduate Students

Graduate students remain in dire need of preventative strategies that could alleviate and address the mental health crisis (Charles et al., 2021). The National Academies of Sciences, Engineering, and Medicine [NASEM] (2018) recognized that graduate students' physical, mental, and emotional well-being is vital for their success but also reports that graduate students are experiencing more stress. Graduate students are often left out of the conversation on well-being. Graduate students' bouts with depression and anxiety have been attributed to a myriad of academic problems while matriculating through their programs. Furthermore, little is known about their work-life balance (Evans et al., 2018).

Graduate students' inability to have a good work-life balance contributes to their stress and anxiety (Evans et al., 2018). Financial insecurity, poor advisor relationships, lack of transparency in their programs, and guidance through their process are additional reasons why graduate students face many stressors in their programs (Levecque et al., 2017). Plus, publications, high workload, research, work-life balance, competition, and socialization affect doctoral students' well-being (Haynes et al., 2012; Hunter & Devine, 2016; Schmidt & Hansson, 2018). In addition, the different phases (doctoral completion coursework, comprehensive or preliminary examination, and the dissertation phase) graduate students have to go through in their programs is an added stressor (Gardner, 2007; Sverdlik & Hall, 2020; Weidman et al., 2001).

Hunter and Devine's (2016) mixed-method study on doctoral students' emotional exhaustion concluded that understanding students' experience with emotional exhaustion would better assist with understanding doctoral students' emotional well-being. Their study consisted of 186 current and recently graduated doctoral students. Haynes et al.'s (2012) qualitative study about doctoral students' perceptions of their well-being in their doctoral programs concluded that the participants faced role conflicts due to multiple roles that required a lot of emotional energy, and stress affected their emotional well-being. Their study consisted of eight female doctoral students, six in education and one in chemistry and agriculture. Shavers and Moore's (2014) qualitative study on the perceptions and experiences of African American female doctoral students at predominantly White institutions concluded that Black women had to present different forms of themselves to be successful in their programs, and they faced personal and institutional challenges that affected their well-being. Their study consisted of 15 Black women in the social and clinical sciences.

Sverdlik and Hall (2020) reported doctoral students' well-being and internal motivation were highest during their coursework phase and lowest during their comprehensive examination phase. Literature on doctoral education attributes this to the program requirements being ill-structured as doctoral students progress through the different phases (Lovitts, 2008). The phases of the doctoral program include coursework, comprehensive examination, and dissertation phase. Further, the limited research available on the well-being of doctoral students is concentrated in specific fields.

The topic of well-being is widely researched in the field of psychology compared to other disciplines like the natural sciences and rarely acknowledges the diversity within the disciplines (Schmidt & Hansson, 2018). A recent literature review on doctoral students' well-being resulted

in 17 different studies that spanned nine countries, but only five originated in the United States (Schmidt & Hansson, 2018). Of the five research studies based in the United States four focused explicitly on female doctoral students and one on "racio-ethnicity" (Schmidt & Hansson, 2018, p. 3). Leaving out disciplines like those in STEM not only erases the doctoral students' experiences in STEM but also their voices.

Despite the clarion call for more transparency and a more structured process, graduate students are plagued with a myriad of stressors that could derail their progress within their programs (Levecque et al., 2017). The *Graduate Assembly Graduate Student Happiness & Well-Being* survey report indicated that Ph.D. students exhibited higher levels of depressive symptoms than master's students (UC Berkley Report, 2014). The report mentioned that 47% of Ph.D. students reached the threshold that is considered depressed compared to 37% of master's students (UC Berkley Report, 2014). Items related to basic human needs, academic progress, departmental climate, and well-being were included. In addition, satisfaction with life, a common indicator of happiness and positive functioning, and depression, an indicator of mental illness and dysfunction, were also measured (UC Berkley Report, 2014). The report found 43-46% of graduate students in the natural sciences (biological sciences, physical sciences, engineering, and "other professional") reached the threshold of depression; 64% of Arts & Humanities graduate students met the threshold; 37% of the law students met the threshold; 34% of social sciences and 28% of the business met the threshold (UC Berkeley report, 2014, p. 7). This signifies why graduate students need to have different outlets they can use to help alleviate their stressors.

Levecque et al.'s (2017) study with Flemish students attributed workload as the main stressor for Ph.D. students' mental health. When compared to different populations (i.e., the general population, highly educated employees, higher education students), Ph.D. students were

2.43, 2.84, and 1.85 respectively more at risk to develop psychiatric disorders. No matter where the study is conducted, Ph.D. students are seen to experience psychological distress because of their work environment. This study, although conducted amongst Flemish Ph.D. students, mirrors the problems faced by students in North America who are pursuing various graduate degrees. Furthermore, the studies above provide evidence of why a new approach is needed when studying graduate students, like, BWGS in STEM, an approach that is not steeped in lack and negativity.

What is missing from the narrative of graduate students' mental health and well-being are the positive factors that are associated with lower levels of depressive symptoms (Charles et al., 2021). To examine some positive factors (e.g., social support, graduate department social climate, and optimism about future career prospects) that may attenuate graduate students' bouts with a mental health crisis, Charles et al. (2021) surveyed over 3,600 graduate students across 10 University of California campuses. Doctoral students in the social sciences, humanities, and sciences and master's students in academic and professional programs participated in the study. The positive factors were reported to help mitigate graduate students' risks of depressive symptoms and suggested that universities foster more social relationships with their students to decrease levels of depression (Charles et al., 2021). Implementing more programs that prepare students better for their future careers was significant (Charles et al., 2021).

Although these positive factors do not erase their reality with negative experiences that create stress, they serve as protective factors that could benefit graduate students' current and future selves. Creating an environment where graduate students feel happy and less depressed is needed. Being happy might increase graduate students' productivity, create a more balanced lifestyle, increase collaboration with their peers, and allow them to be their authentic selves.

Thus, more research is needed that highlights graduate students' (e.g., BWGS in STEM) satisfaction with life which measures their happiness and well-being.

Taken together, the above signals that graduate students need change. The emotional exhaustion they face, along with other stressors that are internal and external to their programs, is why I chose the radical healing framework, which centers on People of Color and Indigenous individuals lived experiences but also helps POCI strive for wellness (French et al., 2020). Studying the well-being of graduate students (e.g., BWGS in STEM) and the environment where they spend most of their time is imperative. Poor well-being practices can impact graduate students' ways of life and their engagement in their research, teaching, and social lives. French et al.'s (2020) framework could be used by graduate programs to understand how graduate students liberate themselves from the stress of obtaining their degrees and who and what plays a role in their liberation.

The radical hope, collectivism, cultural authenticity and self-knowledge, and strength and resistance tenets of the radical healing framework is worthwhile in beginning the conversation about graduate students' happiness and living joy-filled lives. The radical hope tenet can outline how graduate students use hope to improve their experience as graduate students. Furthermore, collectivism could demonstrate how being in a community with students and faculty who share their different identities helps reduce graduate students' psychological distress and build harmonious relationships; in addition to understanding how sharing their stories with their community is liberating. The strength and resistance tenet of the PFRH can illustrate how graduate students create counterspace as a form of resistance that promotes a good work-life balance instead of being in overly competitive spaces, which may have negative effects on their well-being.

Using this framework to study graduate students is relevant because the radical healing framework could help them reconceptualize how they view and achieve their well-being. My study on the holistic well-being of BWGS in STEM provides new insight regarding how they are thriving. Taking a strength-based approach to studying the holistic well-being of BWGS in STEM provides insight into other protective factors that are beneficial in their daily lives.

In next section of the literature review, I discuss the importance of studying the well-being of Black women graduate students in STEM, socialization in graduate programs, and graduate students support systems.

Well-Being of Black Women Graduate Students in STEM

The marginalization of Black women graduate students in STEM continues to be seen in the literature on well-being in addition to facing other discriminatory and exclusionary practices because of their race, gender, ethnicity, and other social identities. For instance, Schmidt and Hansson's (2018) literature review on the well-being of doctoral students included only two research studies that focused on Black women. Although Shavers and Moore's (2014) study explicitly focused on Black women in doctoral programs, Haynes et al.'s (2012) study included only two Black women and one who was in a STEM-related discipline. The well-being of Black women graduate students in STEM is important and should be a part of their narratives. Focusing on the holistic well-being of Black women graduate students in STEM allows researchers to examine another side of their lived experience and how they strive for wellness and radical healing. Thus, not reporting on their full experiences as BWGS in STEM could lead to inaccurate information about their graduate STEM journey. Researching BWGS' in STEM full experiences is needed to ensure their holistic well-being is being discussed, in addition to

learning about what institutions and their STEM programs do to provide them with the services they need to thrive.

Scholars' general approach to studying the well-being of graduate students' often does not consider their different identities and how they shape their outlook on their well-being. Furthermore, well-being is a foreign concept for some communities of graduate students. For example, the holistic well-being of BWGS in STEM programs is not considered or addressed. Instead, it is their negative experiences and how the STEM learning environment contributes to those negative experiences that are emphasized in the literature (Alexander & Bodenhorn, 2015; Alexander & Hermann, 2016; Joseph, 2012).

Alexander and Hermann's (2016) phenomenological qualitative study examined the experiences of African American women in graduate STEM fields at a predominantly White university (PWU). The study consisted of eight participants representing six STEM fields (biology, chemistry, biomedical science, statistics, engineering, and chemical engineering) in graduate study. The women reported experiencing racial microaggression in STEM classrooms, racial stereotyping, invisibility, lack of institutional support from peers and faculty, and diminished and low self-efficacy. Similarly, Alexander and Bodenhorn's (2015) study investigated the adjustment experiences of Black women attending graduate school at a southern predominantly White university concluding that the women experienced negative emotions and feelings resulting from microaggressions. Although Black women attending graduate school have faced challenges because of microaggressions, they have also thrived in graduate school, and that narrative should also be reported. My study is taking a stance and studying Black women graduate students in STEM experiences by using a lens and framework that is strength-based.

Trying to survive in a racially charged environment can result in Black women graduate students in STEM abandoning caring for themselves because they are busy fighting other systemic injustices within their graduate programs. Thinking about their well-being may not be a priority for them because they may be in a heightened state of survival due to their traumatic experiences in their programs. The studies above highlight some of the areas where Black women graduate students in STEM face challenges and those areas need improvement. However, the critical consciousness and collectivism tenets of the radical healing framework addresses some of these challenging areas for BWGS in STEM.

The limited research studies that are available on BWGS in STEM do not consider their well-being. The exclusion of Black women's experiences in their graduate program and their well-being is prevalent in the literature on well-being. Schmidt and Hansson's (2018) literature review on the well-being of doctoral students included one research study (Shavers & Moore, 2014) that addressed Black women's well-being in their doctoral programs. Shavers and Moore's (2014) qualitative study examined the strategies African American women doctoral students at predominantly White institutions use to persist academically and cope in their programs. Their study included 15 women at different stages in their doctoral study. Shavers and Moore (2014) concluded that the coping strategies Black women used in their doctoral study were double-edged swords because although the strategies helped them academically, they simultaneously affected Black women’s well-being.

The well-being of Black women graduate students in STEM is diminished because of their racial and gendered experiences. Constantly reporting the negativity BWGS in STEM experience will eventually take a psychological toll, leading them to believe this is all Black women will ever be. Along with their gendered and racial experiences, the holistic well-being of

BWGS in STEM should also be addressed ensuring that their full experiences are being researched and reported accurately. In the studies above, the scholars rightly delineated the negative experiences BWGS in STEM faced in their programs that stymied their well-being. Alexander and Hermann's (2016) study also referenced the women in specific STEM disciplines and the barriers they faced. This strategy often is not seen in the literature because Black women graduate students in STEM experiences are usually grouped together in research findings with other women, or women of color, specifically.

The research studies above indicate the need for a new narrative for BWGS in STEM that does not consistently dwell on their negative experiences. Thus, reporting BWGS in STEM strengths and how they prioritize themselves is also a part of their stories. For example, Harper's (2009) study on using an anti-deficit framework to study students of color in STEM provided ways in which researchers can reframe deficit-orienting questions to anti-deficit questions. In addition, his study provided some examples of how popular theories (e.g., campus ecology theory, stereotype threat theory) used by researchers can be reframed to "advance the study of minority student achievement in STEM" (Harper, 2009, p. 71). Although this study was conducted using Black male undergraduates as its participants, this anti-deficit approach can be applied to other populations and to study other topics like the holistic well-being of BWGS in STEM.

Taking Harper's (2009) suggestion, I employed a strength-based approach instead of a deficit approach to study the holistic well-being of BWGS in STEM by using French et al.'s (2020) Psychological Framework for Radical Healing (PFRH) because their framework prioritize People of Color and Indigenous individual's many social identities. Taking this approach

coincides with positive psychologists who seek to report another side of the human experience that is not filled with pain and negativity (Diener, 1984).

Using a framework like the radical helps change BWGS' in STEM viewpoints on their well-being by shifting how their well-being is valued in their daily lives. In the case above, the students viewed their well-being as non-essential, however, their well-being should be considered essential. The PFRH facilitated BWGS in STEM reframing their stance on well-being. Instead of highlighting the negative experiences of BWGS in STEM, the PFRH examined how they achieved radical healing. The framework highlighted the oppressive systems at play in the lives of BWGS in STEM, and how these women utilized their strengths to resist these oppressions and live joy-filled lives. BWGS in STEM have strengths and this framework amplified their strengths and how they focus on their well-being.

The critical consciousness tenet afforded Black women graduate students in STEM the freedom to critically reflect on the challenges they face as BWGS in STEM, but also take critical action which involves moving from "commitment to action" (Watts et al., 2011 as cited in French et al., 2020, p. 26). With critical consciousness, Black women graduate students in STEM made the necessary adjustments to overcome the barriers to their well-being by corralling their community and engaging in activities that increase their psychological well-being. Forming a community with other Black women is essential to Black women's culture and passing down relevant information for their survival. The collectivism tenet of the PFRH values People of Color and Indigenous individual's culture and their community which was used to underscore how BWGS in STEM different communities influence their well-being while building solidarity with each other. The strength and resistance tenet highlighted what the BWGS in STEM did to live joy-filled lives.

The cultural authenticity and self-knowledge tenet of the PFRH called attention to how BWGS in STEM resisted the colonized way of thinking about their well-being which entails being stressed out and exhausted. In turn, this tenet helped Black women graduate students in STEM celebrate their different identities and what makes them unique. In addition, BWGS in STEM incorporated their salient identities into their daily rituals and activities that focus on their well-being. In the next section, I focus on the graduate socialization process and graduate students support systems.

Socialization in Graduate Programs

The socialization process can be physically and emotionally draining for BWGS in STEM programs and consists of both social (e.g., financial assistance) and academic (e.g., relationship with faculty) factors (Joseph, 2012). They must maneuver both academic (e.g., writing a dissertation, conducting research, attending conferences, and securing funding) and non-academic issues (e.g., race and gender-related slights). Graduate students must also navigate the different cultures from their undergraduate experience at an HBCU compared to their graduate experience at a PWI, along with their department culture (Joseph, 2012). Additionally, they have to address problems such as being perceived as affirmative action cases, intellectually inferior, and other forms of negative stereotypes, which take a psychological toll (Williams et al., 2005). These experiences may lead to graduate students' exhibiting signs of imposter syndrome where they are doubting their intellectual capabilities and that their talents and abilities were overestimated (McGee et al., 2021). Imposter syndrome or imposter phenomenon is "an internal experience of intellectual phoniness which appears to be particularly prevalent and intense among select sample of high achieving women" (Clance & Imes, 1978, p. 241). Because of the

emotional and psychological toll that can occur during graduate students' socialization, this process makes it easy for high achieving graduate students to feel displaced.

The socialization of graduate students often focuses on one part of their journey and career path with limited attention to their well-being and nonacademic professions. Notably, graduate students are socialized into academic and research positions with little consideration of other occupations. Participating in internships can alleviate the pressure to pursue academic careers because internships provide practical experiences that can enhance learning in STEM fields and provide diverse career training and mentorship for students (Jones, 2017; Martínez-Orengo et al., 2021; Pender et al., 2010; Veenstra, 2014). Yet, despite the impact of internships on graduate students career readiness, there is a lack of information, training, and support for those who choose non-academic employment (Martínez-Orengo et al., 2021). Addressing this area in the socialization process can be influential for graduate students' well-being so they are not being overly stressed to pursue a career in which they are not interested.

Socialization refers to the process through which graduate students gain knowledge and skills needed for acclimating to the academic norm of research and scholarship (Weidman & Stein, 2003; Weidman et al., 2001). Gopaul (2011) used Merton et al.'s definition of socialization to mean "the processes through which [a person] develops [a sense of] professional self, with its characteristic values, attitudes, knowledge and skills ... which govern [his or her] behavior in a wide variety of professional situations" (Gopaul, 2011, p. 11 as cited in Merton et al., 1957, p. 287). To develop this professional self, doctoral students must build relationships with their peers and faculty members (Gopaul, 2011). Relationships and knowledge acquisition in the first two years are crucial to graduate students' success (Joseph, 2012). The information gained from these relationships can catapult graduate students to succeed or fail, depending on

the culture of their programs. Additionally, doctoral students also have to maneuver the institutional, individual, disciplinary, and overall culture encompassing graduate education (Gardner, 2007); thus, knowing how to negotiate the different cultures in the socialization to doctoral education may facilitate or impede degree success due to the synergy (or lack thereof) among the different cultures (Gardner, 2007).

The first two years of graduate education are instrumental and determine whether many students will complete their degree. For doctoral students in science and engineering, there is a 50% attrition rate, and two-thirds of Black students pursuing a doctoral degree do not finish (Joseph, 2012). Joseph's study consisted of six African American women in their first two years of their STEM doctoral program. This high failure rate can cause undue stress on Black graduate students which may deter them from pursuing their intended STEM degree.

The graduate socialization process for Black students can be problematic because it reinforces the heteronormative ways of thinking when it comes to research, employment, and publication (Felder, 2010; Gildersleeve et al., 2011; Gopaul, 2011; Orphan, 2015; E. Taylor & Antony, 2000) and has been critiqued for its linearity (Gopaul, 2011). Black doctoral students have a range of interests they would like to pursue, and they recognize the importance of giving back to their communities. They are civically engaged and conduct publicly engaged research even though it is not highly recognized or valued as a component of public, academic work (Jones et al., 2013). Their research informs their communities about how systemic racism and oppression work to defeat their communities, help to improve their social, political, and economic status, and in doing so, help to improve racially and ethnically diverse groups within their communities (Jones et al., 2013). As a result, having access to other career paths can diversify their research interests and projects (Gopaul, 2011).

BWGS in STEM who conduct research that is beneficial to their community envision new possibilities for the future. A significant part of Black students' success is having a faculty advisor who supports their research agenda and is willing to provide the proper mentorship and resources needed to complete their projects (Barnes & Austin, 2009; Barnes et al., 2010). Yet, for many Black women graduate students in STEM, the number of faculty who share their gender, race, or ethnicity is limited, which forces them to think of other ways to accomplish their research interest. Participating in research that benefits their community takes courage to envision something new.

Some researchers have examined the socialization of African Americans broadly (Felder, 2010; Gildersleeve et al., 2011; E. Taylor & Antony, 2000), and only a few have studied the experiences of BWGS in STEM programs (Joseph, 2012). Gildersleeve et al. (2011) investigated the culture of doctoral education using a critical race theory analysis to examine the experiences of Black and Latina/o students. They argued that the culture of doctoral education could be "dehumanizing and marginalizing for Latino/a and Black students" because of the pervasive racism and programs need to "account for power, resistance, and agency within and along racialized demarcations" (Gildersleeve et al., 2011, p. 94).

In addition, Taylor and Antony's (2000) study examined the experiences of African American doctoral students in education against stereotype threat. The participants shared that stereotype threat permeated many facets of their graduate education that interfered with the socialization process. Tokenism, marginalization, and labeling were ways African American students experienced stereotype threats. Reducing stereotype threat for Black students is needed for them to succeed in their respective doctoral programs (Taylor & Antony, 2000), which may also influence their holistic well-being. Experiencing a stereotype threat can be damaging to the

holistic well-being of BWGS in STEM because of the negative messaging it holds about their race and gender, both as Black women and as future scientists. So, if Black women graduate students in STEM feel threatened or stereotyped during the socialization process, another barrier to self-care is created.

The radical healing framework developed by French et al. (2020) takes a strength-based approach that is instrumental in examining BWGS in STEM socialization. Using radical hope in the socialization process promotes a new way of socializing graduate students. Radical hope challenges how BWGS in STEM are socialized into building different types of relationships in their graduate programs. Taking this frame and using hope in the socialization process gives them agency to seek out relationships that improve their experiences as BWGS in STEM where they can envision a future where they are thriving, not just surviving. Furthermore, the radical hope tenet of the PFRH demonstrates how the research BWGS in STEM conduct can uplift and promote a better future for their community.

Cultural authenticity and self-knowledge, and cultivating relationships are a core part of the PFRH and can be useful to improve the socialization process for minoritized graduate students like Black women graduate students in STEM. Including BWGS' in STEM different social identities in the graduate socialization process reveals what they value most and how those values shape and influence their career trajectory.

BWGS in STEM benefit from a socialization process that focuses on their well-being, including what they need to thrive and feel seen, instead of a socialization process that places more importance on their publications, grant submissions, and research. Taking a strength-based approach to interrogate the graduate school socialization process may reveal the different strengths BWGS in STEM and other minoritized student embody. If programs incorporate

BWGS' in STEM strengths throughout the socialization process, stressors can be lessened or perhaps even eradicated. A strength perspective can alleviate faculty, peers', and other personnels' misconceptions about BWGS in STEM capabilities. In the next section, I discuss graduate students support systems and how they either contribute to or detracts from Black graduate students' well-being.

Graduate Students Support Systems

Black women pass down self-definitions and self-valuations through their social relationships that are essential for coping with different oppressive experiences (Collins, 1986). Within the Black community, support systems are vital, and they are a pertinent part of Black women's culture. Support systems come in many forms, like peers, family and friends, and faculty advisors. Developing different social relationships allow Black women graduate students in STEM to gain information while matriculating through their programs. Social relationships impact how BWGS in STEM care for themselves and prioritize their well-being.

Social Relationships. Within the collegiate environment, support systems focus on relationships between faculty members and peers. Forging these relationships allows students to get acclimated with their environment and program. Peers can pass down relevant information that is critical to the graduate students' journey and success in their program. Building a strong support system with peers can determine whether a student chooses to leave or stay in their programs. In contrast, faculty relationship building shields students from the department's bureaucracy and the doctoral process (Barnes & Austin, 2009; Jones et al., 2013). Having information passed down to new and incoming students by the faculty and peers helps with the socialization process and gives them access to the hidden curriculum and the publish or perish

rhetoric which is another barrier Black women face in their graduate programs (Jones et al., 2013).

Alexander and Bodenhorn (2015) found that Black women in graduate programs relied on social relationships such as mentors, family, friends, and romantic partners when transitioning into and navigating through their graduate school experience. These external relationships gave Black women people who could help them manage their stress while also serving as a sounding board. However, the challenge with these relationships is that they are not situated within academic spaces, making it difficult for them to understand the full scope of graduate students' experiences. Having social relationships in academic areas is helpful for the well-being of BWGS in STEM. These relationships provide BWGS in STEM with insights about how to care for themselves while matriculating through their programs.

Mentors are needed to help guide students through unfamiliar territory in academic spaces (e.g., research) and serve as encouragement. On the other hand, family and friends provide well-needed emotional and personal support when students feel discouraged both academically and personally (Alexander & Bodenhorn, 2015). This is important because Black women most often feel like they do not belong because of the many systemic problems and negative messages about their race, gender, and capability as a scientist. Understanding the scope of these different relationships and how they impact the holistic well-being of BWGS in STEM is necessary to continue their story. The collectivism tenet of the PFRH reveals how POCI community and building connection help with their radical healing. This tenet demonstrates how BWGS in STEM support systems are a valuable source of knowledge that contributes to their success, radical healing, and their well-being.

Advisor Relationships. Scholars within the field emphasized the importance of the advisor-advisee relationship (Barnes & Austin, 2009; Felder, 2010; Jones et al., 2013; Taylor & Antony, 2000; Williams et al., 2005). Barnes and Austin's (2009) study examined 25 exemplary advisors about what they perceived to be the roles and responsibilities of an advisor. For their study, an exemplary advisor was a faculty member who had been one of the top producers of PhDs in their department or program over five years. The data for this study came from a larger investigation of how doctoral advisors successfully guide their advisees. Each department was ranked based on the number of doctoral degrees conferred each year. Additionally, the faculty members from Barnes and Austin's (2009) study were employed at institutions that are ranked in the top 25% nationally for graduating doctoral students. The faculty members came from three disciplinary areas, (natural science, humanities, and social sciences), and one professional area (education) and they concluded that there are three important functions of doctoral advising: helping advisees to become successful; develop as a researcher; and develop as a professional (Barnes & Austin, 2009). I would also add that advisors should try to incorporate activities or recommend seminars to their advisee that promotes living a balanced lifestyle and not just one that is solely dependent on their academics.

Furthermore, a significant part of a graduate student's success and progression is completing the dissertation. Barnes and Austin (2009) reported that the faculty advisors in their studies felt responsible for helping their students cope with failure and find doable dissertation topics. Given the increased number of Black women obtaining doctoral degrees, Jones et al. (2013) suggested using a Black feminist approach when advising Black women. Jones and colleagues (2013) stated that non-traditional advising that is student-centered rather than metric-driven or task-centered could help with more positive advising and interactions for Black women

in doctoral programs. Using the Black feminist framework could help faculty advisors consider the personal and academic obligations of Black women by paying close attention to how their multiple identities intersect. Considering the whole person through this approach prevents advisors from advising their students in a fragmented manner. Similarly, the framework integration of intersectionality is an important component that can help advisors consider their advisee's needs and how their racial and ethnic identities influence those needs.

Lundberg and Schreiner's (2004) quantitative study on the impact of the faculty-to-student interactions as it pertains to seven different racial and ethnic groups concluded that frequent interactions contributed to learning and personal development, particularly for students of color. An advisor who advocates for and affirms Black women's knowledge and understands the importance of their research, can play an instrumental role in BWGS' in STEM sense of belongingness and how they make meaning of their well-being. An advisor who shows care and concern for their student's well-being creates an ethic of caring culture that is student-centered that prioritizes more than their student's academics. Advising with an ethic of caring can help relieve some of the stressors faced by BWGS in STEM and reduce or eliminate the harmful coping mechanisms they are using to survive.

The PFRH addresses some of the concerns of BWGS in STEM and can be used to address other concerns graduate students from marginalized backgrounds have while attaining their degrees. The collectivism tenet of the framework demonstrates how BWGS in STEM support systems work and the role their support systems play in their successfully navigating and completing their programs. Moreover, the cultural authenticity and self-knowledge tenet illustrates how BWGS' in STEM racial and ethnic identities are strengths they incorporated in their STEM journey. Lastly, French and colleagues' integration of Black psychology, liberation

psychology, ethnopolitical psychology, and intersectionality in their radical healing framework assists in identifying additional ways BWGS in STEM thrive by calling attention to their strengths and how those strengths influence their well-being.

Next, I report some of the coping mechanisms used by graduate students including women of color and Black students. Addressing coping mechanisms illustrates why my research on the holistic well-being of BWGS in STEM is necessary, and why BWGS in STEM need liberation and healing from the negative experiences they have encountered in their STEM graduate programs. Lastly, I close by giving a historical overview of the SBW and the SW stereotypes used in the Black community and how they are situated in Black women's oppression, making it difficult for Black women to receive help or prioritize their holistic well-being while demonstrating how the framework is useful to counter how BWGS in STEM utilize these stereotypes.

Coping Mechanisms

Scholars assert that Black graduate students counter their negative experiences by using a myriad of coping mechanisms which hardly focus on their well-being. Wilkins-Yel et al. (2019) examined how microaggression was used as an avenue to render women of color invisible and hypervisible simultaneously in STEM fields. Their study consisted of 176 women of color graduate students in STEM doctoral programs from a nationwide study. In their research, the women of color used agentic strategies to cope with their hostile environments. These strategies included establishing a trustworthy network, finding outlets to process negative experiences, and reframing negative, self-defeating thoughts. Other coping strategies used by Black graduate students include self-efficacy, racial pride, and racial socialization (Leath & Chavous, 2018), racial agency (Dortch, 2020), building a strong support system (Alexander & Bodenhorn, 2015),

focusing on their career and academic success, pushing through, and overcoming a stressor by working harder (McGee et al., 2019). However, what is missing from this list are the strategies that graduate students use that prioritize their radical healing such as the strategies they use that give them energy and a sense of fulfillment to continue in their programs.

Using forms of coping mechanisms covers up the problem and forces Black students to push through in situations that are not intended to be pushed through. Similarly, McGee et al.'s (2019) study examined how 48 Black Ph.D. and postdoctoral students in engineering and computing managed the stress and strain of their doctoral training. Their research concluded that the students reported seeking to meet the demands of their programs and that being successful was more important than their self-care, health, or well-being (McGee et al., 2019). Exploring the microculture of STEM programs and departments is vital to ensuring Black students feel welcome and can make contributions as a participant in the field. Although the strategies reported may be helpful, they focus solely on the student's efforts instead of the system that should be changing.

In addition, relying on coping mechanisms takes a psychological and emotional toll while in their programs, forcing them to be the strong Black woman (SBW) or the superwoman (SW). Focusing on coping instead of healing misses the mark for BWGS in STEM. The variability in the coping mechanisms Black graduate students used was based on their perception of the stressor or the situation. Because of this variability, the literature is mixed on which coping mechanism is most effective (Loyd et al., 2022). Thus, moving towards radical healing can allow Black graduate students to utilize better practices that will ensure their freedom from using the SBW and the SW stereotypes.

The Strong Black Woman and Superwoman Stereotypes. The trauma of slavery affected Black women's psyche and highlighted why they used coping mechanisms such as the strong Black woman (SBW) and the superwoman (SW) stereotypes to cope with their reality. Black women must be strong to live in a world that views them as simultaneously invaluable and dispensable despite the evolving oppressions that cause them to feel unwelcome. Black women are also angry because their human and civil rights were violated (Evans et al., 2017). The basic human rights that were afforded to White men and White women were not an option for Black people, including Black women during slavery. Simply existing as a Black woman threatened their survival during slavery. Hence Black women coped by learning creative ways to survive, which was to show strength by utilizing the SBW and the SW stereotypes.

The literature identifies the SBW, the SW, and the "mammy" stereotypes as contributing to the deterioration of Black women's psychological and physical well-being (Abrams et al., 2019; Carter & Rossi, 2019; Donovan & West, 2015; Liao et al., 2020; Woods-Giscombe et al., 2016). Despite this revelation, these stereotypes are upheld by Black women as a survival mechanism because it is the only way they know how to survive toxic and hostile environments. Suppressing their needs and desires leads to more stress and anxiety for Black women. Since the system was never created to address Black women’s needs but instead to place them in an inferior status, Black women find it difficult to ask for, or articulate, what they need.

The SBW is "self-sacrificing, resilient, self-contained, and naturally strong" (Donovan & West, 2015, p. 384). In contrast, the SW is characterized by her strength, emotional suppression, and self-sacrificing activities (Woods-Giscombe et al., 2016). The "mammy" is a self-sacrificing, mothering figure who cares for both her family and her slave owner's family without any fatigue

or complaint (Carter & Rossi, 2019). The underlining thread in all three stereotypes is sacrificing oneself by suppressing feelings and needs.

Black women graduate students in STEM who experience racial and gendered microaggressions without having an outlet to process those experiences could suppress their feelings and needs. Similarly, when BWGS in STEM continuously do the work to create an environment for them to thrive without assistance from their programs, this can become mentally taxing. With this added responsibility, Black women have to show themselves as strong even when they do not have the mental capacity to do so (Carter & Rossi, 2019). This is a prime example of how Black women sacrifice themselves for the benefit of others.

Celebrating the SW and the SBW stereotypes romanticizes strength and prevents Black women from getting the proper care they need while facing psychological and emotional distress. When used to characterize Black women, these stereotypes, however, show strength as performative and become problematic when the underlining issue of institutional racism and sexism is not addressed. Furthermore, being strong is not necessarily negative; however, if strength is used to mask Black women's pain or prevent them from seeking help, that is when being strong becomes problematic.

Donovan and West's (2015) quantitative study of 92 Black female college students reported a positive correlation between stress and depressive symptomology for Black women who endorse high to moderate levels of the SBW stereotype (Donovan & West, 2015). Similarly, Liao et al.'s (2020) quantitative study of 222 African American women from a PWI in the Midwest revealed that those who internalized the SBW schema embodied three of the four mediators that predict depressive symptomatology. The three mediators are maladaptive imperfection, self-compassion, and collective coping. Liao and colleagues concluded that when

the SBW is used to manifest strength, it has adverse psychological outcomes for Black women. Black women who internalize the SBW and the SW stereotypes tend to have high maladaptive imperfection, having unrealistic high standards that lead to being overly concerned with perfection and making mistakes. Because of this, they are less likely to take advantage of the other coping mechanisms such as self-compassion (i.e., viewing oneself with kindness and non-judgment) and collective coping, relying on group-centered activities or social networks that could improve their psychological health (Liao et al., 2020). The researchers urged practitioners to address policies, legislations, and aspects of public education that cause Black women to ascribe to the SBW schema.

In another quantitative study, Abrams et al. (2019) surveyed 194 participants (96 college students and 98 community members). The authors argued that characteristics of the SBW schema, along with externalized self-perceptions (e.g., evaluating themselves based on external cultural standards), contributed to Black women's development of depressive symptoms, which was mediated through self-silencing and manifested through four distinctive behaviors.

The studies taken together highlight the negative toll embodying the strong Black woman and the superwoman stereotypes has on Black women's bodies. The research also indicates that the SBW and the SW stereotypes are harmful to Black women's health and well-being without deeply interrogating the role of racism and Black women's embodiment of these stereotypes. Furthermore, Liao and colleagues' conclusions regarding the Black women in their study having high maladaptive imperfection also fail to mention the reasons for their perfectionism. Black women's perfectionism may stem from their treatment in a White patriarchal society that would use stereotype threats to classify them as lazy or inferior. These erroneous stereotype threats and

structural racism could be why Black women cannot take advantage of other coping mechanisms like self-compassion and collective coping.

Although all three research studies involved college students and the participants' ethnicities were included, Abrams et al. (2019) and Liao et al. (2020) also listed the educational levels of the women who participated in their study. Reporting the specific disciplines of the participants instead of giving general information about their educational backgrounds was a limitation of these studies. Addressing the issue of disaggregating data used on Black women is necessary to understand their full experiences. Lumping the experiences of Black women in undergraduate and graduate school together is a trend in the literature that makes it seems like both student population have the same experiences. Black women in undergraduate or graduate school may subscribe to the SBW and the SW stereotypes; however, each group has distinct challenges that could influence their reasoning for using these stereotypes.

The SBW and the SW stereotypes although celebrated are maladaptive because they falsely portray strength and resilience when they are used by Black women who are in dire need of help (Carter & Rossi, 2019). Since these stereotypes have a negative connotation when they are used and when they are associated with Black women, a possible solution is to redefine these terms so when they are used, they do not continue to marginalize Black women including BWGS in STEM. Showing strength should not be viewed as a weakness because strength can materialize in different forms. However, showing strength can be problematic if it prevents BWGS in STEM from asking for help or take better care of themselves.

The tenets of the PFRH help shift the narrative of strength as performative for BWGS in STEM by providing them with alternative ways to survive. Utilizing a framework such as the PFRH helps Black women move towards radical healing instead of using the SBW and the SW

stereotypes as coping mechanisms. Additionally, going through the process of radical healing can be transformative for Black women and their future generations. In turn, happiness and living joy-filled lives can be seen as something attainable instead of unattainable for Black women.

The radical hope tenet of the PFRH helps BWGS in STEM re-envision a lifestyle that centers and prioritize their well-being without needing to sacrifice themselves or not show their emotions. French et al. (2020) referenced the work of Ginwright (2016) who mentioned how "hope is a necessary condition of working to improve human existence" (p. 26). In this case, creating a new narrative where BWGS' in STEM holistic well-being is not deprioritized is how their existence could be improved. Besides, radical hope allows BWGS in STEM to express themselves in ways that do not force them to be self-sacrificing or suppress their emotions.

French et al.'s (2020) cultural authenticity and self-knowledge tenet values racial, ethnic, and cultural expressions, which is a strength of this framework and celebrates POCI's uniqueness. The strength and resistance tenet, along with the critical consciousness component of the radical healing framework, helps Black women graduate students in STEM not only recognize the oppressive forces that prevent them from living authentically but could also empower them to resist these negative imageries that do not accurately define them as Black women and as scientists. For instance, the strength and resistance tenet of the PFRH encourages Black women to increase their use of self-compassion and healing instead of utilizing maladaptive imperfection, as mentioned in Liao et al.'s (2020) study. The critical consciousness component of the framework helps BWGS in STEM recognize their oppression and work towards radical healing.

French et al. (2020) posited that "In the process of radical healing, it is important for an individual's actions to be authentic, reflect their truth, and align with their identities and contexts" (p. 26). Thus, this framework provides BWGS in STEM with a change in perspective. In addition, the strength-based approach the framework uses to examine the lived experiences of POCI is valuable for researchers who study the lived experiences of BWGS in STEM.

BWGS in STEM need to heal from multiple traumas they have experienced while pursuing their degrees. Healing can help BWGS in STEM acknowledge their oppression and move towards dismantling the long-standing narrative of not prioritizing their well-being. Furthermore, coping relies on an individualist approach, but radical healing uses a collective approach (French et al., 2020). BWGS' in STEM reliance on their communities and other support systems connects with the collectivism component in the PFRH. The PFRH is useful for BWGS in STEM healing because it stresses the importance of cultural authenticity, collectivism, and critical consciousness which brings awareness to their oppression without necessarily dwelling on them. These components should be used when thinking about BWGS' in STEM radical healing and well-being and how they can be empowered to change the narrative around coping to thriving.

Chapter Summary

In this chapter, I discussed the conceptual framework I used followed by the campus environment and the graduate experience including campus racial climates at predominantly White institutions and historically Black colleges and universities, and the intersectionality of race and gender. Next, I discussed some of the prominent models on well-being found in psychology, the well-being of graduate students, and the well-being of Black women graduate students in STEM. I addressed graduate students' socialization, and graduate students support

systems. Lastly, I outlined some coping mechanism Black graduate students have used in their respective programs, and closed with the strong Black woman and superwoman stereotypes. In the next chapter, I outline my methodological and epistemological approach, the research design and analysis process for this study, with Black women's lived experiences being the center of the analysis.

Chapter Three: Study Methodology

The purpose of this study was to explore the holistic well-being of Black women graduate students (BWGS) in STEM and how STEM learning environments influence their well-being. This chapter contains the narrative inquiry methodology and methods I used to ascertain the meaning-making process of BWGS in STEM and their holistic well-being. In the following sections, I outline the psychological framework of radical healing (PFRH) and discuss my researcher's positionality and how it informs my study. I describe Black feminist epistemology (BFE), the epistemological approach I used, and provide a rationale for the narrative inquiry methodology. Next, I describe my data collection methods, data analysis techniques, and how I assured trustworthiness. Lastly, I offer ethical considerations that adhere to the university's policies on using human subjects as research participants. I provide a research reciprocity statement detailing how the participants could benefit from participating in this study.

As it stands, little is known about the holistic well-being of BWGS in STEM. The limited work published about Black women in graduate school emphasizes their negative experiences (Alexander & Hermann, 2016; McGee et al., 2019). While it is crucial to examine the negative experiences of BWGS in STEM to call attention to their racialized and gendered experiences, this approach reinforces a deficit orientation (Harper, 2009). Taking a deficit approach in studying BWGS in STEM instead of highlighting their strengths may label BWGS in STEM inaccurately as needing to be fixed. The current study contributes an alternative view to studying the lived experiences of BWGS in STEM by centering their holistic well-being. Focusing on the holistic well-being of Black women graduate students in STEM and reporting what they have done or are currently doing to care for themselves is equally important. Researching the holistic

well-being of Black women graduate students in STEM provides a different perspective on how they thrive in STEM.

The tendency for research to focus on the negative experiences of BWGS in STEM and exclude research about their well-being makes using the PFRH an appropriate framework to explore another side of their narratives. The PFRH could help BWGS in STEM acknowledge and actively resist oppression which is essential for their radical healing (French et al., 2020). The PFRH urges People of Color and Indigenous individuals (POCI) to move towards liberation and freedom to achieve radical healing by centering their strengths and the strengths of their communities. I used narrative inquiry methodology and the PFRH to address the following research questions: 1) How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being? 2) In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being? 3)What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

Conceptual Framework

I used French et al.'s (2020) Psychological Framework of Radical Healing (PFRH) for this research study, chosen to align with Collins' (2000) Black feminist epistemology (BFE), which foregrounded my positionality, and how I interacted with the research participants. The tenets of the PFRH framework, as discussed in Chapter Two, and the qualitative inquiry inform the research design and data collection. I recast the existing literature through this conceptual framework to demonstrate how BWGS in STEM may incorporate the PFRH to center their well-being. The radical healing framework helps People of Color and Indigenous individuals move from coping to healing and requires them to shift from "Western individualistic, and person-level

notions of healing to a multisystemic focus of healing rooted in POCI communities" (French et al., 2020, p. 31). In doing so, the framework centers POCI's voices and strengths, the approach I am taking to studying the holistic well-being of BWGS in STEM. *Radical healing* means "to sit in a dialectic and exist in both spaces of resisting oppression and moving toward freedom" (French et al., 2020, p. 24). French et al. (2020) integrated Ginwright's (2010) definition of radical healing, which he described as “building the capacity to act upon one’s environment in ways that contribute to the common good” (French et al., 2020, p. 23). Radical healing emphasizes cultural authenticity and the community's strength through collectivism, allowing POCI to work towards eliminating barriers to their wellness (French et al., 2020). As an added benefit, the scholars who developed the PFRH incorporate aspects of Black psychology, ethnopolitical psychology, intersectionality, and psychology of liberation in their definition of radical healing.

African American women invoke ways of knowing through dialogues to assess knowledge claims (Collins, 2000). Engaging in dialogues is one-way POCI, including BWGS in STEM, can gain critical consciousness that may lead to radical healing. Within existing research, there are specific areas where Black women's narratives and experiences have been erased. One such place is in the literature on well-being. As highlighted in the literature review section, existing literature upholds many structural and institutional systems that mislabel and dehumanize Black women and their well-being. The systemic racisms, sexism, and other isms BWGS in STEM programs contend with signifies that their well-being is not a priority or viewed as essential to their success.

Using the PFRH could help BWGS in STEM programs move towards healing and liberation because this framework emphasizes POCI’s strengths instead of weaknesses.

Furthermore, for people with marginalized identities, healing from different forms of trauma takes time and necessitates frameworks that deviate from a one-size-fits-all model. The PFRH offer People of Color and Indigenous individuals tangible ways where healing can occur without erasing their many identities. This culturally relevant framework shows numerous ways POCI heal from racism and highlights how their ethnic and racial pride are instrumental for radical healing (French et al., 2020).

A large part of the healing process for People of Color and Indigenous individuals happens through their community. The PFRH underscores how POCI use collectivism to heal from racial trauma and build support systems that can help them thrive. Radical healing moves People of Color and Indigenous individuals from simply surviving to thriving. To address their oppressions, Black women continue to pivot and reinvent themselves. Although STEM learning environments can be problematic, BWGS in STEM chooses to focus on their well-being while working towards healing and liberation. In so doing, BWGS in STEM can show up authentically and whole.

The PFRH served as my conceptual framework, and the dimensions of Black feminist epistemology (BFE) informed how I understood Black women's experiences and knowledge production. Plus, using narrative inquiry as my methodological approach underlines the power of storytelling which is a large part of Black women's culture. Using their lived experiences as a way of knowing gave the women the opportunity to tell their stories from their perspectives.

Researcher Positionality

As I engaged in this important work about the holistic well-being of Black women graduate students in STEM, I am aware of some of my shared identities that overlap with the group of women who participated in this study. Although our racial identity was a large part of

this study, I recognized that our cultural background and upbringing is instrumental in how we see and move through the world. Thus, Milner's (2007) framework on researchers racial and cultural positionality helped me critically reflect on the dangers seen, unseen, and unforeseen while conducting my research with BWGS in STEM. *Researching the self* and *researching the self in relation to others* are two features of Milner's (2007) framework which allowed me to think deeply about the participants in my study and acknowledge their multiple roles and identities they bring to my research. This awareness brought a rich perspective to my research and enhanced the research experience.

My identity as a Black woman with two degrees in a STEM field from an historically Black college and university (HBCU) was integral to this research process. While reflecting on my educational journey, I can remember instances where my well-being was not a priority. I would strive to be productive and push through, no matter the negative effect it had on my well-being. I coped with the stressful environment of being a Black woman in STEM by working twice as hard to accomplish the task. McGee et al.'s (2019) discussion around the John Henryism effect as a coping mechanism, where Black students worked twice as hard and longer in stressful environments, was a regular occurrence for me both in undergraduate and graduate school. For example, during my sophomore year, I became ill in one of my science classes, and although I was able to leave class, I made sure not to miss another class that same day. The concept of resting or taking a break was foreign because I did not want to fall behind.

Despite their negative effects on Black women's well-being, I have used both the superwoman (SW) and the strong Black woman (SBW) stereotypes to survive in academic and non-academic spaces. Creating an environment that can help BWGS in STEM rethink and reframe how they conceptualize their well-being is essential to this study. Focusing on our well-

being is a rarity for Black women because of our many responsibilities. Moreover, this topic of well-being is not studied with BWGS in STEM. Through this study, I hoped to normalize the conversations about the holistic well-being of BWGS in STEM. Although I am years removed from being a Black woman in STEM, it is essential to share the stories of Black women who are focusing on their well-being and still thriving in graduate school.

Reflecting on my past, envisioning a new way of thinking, and being a Black woman drew me to study the holistic well-being of BWGS in STEM. Because our lives and stories have been inundated with narratives that center on our hurt and pain, I chose not to repeat or recreate that type of storytelling with my dissertation. I made a conscious effort to talk about the stories that bring us joy as Black women because we are joyful beings.

I used Collins' (2000) Black feminist epistemology (BFE) which situates Black women's experiences as valuable sources of knowledge as a Black woman researching other Black women's experiences. Black women's unique standpoint is a legitimate form of knowledge based on their experiences, and it is worth studying (Collins, 2000). Their unique standpoint results from their "outsider-within" status and their participation in constructing African-American culture in an all-Black setting (Collins, 2000). As a Black woman, I also come to this research with a unique standpoint. Because of my two degrees in a STEM field from an HBCU, I can stand in solidarity with the women in this study and validate their experiences. I longed for days to read stories about BWGS in STEM who saw their well-being as an essential part of their lives and their STEM journey.

For decades, Black women's voices have not been privileged in society because of the systems that have been upheld to put them in a subordinate status. As a subordinate group, "African-American women not only have developed a distinctive Black women's standpoint but

have done so by using alternative ways of producing and validating knowledge" (Collins, 2000, p. 252). I chose to use my dissertation where BWGS in STEM can engage in dialogue about their well-being because hearing their stories gives insight into another part of their lives, and one that is often not addressed. Black women are intellectuals. They create a community that includes other Black women who become their support network. Being in community gives Black women the space to be supportive and validate each other's experiences. This is important because Black women often get their strengths and motivations from external sources such as their families and friends.

Conducting research that asks Black women who have been marginalized and discriminated against to share their stories necessitates sensitivity to their needs. I gave special attention to Collins' (2000) discussion of *ethics of caring,* which emphasized the uniqueness of an individual. Central to the knowledge validation process in *ethics of caring* is one's empathy, emotions, and personal expressiveness (Collins, 2000). My work with the I CAN PERSIST (ICP) STEM Initiative for girls and women of color for the past four years equipped me with skills that were beneficial to this research. Working with girls and women of color in STEM helped me practice the care and compassion needed when discussing sensitive topics like well-being. Most of the scholars in the ICP program shared how well-being was a foreign concept and a topic that was not discussed as women of color in STEM. Through this work, I hope to normalize the conversation on well-being for BWGS in STEM and within the Black community. Helping BWGS in STEM create a new narrative that celebrates their strengths instead of reporting their weaknesses is the primary focus of this dissertation.

Research Design

In this study, I sought to understand how Black women graduate students in STEM made meaning of their holistic well-being. Taking a qualitative approach helped amplify Black women's voices as they shared their relevant experiences. Qualitative research takes an interpretative and naturalistic approach and is ideal for studying the lived experiences of people and their feelings in the context of social and cultural phenomena (Guba & Lincoln, 1982; Schwandt, 2000). Using a qualitative approach when studying the holistic well-being of BWGS in STEM helps pay homage to their reality by honoring their voices and highlighting their experiences as a marginalized group. Throughout the research process, the following questions guided the study:

1. How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being?
2. In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being?
3. What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

Black Feminist Epistemology (BFE)

Black feminist theory is a critical social theory that provides themes distinct to African American women's experiences and allows them to address the "outsider-within" experiences Black women encounter in spaces that are not a cultural fit because of White supremacist structures (Collins, 2000). To challenge the dominant epistemology that privileges the White elite, Collins (2000) introduced Black feminist epistemology (BFE), which centers Black women's voices and serves as a new way of knowing that emphasizes lived experiences to

represent new meanings. BWGS' in STEM lived experiences and perspectives about their well-being can provide a new way of knowing for other BWGS in STEM. Using Black feminist epistemology as a lens to understand BWGS in STEM lived experiences gives further insight into how and why BWGS in STEM prioritize their well-being.

Using experience as a way of knowing helps Black women understand the social world and how to take action (Collins, 2019). Collins (2000) proposed four dimensions that disrupt White elitist perspectives about the knowledge validation process that were useful to studying the holistic well-being of BWGS in STEM. The dimensions of Black feminist epistemology (1) lived experience as a criterion of meaning, (2) the use of dialogue in assessing knowledge claims, (3) ethics of caring, and (4) ethic of personal accountability guided the data collection for this study, and how I understand BWGS in STEM knowledge production.

The first dimension of Black feminist epistemology, *lived experience as a criterion of meaning,* requires Black women to have both wisdom and knowledge to survive (Collins, 2000). "Knowledge without wisdom is adequate for the powerful, but wisdom is essential to the survival of the subordinate" (Collins, 2000, p. 274). Black women use wisdom and their lived experience to understand the intersecting oppressions they face. Furthermore, BWGS' in STEM gendered experiences remind them that their experiences differ substantially from their peers. Plus, their lived experiences can become a springboard for having critical conversations about their well-being as graduate students.

The second dimension of Black feminist epistemology, *the use of dialogue in assessing knowledge claims,* focuses on how dialogue prioritizes connectedness instead of separation when assessing Black women's knowledge claims. Dialoguing allows for conversations and not debate when discussing one's experiences and has roots in African oral traditions (Collins, 2000). Using

focus groups as the vehicle for the participants to share their stories allowed them to hear from other BWGS in STEM about their journey and the ways in which they care for themselves as a woman and a scientist. I used the focus groups to let the participants talk about their well-being in real-time.

The third dimension of Black feminist epistemology is the *ethics of caring.* The ethics of caring relies on personal expressiveness, emotions, and empathy (Collins, 2000; Shavers & James, 2014). Personal expressiveness is valued within the African American community and allows Black people to express themselves in ways they deem authentic. Personal expressiveness, emotions, and empathy are intertwined and are identifiable when dialoguing. I used an ethic of caring throughout the study with how I interreacted with the participants. Because of the rapport we built in our first focus group, the participants brought a level of comfort whenever we met virtually. Because of the times of our focus groups, I encouraged the women to bring their lunch, dinner, or a snack. We created an environment that was judgment-free, which helped the women openly share their experiences. The women provided affirmation to each other and empathized with their peers when something shared resonated with them.

The fourth and final dimension of Black feminist epistemology is an *ethic of personal accountability.* This dimension acknowledges that individuals make knowledge claims through dialogues and are expected to be accountable for those knowledge claims (Collins, 2000). An individuals' character, value, and ethics are evaluated when assessing their knowledge claim (Collins, 2000). Their views come from personal beliefs and core values and cannot be separated from the knowledge claims and the validation process.

At the same time, human action is dialogic and does not happen in a vacuum or in isolation (Moen, 2006). Dialogue has deep roots in African American and African culture and is

essential in the knowledge validation process (Collins, 1989). Black women pass down knowledge and make meaning of their experiences through storytelling (Collins, 1989). Matriculating through a graduate program can be a daunting experience and passing down relevant information to others could be essential for graduate students' success. While some BWGS in STEM may be aware of the rigor of their STEM graduate program, others might not. As a researcher utilizing Black feminist epistemology, I am aware of the pitfalls of information sharing and the importance of not making assumptions about peoples' experiences. Knowledge creation is a shared experience with the creator and the consumer of that knowledge. Thus, Black feminist epistemology promotes a unique understanding of knowledge creation for BWGS in STEM.

BWGS' in STEM everyday experiences is a valuable source of knowledge. For example, upper-level graduate students can pass down pertinent information about their well-being practices that may benefit incoming graduate students. This exchange of information should be done with a level of caring and the knowledge that we are accountable for the information we share. The dialogue that occurs in this environment could become the catalyst for others to do the same while bringing different perspectives.

BWGS in STEM who share their experiences with other Black women and how they thrive pass down relevant knowledge needed for their survival. Using narrative inquiry as a methodological approach helped me focus on the participants' voices. Narrative inquiry helped the participants tell their unique individual stories using a storytelling format. In the next section, I discuss why I chose the narrative inquiry methodology to study the holistic well-being of BWGS in STEM.

Narrative Inquiry

I used narrative inquiry as a methodological approach to answer the research questions and center the participants' voices. I chose this method over other methodologies because narrative inquiry "aims to understand and make meaning of experiences through conversations, dialogue, and participation in the ongoing lives of research participants" (Taylor, 2013, p. 2). Clandinin (2013) defined narrative inquiry as "an approach to the study of human lives conceived as a way of honoring lived experiences as a source of important knowledge and understanding" (p. 17). Thus, narrative inquiry is fitting for studying the holistic well-being of BWGS in STEM because their lived experiences are a source of knowledge.

Collins' (2000) Black feminist epistemology is congruent with my methodological approach because Black feminist epistemology uses dialogue and lived experiences to understand Black women's experiences and to assess their knowledge claims. Furthermore, engaging in dialogue and storytelling is a significant part of African American culture and how information is passed down through generations. The narrative inquiry methodology emphasizes the relational engagement between the researcher and the research participants, which is an important component of qualitative research and my research study. As a qualitative researcher, and to promote engagement because the data collection occurred virtually, I commented on the participant’s weekly blog posts, asked the participants clarifying questions about their posts, and left affirmations when I read something in their post that resonated with me.

Another important aspect of narrative inquiry is exploring how individual narratives are embedded within social, cultural, familial, and institutional narratives, influencing how they experience the world and express themselves (Clandinin, 2013; Taylor, 2013). Understanding one's experiences is a reflective process, so being attentive to the participants' social context was

necessary to tell their complete stories. I recruited the participants from historically Black colleges and universities (HBCUs) because of their familial and cultural atmosphere, and I anticipated that this type of environment would add richly to the narratives of BWGS' in STEM lived experiences.

Although the focus of this dissertation is the holistic well-being of BWGS in STEM and the strategies they have used, the STEM learning environment at HBCUs provides the context for their storytelling. Black women use dialogue and informal conversations to make meaning of their lived experiences (Collins, 2000). Narrative inquiry is a methodology where participants can use storytelling to communicate their feelings. In addition, narrative inquiry can be used to help participants make sense of their everyday lives because relationships are central to their experience (Taylor, 2013). Having the opportunity to reflect upon their experiences as BWGS in STEM and share what they do to care for themselves could be an enlightening experience for those involved.

Methods

Site Description and Selection of Study Participants

Perna et al. (2009) and other scholars implored future researchers to look to HBCUs for insight into Black women's STEM experiences and what institutions like HBCUs have done to create an environment where they are successful. HBCUs have a reputation for graduating Black women in STEM at a higher rate because of the racial representation and non-competitive environment. So, I chose to recruit my participants from HBCUs instead of predominantly White institutions (PWIs). The women were recruited from four different HBCUs located in the southern part of the United States. Recruiting and studying the holistic well-being of BWGS in STEM from environments designed to affirm cultural values and racial identities could lead to

information-rich cases. Information-rich cases are "those from which one can learn a great deal about issues of central importance to the purpose of the research" (Patton, 1990, p. 169). For example, Black women who have attended HBCUs and majored in a STEM field shared how being represented on multiple levels and not just racially and culturally increased their sense of belonging (Perna et al., 2009). Thus, if the environment fostered at HBCUs makes Black women feel a sense of belonging, this environment could potentially provide insight into how BWGS in STEM make meaning of their holistic well-being.

Recruitment Strategies

After receiving Internal Review Board (IRB) approval, I started the recruitment process. I searched for HBCUs with graduate programs in STEM and emailed the department chairs, coordinators, faculty, and other members who may have access to my population of interest. I also circulated my recruitment flyer to STEM faculty from my previous summer employment, the council of HBCUs, alumni from HBCUs, and other entities that could share my study recruitment email and flyer. Additionally, I posted the flyer on my LinkedIn profile, in different GroupMe, and asked my network to do the same with their social media profiles.

The recruitment email (see Appendix A) contained a brief synopsis of the study, including the study criteria and a flyer (See Appendix B). The flyer included a link to the questionnaire to ensure those interested met the study's criteria. The link to the questionnaire was hosted using the Qualtrics platform. The intake questionnaire (see Appendix C) took approximately five minutes to complete and collected the participant's demographic information, including their name, email address, age, racial identity, names of undergraduate and graduate institutions, STEM disciplines in undergraduate and graduate school, a question asking if they currently attend an HBCU, a pseudonym that would be used to anonymize each participant, their

graduate level, and their first-generation and international status. I also included a question asking the participants what compels them to take care of themselves to give me some initial insight into the participants' thinking about their well-being.

After completing the intake questionnaire, I sent a welcome and introductory email (see Appendix D) to the women who met the criteria inviting them to the study, an invitation to our private and password-protected blog site via the WordPress platform, and the study information sheet (See Appendix E). The email asked the women to create a WordPress account by a particular date. After the women accepted the invitation, they were added to the blog site using the username they provided. In addition, I included a doodle.com poll link for the participants to record their availability for a 2-hour period for our first focus group. Lastly, the email reiterated how much they would be compensated once they completed the study.

Once I received the participants' availability, I sent a confirmation email (Appendix F). The email listed the day and time of our first focus group, the Zoom link, logistics regarding what to expect during the first focus group, the duration of the study, including the length of the blogging process, and when the second focus group would be scheduled. I also included the study information sheet again so the women could learn more about the study.

Initially, about 27 women expressed interest in my study; however, about 15 either did not meet the criteria for the study or did not finish completing the intake questionnaire (See Appendix C). Of the 12 women who met the requirements for the study, six accepted the invitation to the blog site in the allotted time, and the other six decided they could no longer participate in the study or did not accept the invitation to the blog site. Once the blogging began, two of the women did not complete their week two blog in the allotted time. I contacted the two women; however, they did not respond. Consequently, I reopened the recruitment process to

recruit more participants since only four of the women were blogging consistently. I received an additional 32 participants. I invited seven more women to participate, and of the seven who were invited, only 1 accepted the invitation in the allotted time for the study. In all, seven women participated in the study, including the two participants who did not blog initially.

Participants

Narrative inquiry as a methodology makes it unsuitable to work with a larger number of participants because of its time commitment (Bell, 2002). After the recruitment process, seven Black women graduate students in STEM agreed to participate in my study. I limited my study to seven participants because my goal was to focus on their narratives and working with a smaller participant pool kept me focused on their narratives. Using an online format allowed me to bring together participants irrespective of their geographical location (Comley & Beaumont, 2011).

The study participants were diversified based on areas such as discipline within STEM and their graduate level. At the time of the study, four of the women were doctoral students, and three women were in a master's program. The seven participants represented four different HBCUs found in the southern part of the United States and they identified as either Black or African American women. Of the seven participants, three were in their second year, two in their first year, one in their fourth year, and another in their sixth year. The participants' disciplines include biomedical engineering, robotics, public health, neuroscience, biology, and health sciences. For more information about each participant, see Table 1.

Table 1

Participant Information

Participant Pseudonym	Undergraduate University (Pseudonym)	Graduate University (Pseudonym)	Degree Program Level	Degree Program Status	Graduate Discipline	Undergraduate Discipline	Age
B. Grits (Black Girl Raised in the South)	Etta Zuber Falconer State University	Aprille Ericsson University	Masters	Second Year	Public Health	Chemistry	35
DrPH23	Aprille Ericsson University	Aprille Ericsson University	Doctoral	Third Year	Public Health	Molecular Cell Biology	34
DrTNS2022$	Gwendolyn Boyd University *	Valerie Thomas School of Medicine	Doctoral	Sixth Year	Neuroscience	Biology	38
Freddie	Francisca Nneka Okeke University Evelyn Carmon Nicol College #	Francisca Nneka Okeke University	Masters	Second Year	Biology	Biology	25
Kally	Aprille Ericsson University	Aprille Ericsson University	Doctoral	Second Year	Biomedical Engineering	Chemical Engineering	24
Kas D	Jedidah Isler University	Gladys West Medical College	Masters	First Year	Health Sciences	Biology	23
Marie Anna	Alice Ball State University *	Aprille Ericsson University	Doctoral	Fourth Year	Robotics	Mechanical Engineering	24

* indicates a Predominantly White Institution (PWI)

# indicates a community college

All other institutions listed are classified as Historically Black Colleges and Universities (HBCU)

Using multiple participants in qualitative research ensures different perspectives despite the small number of participants (Polkinghorne, 2005). Inviting participants who are information-rich and diverse within STEM provided different perspectives when the women shared their STEM experiences and how they make meaning of their holistic well-being. By only focusing on recruiting from one institutional type, like HBCUs, having a variation in the individual characteristics of the participant pool brought more credibility to the study. Next, I provide a chronological overview of the collective data sources followed by their detailed description in the subsequent sections.

Sources of Data

I engaged in two focus groups and four blog exchanges with participants. The women completed week one blog before our first focus group meeting. Completing week one blog before the first focus group allowed the women to gain insights into the blogging process so they could ask informed questions during our first focus group session and before completing the final three weeks of their blogs. Next, I scheduled the first focus group, which lasted for one hour and 51 minutes. I removed any questions that overlapped in future blogs based on how the participants answered the questions covered in the first focus group.

Following the first focus group, the participants completed the last three blogs over four weeks. I extended the time an extra week to accommodate the women who needed extra time to complete their blog entries. Over their five weeks of blogging, 64 comments were recorded from their peers and me as the researcher. The most dialogues occurred during week one, the STEM journey theme, which had 30 comments across all seven participants, including my comments as the researcher. Week three, the week they answered questions about their well-being, had 16 comments across all seven participants.

For the tabulated list of the participants and researcher comments on the weekly blogs, see Table 2. Lastly, following the end of the blogs, I scheduled the second focus group two weeks after the participants completed their blog entries. I decided to meet two weeks later, so I had time to do a preliminary analysis of the data. The second focus group lasted for one hour and thirty-two minutes. A detailed description of each of the data sources is provided below in the subsequent sections.

Table 2

Tabulated Blog Comments

Participant Pseudonym	Week One Tabulated Blog Comments	Week Two Tabulated Blog Comments	Week Three Tabulated Blog Comments	Week Four Tabulated Blog Comments	Total Tabulated Blog Comments
B. Grits	10	1*	5	1*	17
DrPH23	4	1*	1*	1*	7
DrTNS2022$	1*	1*	4	2	8
Freddie	7	1*	2	2	12
Kally	4	1	2	1*	8
Kas D	3	2	1*	1*	7
Marie Anna	1*	2	1*	1*	5

* indicates only the researcher commented on the blog

I chose blogs and two virtual focus groups to collect the stories of BWGS in STEM because they allowed the women to be creative in their storytelling. In the Black community, storytelling is used as a conduit to pass down knowledge about Black peoples' different experiences, it is instrumental in oral traditions, and it is a legitimate part of their knowledge production (Collins, 2000). BWGS in STEM programs can use storytelling to make meaning of their holistic well-being. Each participant's lived stories, as they reflected and shared their own experiences, became the data sources. This exchange of information allows the researcher to gain meaningful insight into the lives of Black women as they have experienced it. Collins (2000) labeled this in BFE as *lived experiences as a criterion of meaning*.

Six of the seven participants participated in the focus groups, and all the participants blogged for five weeks, a week longer than anticipated using the WordPress platform. One participant, DrTNS2022$, participated in the second focus group because she joined the research study after the first focus group was conducted. Another participant, Marie Anna, participated in the first focus group because she was not available to attend the second focus group.

Focus Groups

I organized the focus group protocol into three broad categories of questions based on Hall's (2020) method of organizing: 1) warm-up questions; 2) questions related to the participants and questions related to the topic of interest, holistic well-being; and 3) closing questions. The general format of the focus group protocol was semi-structured instead of structured or unstructured. A semi-structured protocol "balances broad and specific topic-related questions" and is more flexible so the participants can introduce topics and ideas during the session (Hall, 2020, p. 43). The goal of the focus groups was to build rapport amongst the participants, engage in a conversation in real-time, and create an environment that was rejuvenating and validating for the participants. Both focus groups were conducted virtually, audio and video recorded using the Zoom platform and transcribed using Otter.ai, an external transcription service.

First Focus Group. I used the first focus group to build rapport with the participants because the focus group was conducted virtually. In addition, I asked some research-related questions. During the first focus group, the women could ask clarifying questions about the research process, including their time commitment, change their pseudonyms if needed, and meet each other virtually. I chose this format because building community, whether in person or virtually, was essential to my study and the participants. So, creating an atmosphere where

BWGS in STEM felt comfortable was necessary despite their geographical location. Six of the seven participants attended. DrTNS2022$ joined the study after the first focus group was conducted.

At the beginning of the first focus group, the first set of questions I asked were warm-up questions (Hall, 2020). The warm-up questions were not about the research topic but were asked to get the women talking and interacting with each other. Some of the questions I asked included: What is your name, current institution, STEM discipline, and hometown? What is your favorite hobby, and why? and I closed by asking the participants to share something they were grateful for that week. The next set of questions I asked was directly related to my dissertation topic and the participants' issues (Hall, 2020). Each question had sub-questions that were used as follow-up questions if the women did not include those areas in their answers. Some of the questions I asked during the first focus group include: What comes to mind when you hear the term holistic well-being? Tell me what made you choose to attend an HBCU to pursue your STEM graduate degree? In what ways has this environment fostered hope and/or community as a Black woman graduate student (BWGS) in STEM? Walk me through what comes to mind when you hear the strong Black woman (SBW) and the superwoman (SW) stereotypes as BWGS in STEM? The complete list of the questions I asked can be found in Appendix G.

Second Focus Group. The questions I asked during the second focus group were based on common themes that cut across the participants' narratives when they were blogging. Some of the questions I asked in the second focus group were: Thinking back to the first focus group and our discussion around well-being, did your understanding or actions around your well-being change or deepen since our first meeting? Can you think of any aspect of this experience that was most valuable to you? How do you see yourself resisting or unlearning some of the

maladaptive coping mechanisms you have used so you can prioritize your well-being? How would being recognized for your strengths and capabilities help change the narrative for Black women in STEM? The complete list of the questions that were asked is found in Appendix G. After I completed each of the focus groups, the files were downloaded from Zoom and saved using the nomenclature [focus group number_MMDDYY] and uploaded to Otter.ai to be transcribed verbatim.

Blogs

Blogs are digital tools that allow participants to make meaning of their experiences. Blogs are defined as a "series of entries posted in reverse-chronological order" and are maintained by individuals (Kim & Jang, 2014, p. 207). From a Black feminist epistemology point of view, blogs can help highlight BWGS' in STEM lived experiences as they shared their reality. Blogs "provide a format for documenting reflective descriptions of personal experiences" and can be used as another way of collecting data in qualitative research (MacLaren et al., 2017, p. 809). In other words, blogs help facilitate a collaborative space for those who use them for data collection. Using this digital tool coincides nicely with the storytelling format of narrative inquiry, which gave the participants the freedom to tell their stories uninterrupted and at their own pace.

All the participants blogged for five weeks using the WordPress platform, and each participant received an invitation to join the blog site when they received the welcome and introduction email (see Appendix D). To begin, each participant received an invitation via WordPress, which was password-protected, and only the research participants and I had access. Once the participants accepted the invitation to the blog site, they were asked to change their profile display name because WordPress randomly assigned each participant a display name.

Changing their profile display name made it easier to identify which participants blogged and commented on the blogs.

To create a welcoming environment for the women, I personalized the blog platform. The blogs were organized into themes along with the questions that aligned with those themes. The week one theme was STEM journey; week two was HBCU experience; week three was well-being; and week four was community building. For visual appeal, I used a hunter green and tan color scheme with photos that were specific to each theme. Each week's blog questions included a quote from a Black woman whose name was hyperlinked. Hyperlinking the name of the Black woman provided the participants with additional information about the author of the quote by directing them to a website that contained supplementary information about the author.

I created several tabs to ensure ease of navigation for the participants on my research blog page housed on the WordPress platform. The About Research page provided high-level information about the study, including a researcher's note, the research purpose, participant's criteria, expectations, and my dissertation funding sources. The Researcher's Profile tab included a summary of me as the researcher. The Video Demo tab included two brief videos demonstrating how to use the blog platform, what to expect while blogging, and how to change their display name in WordPress. The Weekly Questions tab housed the blog questions for the participants and the Frequently Asked Questions tab included questions and answers for topics that may have arisen while the participants' blogged. The Compiled Blogs tab housed all the written blogs from the participants and a contact tab.

Each week, the blog questions were made available on Mondays at 9:00 a.m. eastern standard time, and each participant was given a week to answer the questions that were associated with that week's theme. To remind the participants about the upcoming blogs, they

received a weekly reminder email on Sundays. The weekly email included information about where the participants could find the weekly questions, when the blogs would be released, how long they had to answer the blog questions, and how to label, comment, and publish their blog posts. For additional information about the weekly emails sent to the participants, see (Appendix I).

The participants blogged for five weeks, and they were allotted a week to complete their weekly blog questions. Once the blog questions were released, the participants had access to the questions until the end of the blogging cycle. Each week's blog included two to three questions, and some of the questions included sub-questions. After noticing some of the participants were not engaged or answering the blogs in the specified week, I extended the blogs an additional week to give the women time to answer the questions. Some of the questions I asked over the blogging period included: Can you think of an instance in your undergraduate career where you've witnessed and/or experienced an inequity [e.g., discrimination, racial/gender bias etc.]? In what ways did that experience propel you towards action and wanting to change the system for the better? Have you encountered any negative racial/gendered experiences as a Black woman graduate student in STEM? In what ways has attending an HBCU influenced your well-being negatively or positively? What would it take for you as a BWGS in STEM to show up authentically and make your well-being a priority? and in what ways has your community influenced your well-being as a BWGS in STEM? For the full list of questions used, you can reference the blog protocol in (Appendix H).

While using blogs for data collection has its benefits, there are also limitations. A critique of using blogs as a qualitative method is that it is not inherently dialogical in nature rather it is relational in nature (MacLaren et al., 2017). This means that blogging does not allow a

conversation to happen in real time; however, this format can be used to report shared experiences by the participants. To address this limitation, the participants were asked to read at least two to three of their peers' blogs and comment on areas that resonated with them. To model to the participants how to engage with each other while blogging, I commented on different parts of everyone's blogs by pointing out what resonated with me, and how I saw their story connecting to another participant's story. In addition, I left some questions in the comment section for the participant to answer. For the duration of the blogging period, some of the participants responded to those questions while others did not. Modeling this behavior for the participants was how I kept the blogs dialogic and interactive since blogging was done asynchronously.

The Black feminist epistemology, the radical healing framework, and the narrative inquiry methodology value dialogue and lived experiences as ways of knowing. So, it was essential that the participants' voices, relationships, values and beliefs, and life experiences are emphasized. The blogs and focus groups allowed for reflections and dialogue amongst the participants. The questions were designed to solicit pertinent information that jump-started conversations about the participants' STEM experiences and journey, HBCU experience, well-being, and community building. These questions allowed for reflection and ultimately became the springboard for other conversations. Collins' (2000) Black feminist epistemology and French et al.'s (2020) PFRH both discuss the importance of community for People of Color and Indigenous individuals in their quest to heal from racial and other forms of trauma. The focus groups helped promote an environment where Black women graduate students in STEM could support and connect with each other.

Data Analysis

It is recommended that qualitative researchers memo as a part of the audit trail by documenting the research inquiry process (Creswell & Miller, 2000). I memoed throughout the data analysis to keep myself close to the data and record initial thoughts and potential themes I saw cutting across the participants' narratives. Memoing allowed me to reflect deeply on the participants' stories and recognize the differences in their stories.

The data was stored and organized in different places as a precaution. I used Zoom to record both focus groups. The focus groups were downloaded and transcribed using a third-party transcription service, Otter.ai. Once the transcriptions were completed, I downloaded and uploaded them to a password-protected folder in my Gmail research account. I used the nomenclature [Focus group number_MMDDYY] to save each transcript. For example, I saved the first focus group as focus group1_013022. To store the transcripts, I created a data collection folder and kept the transcripts in a subfolder labeled transcripts in my Gmail research account.

The blogs were stored in the blog platform WordPress until I was ready to organize and code the data. The blogs did not need to be transcribed because the participants wrote their answers to the blog questions. To store the blogs in my Gmail research account, I copied and pasted each participant's blog entries into a Word document, along with all the comments made by their peers. This process was done for each of the seven women. I copied and pasted the blogs into a Word document because the WordPress platform could not download the blog entries into a PDF or another Word document; only Extensible Markup Languages (XML) files were possible. An XML file type is a flexible way to share structured data. Thus, an XML file type is good for moving blogs from one blog site to another. The blogs were stored in the subfolder labeled WordPress data found in the data collection main folder. In the WordPress data

subfolder, the blog posts were further organized into four additional folders corresponding to the weekly blog themes. The weekly themes were: STEM journey; HBCU experience; well-being; community building. Next, I created seven subfolders for each of the participants in each of the weekly theme folders using the nomenclature [pseudonym_initials]. For example, a participant subfolder was labeled as DrPH23_C.T. Using this labeling system allowed me to locate the data source easily and identify where the data was collected while conducting my data analysis.

I used Dedoose qualitative data analysis software to organize, code, and write memos for the blogs and focus groups. To make sense of the data, I organized the data manually using a Word document before uploading the final version into Dedoose. This approach gave me a better handle on my data and reduced my stress. Dedoose was password-protected, and access to the data was restricted to me as the researcher for coding the data. I used Dedoose to track the participants' narratives in an organized way and did multiple readings of each transcript. As a backup to Dedoose, I stored copies of the data on my external drive and in my Gmail research account.

Following the second focus group, I emailed the women a preliminary analysis for their input as part of the member check-in process. This check-in provided additional information I needed to write and report each women's narrative accurately. For example, one participant, Freddie, clarified that although she is Nigerian, she was born in Austria. This clarification was important because in the previous iteration of her narrative, I stated that she was born and raised in Nigeria. Similarly, most of the participants narratives were updated during this process. Using this member check-in throughout allowed me to grow more comfortable with my assessment and writing the participants' narratives. More detailed information regarding the check-in process is provided later in this chapter in the trustworthiness section.

To address the research questions, I analyzed all the data using Braun and Clarke's (2006) six steps of thematic analysis. In addition, I used Bingham and Witkowski's (2021) five-cycle process. Although both processes overlapped, Bingham and Witkowski's (2021) process provided an easier way to track and analyze the data, which enhanced the data analysis experience, and aligned with Braun and Clarke's (2006) thematic analysis.

The five-cycle process included both inductive and deductive analysis practices. In deductive analysis, the researcher applies predetermined codes to the data (Saldaña & Omastra, 2018). Inductive analysis is a strategy where the researcher reads through the data to see what codes emerge (Miles et al., 2020). I used deductive strategy to organize my data, and I used inductive strategy to code, look for patterns, and ultimately finalize the themes to develop the study's findings from the themes.

Using thematic analysis in conjunction with the five-cycle process helped immerse me in the data analysis to generate themes from the blogs and focus groups. A data analysis that draws from deductive and inductive practices "supports a more organized, rigorous, and analytically sound qualitative study" (Bingham & Witkowsky, 2021, p. 134). The narratives of each participant were analyzed individually and as a group. This approach helped with the restorying of the individual experiences as well as with the construction of the group's narrative.

The six steps of thematic analysis include (a) familiarizing yourself with the data, (b) generating initial coding, (c) searching for themes, (d) reviewing themes, (e) defining and naming themes, and (f) producing the report (Braun & Clarke, 2006, p. 87). Bingham and Witkowsky's (2021) five-cycle process includes 1) organizing the data by data type, 2) sorting the data into categories relevant to the research questions, 3) engaging in open coding, in vivo coding, 4) condensing open codes to develop patterns, and theme development and 5) connecting

the themes developed back to the framework and literature to report the findings. Cycles one and two used deductive analysis, cycles three and four used inductive analysis, and cycle five used both types of analysis.

Coding Phases

Phase one of thematic analysis is familiarizing yourself with the data. This stage allows the researcher to immerse themselves in the data and become familiar with the "depth and breadth of the content" (Braun & Clarke, 2006, p. 87). I used Bingham and Witkowsky's (2021) cycle one and cycle two in their five-cycle process to organize and sort the data as I familiarized myself with it. I used cycle one to organize the data using attribute coding, a form of organizational coding that "logs essential information about the data and demographic characteristics of the participants for future management and reference" (Saldaña, 2013, p. 69). Essentially, attribute codes organize the data using varying forms of tagging the data to sort it easily and identify the origin of a particular excerpt (Saldaña, 2013). To create the attribute codes for the blogs and focus groups, I used the nomenclature [Participant psuedonym_data source (blogs/focus group) _semester of data collection_master/doctoral_discipline_year].

I used cycle two of the five-cycle process to sort the data into relevant topical categories that aligned with the research questions (Bingham & Witkowsky, 2021). Using cycle two in Bingham and Witkowsky's (2021) five-cycle process, I sorted my data into relevant topic codes using my three research questions (Bingham & Witkowsky, 2021). This second cycle allows the researcher to read through the data more carefully and sort the data into topic codes that align with the researcher's purpose or questions. The topic codes I used include 1) holistic well-being meaning-making, 2) STEM learning environment, and 3) strategies, which align with research questions one, two, and three, respectively. These three topic codes were saved separately using

a Word document and awaited the relevant excerpts that were identified from the focus groups and blogs.

To familiarize myself with the focus group data, I read through the transcript for the first time with the audio to clean the data and ensure accuracy. Otter.ai did not pick up the various speakers in the transcript so I had to match the correct participant voice to the transcribed data. To identify the participant's accurately, I asked them to say their names each time they answered a question or shared a thought. Next, I read through the data without the audio and took notes in the margins of the transcripts. Otter.ai allows for highlighting and commenting in the margins, which also served as a form of memoing throughout the data analysis process.

For the second focus group, I followed the same format as the first; however, I decided to listen to the audio while reading through the transcript a second time instead of just reading the transcripts. This was a better option because Otter.ai highlighted the words while playing the audio which allowed me to pay close attention to reading the transcripts without getting distracted. Furthermore, having a small sample size helped with re-reading the transcript because it is time-consuming, and this step "provides the bedrock for the rest of the analysis" (Braun & Clarke, 2006, p. 87). After familiarizing myself with the data, I used Bingham and Witkowsky's (2021) cycle two to identify the quotations that aligned with each of my topical categories. Once those quotes were identified, I placed them in their respective Word document along with their attribute codes and filtered out the data that did not align with my research questions. As stated above, this process was done using Word to organize the quotes before uploading the three individual files into Dedoose.

Phase two consisted of generating initial codes. This phase aligns with Bingham and Witkowsky's (2021) cycle three of their five-cycle process, which identified emerging ideas in

the data. I used Kally and Freddie, two of the participants, data sources to systematically code sections of the collected data that were organized into their topical categories. First, I coded relevant sections of the data using inductive analysis and assigned them with a word or phrase. Those words or phrases were used to create the codebook for the data analysis, including their definitions and a quote as an example that matched the definition. Being systematic helped me organize my codes meaningfully (Braun & Clarke, 2006). I used all of Kally's data sources, which included her two focus groups and four blogs to create the first round of the codebook. Next, I used Freddie's data sources and added additional codes to the codebook.

The codebook was organized based on the three topical categories I created in cycle two. For example, the first section contained only the codes for the holistic well-being meaning-making category. Keeping the data in their topical categories helped me sort through the data more easily and methodically. Once the codebook was finalized, I uploaded the three Word documents that contained the quotes based on the topical category and their associated attribute codes to Dedoose, the qualitative data analysis (QDA) software I used to manage my data for coding. The codebook was edited continuously when a new code arose while I coded the data in Dedoose. When a new code was added to the codebook, I included the date it was added, and those codes were used to code all the participants' data in Dedoose.

Phases three, four, and five are intertwined. Phase three consists of searching for themes. Bingham and Witkowsky's (2021) fourth coding cycle helped me identify patterns and develop themes. The fourth cycle of the five-cycle process goal is to condense the initial codes developed in cycle three to report the findings of the analysis (Bingham & Witkowsky, 2021). Once I finished the coding process in Dedoose, I downloaded the data into three separate Excel sheets,

including the memos that corresponds to their topic category. The data was then stored in my Gmail research account in the data collection subfolder in the findings main folder.

I created two additional columns in each of the Excel sheets and titled them pattern notes and general comments. I used the pattern notes column to write phrases or words while I looked for patterns across the data to develop themes (Saldaña, 2016). Pattern coding "develops the 'meta-code' – the category label that identifies similarly coded data" (Saldaña, 2013, p. 209). Using pattern coding helps collapse the codes created in cycle three into a "smaller number of categories, themes, or concepts" (Saldaña, 2016, p. 236). In this cycle, some of the codes created previously were eliminated, and similarly coded passages from the data were used to develop the themes. In addition, I created another column for general notes, which I used for memoing throughout the process. In my memo, I added notes about how I saw the patterns connecting to the framework, and I wrote down some implications as they arose. Using this technique helped me identify key ideas that could help me make sense of and write the final chapter of the dissertation.

Phase four consists of reviewing the themes. There are two levels involved in this phase to determine if the themes previously selected fit the extracted data to refine the themes (Braun & Clarke, 2006). Level one involves reading the previously selected data and the themes to determine if they formed a coherent pattern. If the coded extracted data fit the theme, I moved to level two; if not, the themes were revised. A similar process took place in level two; however, the validity of the individual themes in relation to the entire data set was the focus (Braun & Clarke, 2006). Once the pattern coding was completed using cycle four of Bingham and Witkowski's (2021) five-cycle process, I read through the data multiple times alongside my memo to get a big picture of the data. Then, I created two additional tabs in each of the topical

categories Excel sheets, one named condensed codes and the other named quotes for themes and subthemes. The rationale behind creating two additional tabs was to further organize the data into themes that were generated by using pattern coding from the data downloaded from Dedoose. Under the condensed codes tab, I used a color-coded system as my visual representation. I highlighted all the relevant pattern notes that were similar in one color and then synthesized those pattern codes into a theme using a phrase that best captured the highlighted pattern notes. For example, this excerpt from Freddie's week three blog "I reali[z]ed that the fact that I was able to sleep for most of the day wasn't as bad as I thought. I have now implemented rest breaks into my day in order to remain sane throughout the day" was coded as [parent code: personal time; child code: rest]. However, when pattern coding was applied, it was tagged as "blocking off time for self," and ultimately, it was condensed into the theme, Being in a "good headspace": Black women graduate students' in STEM meaning-making process and the strategies they enact to achieve holistic well-being under the subtheme, "You can't pour from an empty cup or empty base:" Living in a pandemic gives new meaning to resting. This process was carried out for each of the topic code categories until all three of the categories were completed and the themes and subthemes were developed.

Phase five consists of defining and naming themes. During this phase, I finalized the themes that best represented an accurate depiction of the holistic well-being of BWGS in STEM. Once the codes were condensed into their themes, I reread the corresponding quotes from the data closely to identify the quotes that aligned the best with the themes and subthemes that were generated in cycle four. Next, I moved those identified quotes to the themes and subthemes tab under their respective themes. Braun and Clarke (2006) emphasized that "it is vital that you do not *just* paraphrase the content of the data extracts presented but identify what is of interest about

them and why" (p. 92). The quotes I selected embody the themes from the women's narratives and were further interpreted in the findings chapter of the dissertation.

Phase six consists of producing the report. This phase presented the final themes in the dissertation in a concise and compelling manner (Braun & Clarke, 2006). To report on the findings, two central themes along with their subthemes were generated. I used cycle five in Bingham and Witkowsky's (2021) five-cycle process to explain the findings and situate the findings in the literature. I combined both inductive and deductive analytic strategies to produce the final report. I used inductive strategies to develop the short phrases that became themes and subthemes. The main goal of cycle five is to connect the short phrases used for the themes to theory and literature to report the findings (Bingham & Witkowsky, 2021). For example, I connected the theme, Being in a "good headspace": Black women graduate students' in STEM meaning-making process and the strategies they enact to achieve holistic well-being, back to the strength and resistance, radical hope, and critical consciousness tenets in the radical healing framework using deductive practices. This last step in the analysis is crucial to reporting how BWGS in STEM made meaning of their holistic well-being. Thus, I selected quotes for their richness and ability to demonstrate the theme discussed to tell a compelling story. My analysis went beyond just describing the data and concisely demonstrated why studying the holistic well-being of Black women graduate students in STEM was important and how it connected back to the research questions.

Trustworthiness

Building rapport with the women in this study was of the utmost importance. To establish trust amongst the women in the group, we engaged in a warm-up activity before beginning each focus group. The warm-up activity served as an introduction to each other and allowed us to find

a connection amongst the group despite being from different institutions, in different disciplines, and in a virtual format. The blogs gave the women an extended amount of time for them to reflect on their experiences and the questions over a week. The focus groups allowed the women to dialogue in real-time and helped them connect with the parts of their peers' stories that resonated with them. In addition, the two focus groups allowed the women to use each other's stories as a springboard for their stories while processing what was being said.

As discussed in the previous section, each week, I sent out a reminder email to the participants about the upcoming week's blog questions. Sending this email at the beginning of the week ensured that the participants were reminded about their upcoming blogs. I foregrounded an ethic of caring with all the communications I sent to the women as outlined in Collins' (2000) Black feminist epistemology. Knowing that we are more than students and we come into these spaces with different complexities and responsibilities, after noticing a few of the women were not blogging in the allotted time, I decided to extend the blogging process an extra week. Having this flexibility allowed the women time to complete their blogs.

Egon et al. (1982) and Guba and Lincoln (1982) outlined four criteria to ensure trustworthiness in qualitative research: credibility; transferability; dependability; and confirmability. I used multiple data sources (e.g., blogs and focus groups) to verify what was being reported by the participants in the study and to build credibility for the study. Guba and Lincoln (1982) referred to this as triangulating the data. Additionally, throughout the study, I used prolonged engagement, peer debriefing, and member checking.

My peer debriefers consisted of my faculty advisor, a faculty member at another institution with a similar research interest, and a director of a research center. My peer debriefers helped challenge my thinking when analyzing my data. Using peer debriefers helped me stay

true to the population I was studying and make explicit how Black women graduate students in STEM made meaning of their holistic well-being. My faculty advisor helped ensure I told a cohesive and persuasive story about BWGS in STEM and their experiences. After completing my peer debriefing session with my advisor, I reformatted my findings chapter by condensing the six original themes into two succinct themes with dimensions embedded with the core themes. Reducing the amount of core categories created a more unified chapter because some of the previous themes merged with other sections to report BWGS in STEM experiences more effectively.

I used member checking throughout the analysis and data collection process. Since the purpose of this study was to understand how BWGS in STEM programs make meaning of their holistic well-being, it was necessary that I included their voices in the analysis process. To ensure the women's stories were reported correctly, I created a shared folder in my Gmail research account and gave the women access to some of the data for their opinion. The folder included four documents: (1) a participant demographic chart that includes their undergraduate and graduate institutions, their majors at both institutions, and their age; (2) a summary of their narrative profile that contained some personal, cultural, and institutional information for their consideration and edits; (3) a preliminary analysis document that provided participants with a summary of the framework and its tenets, an example of a theme and how the codes were condensed, and questions for them to consider while they read through the documents; (4) a summary of one of the themes to show the participants how their stories are being reported in the findings of my dissertation. Getting the women's feedback by providing them with the information above established credibility. See Appendix J for additional information.

The transferability of the study was addressed through my recruitment efforts and the creation of an audit trail (Guba & Lincoln, 1982). I recruited women from specific backgrounds and institutions. Using those in my network to help with recruitment helped me reach my target participants. In turn, the women who agreed to be a part of the study helped recruit other women to participate. I used an audit trail to address the dependability of the study. Both focus groups were transcribed using a third-party transcription service, Otter.ai. The focus group transcripts were then downloaded into a Word document and stored in my Gmail research account. Once the data was in a manageable format, I uploaded the data into Dedoose, the qualitative software management system I used for coding. I used WordPress for the blogs, as discussed above. Those blogs were copied and pasted along with their comments into a Word document and stored in my Gmail research account, which was later transferred into Dedoose for coding. The participants' identities were anonymized using the pseudonyms they provided in the questionnaire, and their schools were anonymized using Black women scientists. I used memos throughout each stage of the process. Memos helped me process the different ideas that emerged while I read through the data, and memoing gave me time to reflect on my biases and the epistemological assumptions I was making based on my research questions and data analysis.

Finally, at our last focus group, a few of the women expressed interest in having monthly gatherings, and I offered to connect with them when they were available. Continuing to have prolonged engagement despite the data collection being over underscored the community we built as co-collaborators in this study. In addition, I offered DrTNS2022$ to join me for a writing session so we could support each other as we finished our dissertations.

Ethical Considerations

To ensure the participants' identities in this study are protected, I used the pseudonyms selected by the women in the findings section. I also used pseudonyms of Black women who are scientists to anonymize the participant's institutions. Further, in accordance with Indiana University's research compliance policy, I obtained approval from the Indiana University Institutional Review Board (IRB) for this study. If the topics being discussed were triggering, the participants' well-being was a priority. The women had the option of not continuing in this study if sharing their narratives became unbearable or traumatic. Additionally, any easily identifiable information about the participant's institutions was removed from the data.

Reciprocity

McGregor and Marker's (2018) research on reciprocity on Indigenous educational research made me think more deeply about how my current research can be reciprocal to the women in this study. Although McGregor and Marker (2018) focused on Indigenous population, their conceptualization of "reciprocity as giving back and reciprocity as sharing knowledge" (p. 321-322) can be extrapolated and used when studying BWGS in STEM. In their work, McGregor and Marker highlighted some scholars researching reciprocity. For example, McGregor and Marker (2018) stated that reciprocity as giving back "ought not to be extractive but reciprocal," is having an "ongoing relationship with participants, and is achieved through cultural protocols" (p. 321 - 322). Additionally, reciprocity as sharing knowledge is passing down the knowledge between generations and teaching what one has learned (McGregor & Marker, 2018). Collins' (2000) Black feminist epistemology models this type of reciprocity through the lived experience as a criterion of meaning and the use of dialogue in knowledge

claims which emphasizes Black women being the experts of their experiences and forming a connectedness through dialogue.

One way my research is "giving back" to BWGS in STEM is by providing the women with a space to have meaningful conversations about their holistic well-being. The mere fact that they had the opportunity to take up space in this manner and be their authentic self without any compartmentalization is giving back. The act of storytelling can be therapeutic and even reflective for those who choose to do so. Taking a strength-based approach to studying the holistic well-being of BWGS in STEM programs could help change the perceptions of how BWGS in STEM experiences are reported. Using a strength-based vantage point when telling Black women graduate students in STEM stories uplift the participants and provided them with a platform to share more about their strengths instead of their weaknesses.

I see this research as being translatable in many areas, not only for BWGS in STEM but also for Black women outside of the realm of academia. The knowledge shared throughout this process is what McGregor and Marker (2018) termed reciprocity as sharing knowledge. This concept was illustrated when the women shared what they had done or were currently doing to prioritize their holistic well-being. Throughout the process, an ethic of caring was used that emphasized the participant's uniqueness and held space for any emotions that arose as they shared.

Giving BWGS in STEM free range to use different modes to communicate their feelings and experiences is another way my study was reciprocal. Using blogs allowed the women to tell their stories from their perspectives and in their own words and removed the time constraint of participating in an interview. Using different methods for data collection was also how I enacted reciprocity as sharing knowledge in this research. Further, having open access to their blogs and

the other women's blogs during and after the study helped the women honor and validate each other's experiences, self-reflect, create a network with each other, and implement some of the success strategies they shared.

Chapter Summary

In this chapter, I clarified the methodological and epistemological approach I used in my study. I began with the introduction of the psychological framework of radical healing (PFRH). Next, I shared my researcher's positionality and how I connected to the study. Following this, I delineated the research design, data collection methods, and data analysis I used. Finally, I discussed how I ensured trustworthiness and gave ethical consideration for working with human subjects. I concluded with a reciprocity statement that outlined how the participants in this study could benefit from this research. In the next chapter, I provide a detailed description of the participants' narratives.

Chapter Four: Participant Narratives

Our lives are intertwined and interwoven into different types of stories. We live in stories that are cultural, institutional, and personal that shape our outlook and viewpoints (Clandinin, 2013). Furthermore, Collins (2000) posited that storytelling is a significant part of Black womanhood specifically. This chapter provides a nuanced overview of the seven Black women participants in this study. The seven participants' narratives provide deep insight into the lives of Black women graduate students (BWGS) in STEM along with their STEM journeys. Their narratives span varied domains including their cultural, personal, and institutional stories as BWGS in STEM and are presented to show the diversity and richness of their experiences. B. Grits, one of the participants, stated to another, "adjust your crown and go." Reporting the narratives of BWGS in STEM from a strength-based vantage point is how I am choosing to adjust each of the participants' crowns. Providing this deep insight into Black women's narratives helps the reader to understand some of the pivotal points in their lives and why they made certain decisions. Seeing that the current study is designed to examine how BWGS in STEM make meaning of their holistic well-being, their narratives uncover themes that address the following research questions:

1) How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being?
2) In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being?
3) What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

B. Grits

Like most of the participants, B. Grits did not know what she wanted to do when she grew up. She said her STEM journey was a series of opportunities that she took advantage of. In middle and high school, B. Grits did not love science, however, she found her science classes to be interesting. B. Grits attributed wanting to be like her older sister as the single most important reason why she showed any interest in science. Her sister was her role model and she wanted to be just like her. The benefits of having older siblings allowed B. Grits to see first-hand how they navigated college and the application process. As a first-generation student, she looked to her siblings for help when it came to college.

When the time came for B. Grits to attend college, she noticed how different the scholarship packages were if you majored in science, so between being influenced by her sister and being offered a full ride, B. Grits decided to major in chemistry as an undergraduate student. B. Grits' family was also a big influence on her continued interest in science. Besides her sister, gardening with her "paw paw" and baking with her grandmother served as additional reasons for majoring in chemistry as an undergrad and environmental science for her doctoral degree. Furthermore, watching her mother suffer through cancer treatments pushed her toward public health. B. Grits said that pursuing public health "ignited a passion in me to work toward equity for Black people in healthcare."

B. Grits is a second-year master's student in public health at Aprille Ericsson University (AEU), and she also holds a Ph.D. in environmental science. For her undergraduate, B. Grits attended Etta Zuber Falconer State University where she majored in chemistry. B. Grits stated that she had a "magical time" as an undergraduate and her internships contributed to her development as a scientist. Her time was "magical" because B. Grits' experiences allowed her to

show up authentically and she was not an anomaly because most of her peers shared her identity as a Black woman in STEM. She found HBCUs to be affirming. B. Grits shared, "The majority of my professors were [B]lack. And I was not the thickest cheerleader, and we were all tumbling. My existence was affirmed at my HBCU." Her first internship was as a Research Experiences for Undergraduate (REU) at a predominantly White institution where she gained research experiences working with a faculty on a project in the summer. At the end of the REU, B. Grits won the research award for her cohort. In addition, she was mentored by a Black woman who was an alumnus of Aprille Ericsson University during her second internship. Her interaction with this Black woman allowed her to learn more about Aprille Ericsson University and expand her interest in science. Thus, she decided to pursue her graduate degree in environmental science directly after she completed her undergraduate degree in chemistry. B. Grits said that the Aprille Ericsson University alum was single-handedly responsible for her decision to pursue her graduate degree in environmental science right after undergraduate.

Besides being a student, B. Grits works full-time as the project manager for a large federal grant funding agency. The portfolio of grants that she oversees is designed to reduce inequities for women in STEM. Science is her niche, and her love for science comes from understanding it and translating it so that non-scientists can understand it. Furthermore, as a scientist, she plans to "build a bridge." In her current and previous positions, B. Grits advocates for other graduate students, especially the Black women she encounters, by being a "sounding board and confidant."

Like most of the participants, B. Grits grappled with how to prioritize her well-being. During the pandemic, her realization came when she learned the difference between self-care and self-maintenance. To her, self-care was equivalent to well-being, and when she participated in

those activities, they helped her feel "rejuvenated, refreshed and relax[ed]." When asked what compels her as a Black woman in STEM to take care of herself, B. Grits responded,

"As a black woman in general: I lost my mom far too early to cancer, only having discovered it after reaching her fitness goals. Additionally, Malcolm X said it best: "The most disrespected person in America is the black woman. The most unprotected person in America is the black woman. The most neglected person in America is the black woman." We can replace "America" in this quote with "STEM" and the statement still holds true." B. Grits' life experiences served as critical points in her life. These experiences allowed her to take stock of what she is doing to promote her well-being. With this understanding, B. Grits chooses to forge ahead to create a narrative that is fitting for her and the lifestyle she wants to live.

Kally

Kally describes herself as the typical "nerdy student" who is fascinated with science and math and excelled in those subjects. As a first-generation student who is also Haitian, Kally did not have much guidance when thinking about her next steps after high school. Growing up, Kally wanted to become a pediatrician because she was born a premature baby. As a premature baby, Kally's pediatrician was instrumental in making sure she was well enough to go home with her parents. Kally also mentioned that the stories her parents told her about the pediatrician, and how they were "devoted and dedicated" to her made her want to be that for another family and their child. The pediatrician who took care of her as a premature baby continued to be her pediatrician until she moved to the United States. Furthermore, as an older sibling, Kally was good at caring for others, because she wanted to work with children from a young age. In most Caribbean households, being a doctor or any other profession like lawyer and engineer is often seen as successful because those are the most talked-about professions. However, Kally did not have

much guidance as a first-generation student; she often grappled with what her future would look like because she struggled with “finding a passion or profession for the rest of her life.” This narrative is common amongst first-generation students because they do not have the social capital they need to talk about college and their next steps. Kally wondered if her pursuit of the medical field was for herself or due to her family's projection.

When college application season came around, Kally still did not know what she wanted to do. Her Advanced Placement biology teacher in high school suggested engineering to Kally because she could quickly grasp challenging subjects like chemistry. Deciding to trust her teacher’s recommendation, Kally began to list chemical engineering on her college applications without researching the subject because she did not know what else to select as her major.

Kally is a second-year Ph.D. student in biomedical engineering at Aprille Ericsson University. She also attended Aprille Ericsson University as an undergraduate and majored in chemical engineering. Her program is a bridge to the doctorate program, meaning once she finishes her master’s degree, she would continue to complete her doctorate degree. Initially, Kally chose chemical engineering to be competitive for medical school. However, she stayed because of her scholarship and the return on investment in case she decided not to pursue additional education. As a first-generation student, Kally did not have the guidance of her family to help her through the process. After graduating with her bachelor's degree, Kally decided to switch her discipline to biomedical engineering for her doctorate. In addition, after completing her doctorate, Kally would like to pursue a career in industry because she does not have an affinity for teaching or research.

Kally decided to switch from chemical engineering to biomedical engineering after completing an internship in chemical engineering where she decided she did not want a career in

chemical engineering. Pursuing biomedical engineering allows her to "work in the realm of healthcare" in addition to realizing that she is the representation her field needs. Switching from chemical engineering to biomedical engineering was a tough transition for Kally. She had to learn about cell culture and other biological areas and functions that she did not learn as a chemical engineering student. Furthermore, Kally began her graduate school journey at the height of the COVID-19 pandemic which meant she was not able to celebrate her accomplishments due to the state of the world. Granted there were no big celebrations happening, after reflecting on her journey, Kally wished she had taken the time out to celebrate her accomplishments.

As an engineering student, when feelings of imposter syndrome creep in that may deter Kally from pursuing her degree, Kally chooses to lean on her support systems and continues to show up for herself and her family, especially her younger sister and cousins who look up to her. As a Black woman in STEM at her HBCU, Kally feels supported by her peers and faculty. While taking calculus 3, her teacher decided to assign the class some extra credit so they can take time out and focus on themselves. He assigned them extra credit after he noticed how “sleep-deprived” they were in his class, and assigning extra credit meant that they would actually go out and do it. Forming study groups in the library on campus for tutoring sessions with her classmates was also another way she felt supported as an engineering student in her program. They created a non-competitive space under the sole idea that “there is room for all of us to succeed.” Study groups and feeling supported go a long way in programs that are highly stressful and demanding. Furthermore, having these types of groups can help students process the information they learn in the classroom differently.

When asked what compels her as a Black woman in STEM to take care of herself, Kally states, “I realized that the well-being starts with me. After Covid hit, I realized that most of this high productivity notion that was currently being pushed was somewhat meaningless and that my mental peace was more valuable." In thinking about her well-being, Kally shows up for herself in many ways, such as journaling to process her thoughts and feelings, seeking counseling, and taking advantage of her support systems.

Marie Anna

Marie Anna aspired to be an engineer because she wanted to build a car as a child. At the age of seven, Marie Anna's focus shifted when she began playing the piano, and her career aspiration was towards becoming a performer. Marie Anna's love for music led her to apply for a music program at one of the top music schools in the United States. However, after not gaining acceptance into a music program, Marie Anna decided to pursue her first love of being an engineer because she enjoys creating things. Marie Anna said that being rejected twice was one of her most defining moments in STEM because she had too many credits and needed to pick a major quickly. She remembered that she wanted to be an engineer when she was younger, so, she took a “leap of faith” and applied to her current engineering program where she was accepted. However, Marie Anna found herself in a bind because she still did not know what an engineer did, but she knew her interests aligned more with the mathematics side of being an engineer as opposed to the ‘science’ side, so she pursued mechanical engineering as her undergraduate major.

Marie Anna is currently a fourth-year doctoral student in Robotics at Aprille Ericsson University. For undergraduate, Marie Anna attended Alice Ball State University, a predominantly White institution, and majored in mechanical engineering. Her current graduate

program is a bridge to the doctorate program which means once you finish your master's degree, you continue onto the doctorate degree. She aspires to be a traveling researcher because she is not tied to the idea of having a regular 9 to 5 job. Being a traveling researcher will allow Marie Anna the flexibility to gain new experiences that will "reinvigorate" her drive and passion to learn new things. These new experiences she hopes will make her happy in life.

Robotics helps Marie Anne fulfill her love for mathematics because she appreciates the "clear cut answers" she gets as a mathematician. To her, mathematics is a puzzle because there is a right answer and all you need to do is solve it. In science, Marie Anna gravitated toward understanding the laws rather than memorizing the facts. This led Marie Anna to liking physics, especially kinematics and circuits. She said, "Everything was like math in motion, and you could see why things worked and why things didn't work." For Marie Anna, physics is tangible math which reminds her of a puzzle to solve. Plus, she gets excited when asked to explain the relationship between position, velocity, and acceleration. Marie Anna says, her "heart will light up." Thus, it was her love for solving puzzles and math that led her to pursue robotics for her doctorate. In addition, robotics' emphasis on coding is another reason for her selection because coding is like a puzzle for her to solve. Marie Anna believes that although there are many ways to get to the right answer, there is one right answer, which is "your code doing what you want."

Marie Anna's faith plays a significant role in how she chooses to focus on her well-being. Marie Anna's faith and how she utilizes it is a constant theme in her narrative. During her preliminary exams, an exam that determines whether she would be accepted into her doctoral program, Marie Anna's nerves got the best of her. However, it was in this space of nervousness that one of her faculty members intervened and asked if she would like him to pray for her. At this moment, Marie Anna felt seen and understood because her faith is an integral part of her

journey. She appreciated her professor's sentiments because STEM environments are often "devoid of talk or expression of faith." This became a memorable experience for Maria Anna in her STEM journey because it signified to her that her professors cared about her well-being, and she was able to be her authentic self even during her preliminary exams.

As a Black woman graduate student in STEM, Marie Anna has conflicting feelings because on one hand she is put on a "pedestal while simultaneously feeling less than and inferior to everyone." In addition, Marie Anna's feelings of imposter syndrome are illuminated as a Black woman in STEM because sometimes she questions whether opportunities come because of her merit or because she is a Black woman. Reasonings like these unfortunately are typical amongst Black women in STEM or people from a minoritized background. For Marie Anna, however, she appreciates having colleagues who share her identity as a Black woman because it builds solidarity amongst them while allowing her to be authentic despite having conflicting thoughts.

When asked what compels her as a Black woman in STEM to take care of herself, Marie Anna said, "1) Productivity, I am not able to get as much work done if I am hungry, unclean, or in a bad mental space 2.) Other people, I'm generally a worse friend/associate/family member etc. and have limited ability to care for others when I don't take care of myself." Marie Anna's intentions around her well-being are improving because there were times when she felt stuck because of life situations, and she did not know how to process her emotions. Now, Marie Anna has a new outlook on life and how to navigate her different emotions. Being intentional about her joy and desires helps Marie Anna to be her authentic self.

DrPH23

Growing up in a Haitian household, being a medical doctor, a lawyer, or an engineer is usually the point of conversation, and DrPH23 aspired to become a medical doctor, specifically an Obstetrics and Gynecologist (OB-GYN). Her path, however, quickly changed after taking an anatomy and physiology class in high school where she dissected a cat. When her teacher informed her that in medical school the cat would be replaced with a human corpse, DrPH23 decided she did not want to pursue medical school to be a doctor.

Over the years, DrPH23 pursued different STEM areas, such as pharmacy, which was her intended major as an undergraduate, until she took organic chemistry and decided to rethink pursuing a pharmacy degree. Organic chemistry is a branch of chemistry that studies the structures, properties, and compositions of carbon-containing compounds, and being a pharmacist requires people to know how these different compounds look in drugs and how their structures affect the human body. In the end, DrPH23 received her bachelor's degree in molecular cellular biology followed by her master's in public health with a concentration in biostatistics and epidemiology. She pursued molecular cellular biology after loving some of the classes she took as an undergraduate. In this major, DrPH23 finally found her “niche” because before this, she was failing in her different classes until she switched her major to molecular cell biology. This switch led to an improvement in her grades and understanding of the material.

DrPH23 is a 3rd-year doctoral student in public health at Aprille Ericsson University. She received her bachelor’s in molecular cell biology and her master’s in public health from Aprille Ericsson University. When DrPH23 completes her doctoral degree, all three of her degrees will have come from an HBCU. She is the first in her family to graduate with a master's degree. DrPH23 wants to work in the private sector. She believes that the private sector does more for

public health and eventually, she would like to start her own "public health consulting firm" focusing on "equity for all and not just one group."

DrPH23's path to public health was not linear. After graduating with her bachelor's degree, DrPH23 applied to nursing school twice, however, each time she was rejected. After receiving two rejections, DrPH23 decided to work with the state of Florida after receiving her bachelor's degree. During her time off from school and working with the state is when DrPH23 learned about public health. Once she decided to pursue public health, she was able to gain a better understanding of the field from some of her peers who attended her local church because they were also pursuing public health as a profession.

As a public health professional, DrPH23 works with the state contact tracing at the department of health to track and report those who contract the COVID-19 virus. Having a public health background during the pandemic allowed her to use her background in biostatistics and epidemiology to bring ease to her family and friends who sought explanations about the virus. Being able to use her knowledge as a public health professional to help others understand made her feel good about herself.

For DrPH23, going to an HBCU allowed her to see other people who shared some of her identities. In addition, attending an HBCU allowed her to learn a lot about herself in the process. DrPH23 also acknowledges that she has a love-hate relationship with being a Black woman in STEM. This is attributed to her experiences with her classes, the professors, and at times financial aid. In her experience, some of the professors lack empathy, and sometimes she does not receive her financial aid in a timely manner. However, despite these varying experiences, DrPH23 said she "would not change it for the world." Like some women in this study, DrPH23 does not recall encountering any negative gendered or racial experiences as a Black woman in

her program. However, although she experienced some hardships in graduate school, DrPH23 felt well equipped to resist any inequities she may face because of the changes that are happening in society.

When asked what compels her as a Black woman in STEM to take care of herself, DrPH23 responded by saying, “As a [B]lack wom[a]n [I] have so many goal[s] to achieve and in order for me to achieve these goal[s] I know that I [need] to take care of myself mental[ly], physical[ly], and emotional[ly]." More recently, DrPH23 began seeking therapy to help her sort out her different emotions for her to create a better mental space for herself. She decided to seek therapy after facing some difficulties in her program. Now DrPH23 feels like she can prioritize the things that make her happy and create boundaries between herself and others, so she is not overextending herself. For DrPH23, therapy is gives her the tools she needs to achieve the success she sees for herself and her future.

Kas D

Kas D found her niche in science at a young age in middle school. Her fondness for science intensified in middle school where biology yielded her gratification and solidified her "why." To satisfy her curiosity about science, Kas D would mix her mother's cosmetics products, "anticipating a mind-blowing reaction." At the age of eleven, Kas D’s grandfather's battle with cancer heightened her interest in medicine. In her efforts to tackle learning about the type of cancer her grandfather battled, Kas D tried to learn as much as she could about lymphoma research when she was in 6th grade and even went as far as tackling the medical dictionary understand the disease.

Kas D is a first-year master's student in health science at Gladys West Medical College. After completing this one-year accelerated program, Kas D hopes to pursue medical school. Kas

D attended Jedidah Isler University for her undergraduate where she majored in biology. Kas D chose to major in biology in college because her love for biology intensified in high school and that became the catalyst for her major in college. In addition, it was her grandfather's battle with cancer that motivated and influenced Kas D to pursue medicine.

As a Black woman in STEM at an HBCU, Kas D stated that her undergraduate experiences gave her the foundation, confidence, and numerous resources to succeed. Although she majored in biology, she was able to explore other disciplines as a science major, conduct research, and present at conferences, in addition to having the unique experiences of speaking to state legislatures about health disparities. Kas D attributed her unique experiences as an undergraduate, her love for science, and her grandfather's suffering from cancer as reasons for her pursuit of a graduate degree.

Entering a medical profession can be stressful and sometimes it can be an isolating process. However, for Kas D, her classmates who are majority Black women help with the stress of the program despite its rigor. Kas D's cohort supported her during a critical time when she needed their support. After studying for months for the Medical College Admissions Test (MCAT), the main test to gain entrance into a medical school, Kas D could not sit for her scheduled exam. The MCAT, like any standardized test, is high stress and usually lasts eight hours because of all the components. When Kas D's cohort heard about her situation, they supported her by continuing to study with her even after they took their test. Their support allowed Kas D the space to vent when she needed it, and this experience highlighted the importance of having representation in programs and support systems to lean on when needed. Through this experience, Kas D learned that although graduate school can be competitive, her

classmates provided her with a different experience at her HBCU. Kas D is scheduled to sit for her exam again in August 2022.

As a Black woman in STEM, Kas D stated that attending an HBCU gave her a sense of belonging because she did not have to put up a “front” of always knowing what was going on, rather, she felt comfortable asking questions and being real with herself and others. Kas D’s experience at her HBCU is one of the many stories that have been told by other students who have had the HBCU experience. Based on Kas D’s recollections, her HBCU experience was multifaceted which allowed her to pursue and accomplish her dreams. Moreover, the family atmosphere at her HBCU was not only provided by her peers but also by the faculty. Kas D shared that after being stressed and overwhelmed in the first week of her graduate program her advisor gave her the space to just be. Plus, after noticing Kas D’s stress levels, her advisor planned a social outing to get Kas D’s mind off school. Knowing how to balance coursework in a one-year intensive program is hard enough, so having an advisor who was willing to carve out time for her and plan a social event to take her mind off school was a memorable experience for Kas D.

When asked what compels her as a Black woman in STEM to take care of herself, Kas D responded by saying, "I take care of myself so that I am in the best position to take care of others. I take care of myself so that I continue to feel good about myself and maintain my confidence even if others try to knock me." Her advisor was able to model taking care of herself by planning a social event that was not school-related. This allowed Kas D the space to destress while participating in a non-school-related activity. Kas D’s focusing on her well-being and taking care of herself as a graduate student will hopefully help her develop some healthy habits while in medical school and ultimately when she becomes a practicing physician.

DrTN2022$

DrTN2022$'s STEM journey, like most of the other participants, began with her wanting to be a medical doctor. Her infatuation with the medical field and science is why DrTN2022$ decided to pursue a STEM-related area to become an OB/GYN. As a child, DrTN2022$'s curiosity about anatomy led her to attempt to dissect a lizard. She wanted to see what was different about the lizard's insides compared to her human form. Over the years, DrTN2022$'s curiosity propelled her forward because she believed that education was her "meal ticket."

DrTNS2022$'s STEM journey was rocky. She struggled in some of her science courses and sought tutors to help her to better understand the difficult topics in her science classes. She transferred several times while she was an undergraduate due to the lack of mentorship and guidance. Because of these struggles and not having anyone in her life who was in STEM to serve as support, it took DrTNS2022$ eight years to complete her bachelor's degree, two years to complete her master's degree, and now she is in the final year of her doctorate program. Despite her struggles, DrTNS2022$'s infatuation with science kept her going. Furthermore, DrTNS2022$'s extended undergraduate career helped her "build resilience" in her character and propelled her into success.

DrTN2022$ is pursuing her doctorate in neuroscience at Valerie Thomas School of Medicine, and she is in the sixth and final year of her program. For her undergraduate, DrTNS2022$ attended Gwendolyn Boyd University, a private Christian liberal arts college, where she majored in biology. She chose neuroscience for her doctorate degree because she wanted more clinical experience. Upon graduating, DrTNS2022$ will be a post-doctorate in the T32 Clinical Pharmacology academic fellowship program. This fellowship will allow her to gain

more clinical experience, provide her with additional resources that will enhance her career trajectory, and position her to pivot and pursue other career paths.

Over the years, DrTNS2022$ had to be intentional about finding a research mentor who shared some of her identities. Although she was not successful in finding one in her current program, her mentor will be a Black woman in her post-doctorate position. For DrTNS2022$, having a mentor who shares some of her identities is necessary because growing up, DrTNS2022$ did not have many role models in STEM that she could emulate, so having a Black woman at this next step in her life and career is monumental.

After teaching a general biology course in 2011, DrTNS2022$ decided to pursue her Ph.D. because her teaching experience changed her life. DrTN2022$ is community-oriented and hopes to open a STEM academy in underserved communities, preferably in her hometown neighborhood. This drive to give back resulted from her seeing schools in Black communities being “under-resourced.” Because she took an extended amount of time to obtain her bachelor's degree, DrTN2022$ hopes to teach young children about STEM opportunities and careers so they can reach their maximum potential with success.

Being intentional about how she takes care of herself became a focal point after her grandmother passed away. For most of her life, DrTNS2022$’s grandmother served as her confidant, her motivator, and her daily support. Her days often started with her grandmother calling her each morning to check on her followed by various conversations. Her grandmother would check to make sure she was taking care of herself and not just working all the time. DrTNS2022$ looked forward to her grandmother's daily check-ins because they reinforced her confidence and encouraged her. The loss of her grandmother left a void for DrTNS2022$ to fill which forced her to pay more attention to her herself and prioritize the things that brought her

peace and happiness. Although bittersweet, the loss of her grandmother reminded her that she needed to prioritize herself daily.

When asked what compels her as a Black woman in STEM to take care of herself, DrTN2022$ responded by saying, "Because I have others that I am responsible for and my purpose in life requires me to stay safe and healthy." Just like her grandmother acted in a supportive role for DrTNS2022$, taking care of herself now will allow her to do the same for others. The spirit of DrTNS2022$'s grandmother remains with her and now she puts herself on her "to-do list" daily so she can be authentic in different spaces. Additionally, living through the pandemic allowed DrTN2022$ to reprioritize herself, learn new hobbies, take frequent breaks away from her work, and do things that bring her joy every day.

Freddie

Freddie represents the quintessential introvert who finds solace in being by herself and enjoys crocheting in her free time. Born in Austria and raised in Nigeria, Freddie attended school in Nigeria until she moved to the United States for high school. While in high school, Freddie's interest in science was renewed after taking anatomy and physiology, forensics, and various biology classes. Freddie aspired to be a pediatrician because of her love for science and caring for her cousins. Because of her positive experience taking science classes in high school, she enrolled as a pre-medical student in college. Going the pre-medical route seems the easiest because she already enjoyed taking sciences classes, thus taking this step as a pre-medical major seemed like the right thing to do. Becoming a medical doctor was Freddie's goal since she was young and accomplishing this feat would make her the first doctor in her family. For some cultures, being a doctor is considered the pinnacle of success, and that language is often passed

down through generations. Hence, Freddie's aspiration to become a doctor has some cultural underpinnings.

Freddie is a second-year master's student in biology at Francisca Nneka Okeke University, focusing on virology. Before attending her current institution, Freddie was enrolled in the Evelyn Carmon Nicole community college. While completing her coursework, Freddie hit a turning point in her college career when she failed organic chemistry II. Known as one of the "weed-out" courses in STEM because of its high failure rate, organic chemistry has kept many students from following through with their dreams of becoming medical doctors. Failing organic chemistry made Freddie lose her confidence and her pursuit of medicine. Her mindset toward becoming a doctor began to change while she was in the final semester of her undergraduate career when she started to focus more on immunology instead of strictly medicine. In addition, due to unforeseen circumstances, after finishing her undergraduate degree, Freddie had to return home to Nigeria and her dreams of becoming a doctor looked unattainable.

After returning to Nigeria, a professor whom she once served as a TA reached out to her while she was in Nigeria to ask about her plans for her future. That conversation between Freddie and her former professor ignited a fire in her and was the push she needed to believe in her future aspirations. The care her professor showed for her despite being hundreds of miles away reinvigorated Freddie's passion for science and her future. Freddie decided to fulfill her dreams by pursuing an alternate route due to the support she received from her professor combined with her interest in immunology and virology. Although Freddie is no longer pursuing medical school, her research interest lies in healthcare, medicine, and the human body, specifically immunology, and her thesis will focus on viruses.

Like Kally, another participant, Freddie started her graduate school career at the height of COVID-19. Throughout her participation in the study, Freddie was vocal about pushing back on the narratives of how Black women are portrayed in STEM. Within her narrative, Freddie pushes the envelope when it comes to the stereotypes such as the strong Black woman and the superwoman trope because she considers herself a "delicate flower." She also attributes these stereotypes to Black women suffering, and she no longer wants to suffer. She chooses to take care of herself because she wants to make her family and friends proud and happy.

During the pandemic, Freddie began creating boundaries to achieve some work-life balance. She stated that she implemented rest breaks and saw that taking a break did not destroy the world. Moreover, Freddie appreciates the HBCU experience because it allowed her to be around "her people." As an introvert, Freddie reverts to her comfort zone of being by herself and understands holistic well-being to be synonymous with happiness. When asked what compels her as a Black woman in STEM to take care of herself, Freddie responded, "My educational curiosity as well as family and friends. I have always enjoyed learning new things (not so much for a grade but still). There is so much information accessible to me that I would be foolish to not dip my toe in the fountain of information. My family and friends also make me want to be a better person and take care of myself so I can make them proud and happy." Having different types of support systems throughout her college career is salient throughout Freddie’s narrative. Thus, it is no surprise that Freddie is taking care of herself to be an example for her family and friends.

Chapter Five: Findings

In the previous chapter, I introduced the seven Black women who participated in this study. As BWGS in STEM, they shared some common experiences, either explicitly or implicitly, in their narratives. The experiences pointed to the varying ways the women make meaning of their holistic well-being in different contexts.

By examining the themes and subthemes, this chapter answers the study's research questions: 1) How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being? 2) In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being? and 3) What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

The purpose of this chapter is to present my findings from the thematic analysis of the seven Black women's narratives. First, I describe the participants' definition of holistic well-being, including the internal processing they engaged in to achieve holistic well-being, which answered my first research question. Next, I outline the participants' external strategies to enact holistic well-being, which answered my third research question. Lastly, I elaborate on the positive influences and barriers of the HBCUs' STEM environment that contribute to or detract from the participants' holistic well-being, which answered my second research question.

Being in a "Good Headspace": Black Women Graduate Students' in STEM Meaning Making Process and the Strategies they Enact to Achieve Holistic Well-being

This section covers the meaning-making processes of holistic well-being and the strategies that facilitated the participants' holistic well-being to answer research questions one and three. The data revealed that some of the Black women graduate students' (BWGS') in

STEM experiences were intertwined and connected which influenced their meaning-making process of holistic well-being. Because of this interconnectedness, I reported research questions one and three together. How the participants defined holistic well-being informed the strategies they use which gave a clearer understanding about the different processes BWGS in STEM joined in to achieve holistic well-being. The participants' actions and reflections revealed how they define holistic well-being and because of their similar experiences, their definitions at times overlapped. The participants' perspectives on holistic well-being came from a positive and strength-based vantage point which differs from how the literature discusses well-being. Primarily, when scholars discuss or measure graduate students' well-being, the studies emphasize their stressors and the negative sides of the graduate journey within the academic environment (Haynes et al., 2012; Hunter & Devine, 2016).

In my study, the BWGS in STEM reveal in their definition that holistic well-being encompasses their mind, body, and soul in addition to being happy and healthy. To counter the literature on well-being, the women engaged in internal processes that illuminated how they gained clarity about self-care versus self-maintenance, reframing their conceptualization of the strong Black woman stereotype while noting how they achieve holistic well-being. Achieving holistic well-being as BWGS in STEM was multifaceted, and the participants engaged in various strategies that brought them joy on many levels. Their narratives overlapped, showing some commonalities in their approach, which came together to answer my third research question. In the next section, I discuss the participants definition of holistic well-being and the components they include.

Defining Holistic Well-being and its Components

As BWGS in STEM and because of the body they are in, showing up as their whole and authentic self is something they have not had the privilege of doing. The women in this study acknowledged that their holistic well-being is essential for their thriving. Based on the participant's conceptualization, holistic well-being is multi-dimensional. They see holistic well-being as interconnected and not just focused on one aspect of themselves. Freddie, B. Grits, Kally, and Marie Anna shared their definitions of holistic well-being. Their reconceptualization of holistic well-being brings a different viewpoint to the literature on well-being. The participants define holistic well-being as being in a "good headspace" and seeing the interconnectivity between their mental, physical, emotional, and spiritual selves. B. Grits draws from her public health background to share her definition of holistic well-being.

> I'm using the public health definition of health. Health is more than just a state of feeling good, basically. So, when I think about holistic health, I am also thinking about mind, body, [and] spirit, but in terms of not ill. I'm not, I don't have a cold, [and] I am in a good headspace. I have good social interactions with people. Like all parts of who I am as a person [is] in a healthy state.

B. Grits defines holistic well-being as being in a "good headspace" and having "good social interactions." Her definition also reveals that holistic well-being is "more than just a state of feeling good." BWGS in STEM value social interaction because of the relationships they build by interacting with others which aligns with B. Grits' definition of holistic well-being. In addition, B. Grits included the interconnected relationship between her mind, body, and spirit, which means you cannot focus on just one aspect or one without the other. Furthermore, B. Grits' framing of holistic well-being calls attention to the different components she uses when defining holistic well-being.

Freddie shares a similar sentiment to B. Grits in her definition of holistic well-being. Like B. Grits, Freddie believes holistic well-being is being in a "good headspace," which is an essential part of her self-care. In Freddie's definition, she also included feeling healthy and happy as components of her holistic well-being.

> . . .holistic that word specifically just kind of to me I think about self-care, taking the time to make sure that outside of work, outside of every other responsibility, one is fine doing okay. The good headspace, feeling healthy, feeling happy, feeling okay in that moment.

Freddie also shared that she values her mental well-being the most because if her mental health is not good, nothing else matters or functions correctly. Her statement then coincides with her holistic well-being definition of being in a "good headspace." Adding the components of happiness and feeling healthy differs from how well-being is measured and reported in the literature when graduate students' experiences are reported, which tends to focus on the stressors that depletes one's well-being.

Similarly, Kally defines holistic well-being as a state where her mind, body, and soul are in "agreeance" with one another, which aligns with B. Grits' definition of holistic well-being. Kally articulated:

> . . . um, I guess for me, it's [holistic well-being] more so like, your mind, body, and soul. I mean, mind, body, and yeah. So, if they're all like, kind of like kind of like in one state. Like in agreeance with like one another . . .

Kally's explanation of holistic well-being shows the commonality amongst the women and how there is an overlap in how they are reconceptualizing and making meaning of holistic well-being. Kally calls attention to holistic well-being in her quote, where your mind, body, and soul are in "one state." Likewise, Marie Anna views holistic well-being as the interplay between all parts of oneself and how they are connected and depend on each other.

> . . . I think another like on top of everything that everyone else says is like understanding the interplay of how one part of self affects the other, like, oh, if I don't exercise, I am

> sad. Or something like that. Like how physical affects emotional, emotional affects spiritual things.

Marie Anna agrees with the other participant's definition of holistic well-being. In her definition, Maria Anna articulated that holistic well-being is also understanding the interplay between "how one part of self affects the other." In her framing of holistic well-being, Marie Anna calls attention to the interconnectivity of holistic well-being.

Kally, B. Grits, and Marie Anna's definition of holistic well-being materialized as the interconnection of their mind, body, and spirit. Freddie added happiness as a component of her definition, while B. Grits included social interaction as a component and being in a "good headspace." The woman's definition of holistic well-being underscored the components that are essential when they think about holistic well-being as BWGS in STEM. Based on the participants viewpoint, holistic well-being is a state of happiness, being in a “good headspace,” having good social interactions, setting boundaries, and creating work-life balance that centers on the connection between ones mental, spiritual, emotional, and physical state to promote living a life filled with joy, and authenticity. Thus, how the participants defined holistic well-being emerged in the varying ways they achieved holistic well-being.

Varying Perspectives on Achieving Holistic Well-being

Throughout the study, when the BWGS in STEM talked about achieving holistic well-being, it was notably away from their academic workspace. The varying ways the participants spoke about achieving holistic well-being showed their unique experiences and overlapped with each other's narratives. B. Grits and Freddie spoke about achieving holistic well-being when they are vacationing with their families and loved ones. However, Kally articulated that she had not experienced holistic well-being but aspired to do so. For example, in her narrative, B. Grits shared her experience of achieving holistic well-being.

> I know that I personally struggled with balance for sure. Um, but usually when I am on vacation, so maybe the closest I've gotten to the aspirational, holistic feeling [of]well-[being], that we described would have been over the break. And when I finally just said, I'm not looking at emails; I am enjoying my "honey love" [partner] down. So, boo thing there, um, my friends, were all, you know, we were all in a good space, they weren't putting out APBs -"all-points bulletin aka BOLO "be on the lookout"- for me, because I hadn't responded to texts or emails, I was talking to [the] family just more time to interact with the people that I care about. Um, I wasn't stressed out to kind of depress[ed] from the semester from hell. Last semester was rough. Um, so that was probably the last time I was there. But the feeling that you get when you are there is, it's like a release. So comfort[able], [and] I can finally breathe again.

Notably, B. Grits' quote shows the last time she experienced holistic well-being was away from her academic and workspace. In addition to pursuing a public health degree, B. Grits also works full-time at her institution. Achieving holistic well-being makes B. Grits feel comfort and experience a release like she can "finally breathe again." The people who contributed to her feeling comfortable were her loved ones, such as her family, friends, and partner. Moreover, attaining holistic well-being helped decrease B. Grits' stress levels. B. Grits stress levels are reduced because her family and friends do not have to worry about her since she communicates with them regularly and answers their texts and emails.

Like B. Grits, Freddie achieved holistic well-being when she was "back home" in Nigeria with her family and after the semester ended.

> . . . I want to piggyback off of what [B. Grits] said, I think the closest that I ever came to holistic well-being or like the general feeling of happiness was around last year when I was back home [in Nigeria]. I was done with this semester because I started online while I was there and then came in person [in] August of last year. So, around summer, when I was back home [in Nigeria], I was done with a semester, and I also wasn't working anymore. And I had a lot of time to spend with my family that I hadn't seen [in] years. So, the feeling of all of us being together in the same country for like the first time ever, where I got to see all my little nieces and nephews, my grandparents, we got to spend extended time together. I feel like that was when I was the happiest and the most calm, and then I came and started classes, and it's been downhill since then.

Spending time with family and away from academic spaces is how Freddie attained holistic well-being and associates holistic well-being with the "general feeling of happiness."

Freddie experiences this euphoric feeling when she spends time with the people she loves. Like B. Grits, Freddie's family played a significant role in her attaining holistic well-being. After returning home to Nigeria for the summer, Freddie spent an extended amount of time with family members she had not seen in years. Attaining holistic well-being made Freddie feel calmer. However, once school began, Freddie felt like she could no longer maintain the feelings of happiness she once felt. Based on Freddie and B. Grits' narrative, they feel like the academic space does not allow them to achieve holistic well-being. Nonetheless, when the participants attained holistic well-being, they were happy because they prioritized their needs and did things that made them feel joyful.

Kally shared an alternate viewpoint about achieving holistic well-being. In contrast to B. Grits and Freddie, Kally aspires to achieve holistic well-being. To attain holistic well-being, Kally recognizes that she needs to do things that are unrelated to school, which coincides with B. Grits and Freddie's narratives.

> I don't think that I [have] been in that space for a while. Well, actually, I feel like I always have to do something, if that makes sense. Like, I'm always supposed to be on go, always doing something. And if I'm not doing like, either my schoolwork or my research or anything related to that, then I'm not being productive, and then go into like a whole, like, anxiety type of thing. Like, oh my gosh, like I need to be doing XYZ. And if I'm not doing that, it's like, what am I doing? So I'm trying to work on getting to that holistic well-being. I guess that's like my focus or my theme for the year. [If] that makes sense. So, [I am] trying to take that time out like during the weekends, [not] to do anything school-related.

Based on Kally's quote, she has not achieved holistic well-being because she is constantly busy doing something related to school or research. In her understanding, Kally feels like achieving holistic well-being is external to academia. If she is not busy doing the things she needs for school, Kally feels like she is not being productive, which makes her anxious.

However, Kally revealed that her "theme for the year" is to achieve holistic well-being, and she is working on taking time out on the weekends to accomplish her goal.

In this section, the participants revealed their definition of holistic well-being and when they have attained holistic well-being. In their description, some participants indicated that holistic well-being encompassed their mind, body, spirit, and soul and are interconnected. B. Grits included social interaction, and Freddie included happiness as one of their components. Furthermore, B. Grits and Freddie discussed when they achieved holistic well-being while Kally set this as one of her goals for the year. Next, I discuss the numerous ways the participants engaged in internal processing to make sense of their holistic well-being.

Internal Processes to Live Out Holistic Well-being

Another dimension to the meaning-making process of holistic well-being is the internal processing BWGS in STEM engaged in that reframed how they saw themselves compared to how society sees them. While participating in this internal processing, the participants clarified how they distinguished between self-care versus self-maintenance, prioritized rest, and reframed from using the strong Black woman stereotypes. As a collective, the participants reflected on their experiences as BWGS in STEM and decided to counter those narratives that dissuade them from being their authentic selves.

Distinguishing Self-care from Self-maintenance

Living in and going to school during a pandemic served as a wake-up call for the participants forcing them to reprioritize their well-being. In most of the participants' narratives, the pandemic was the impetus for why they decided to restructure their lives. While reflecting on their well-being, the participants gained an understanding of self-care versus self-maintenance. With this knowledge, they became encouraged to work towards achieving holistic well-being. In

our first focus group, B. Grits shared how living in a pandemic helped her differentiate between self-care versus self-maintenance.

> . . . oh man, in COVID is when I realized that how I defined self-care was actually just pampering. So, I would say going to get my nails and toes done or want to get a wax that was self-care. And actuality, it was the time that I spent to do that from the rest of the week. That is how I was pretty much defining self-care. But in the pandemic, I realized when I was at home, for a lot, that that wasn't self-care, that was self-maintenance. So actually spending a day on the couch doing nothing and not feeling the idea that I've wasted a whole day. That became how I shifted my focus to self-care. Like, how am I putting back into myself, one of the people that work for [on the] grant constantly says that you can't pour from an empty cup or empty base. She's like if you're a half-point, and you're trying to give, give, give, you can't do that. So, you got to take care of yourself first . . .

B. Grits' quote calls attention to the performative nature of self-care. Traditionally self-care boils down to pampering, including getting a manicure and pedicure. However, B. Grits recognized that was simply self-maintenance. Shifting how she defined self-care while living in the pandemic gave B. Grits new insight into what self-care should be. Once B. Grits clarified self-care versus self-maintenance, she realized self-care could also mean sitting on the couch doing nothing. In addition, B. Grits mentioned that self-care is a process where you are "putting back" into yourself. B. Grits now defines self-care as "spending the day on the couch doing nothing."

Similarly, after hearing how B. Grits distinguished between self-care and self-maintenance, Kas D shifted her thinking towards how she defined both terms.

> Something that resonated me also with a focus group was, I can't remember who said it, but basically that it's self-care isn't like about self-maintenance. It's really just being able to take a day for yourself. And so, I really like took that because I would just use Saturday or Sunday to like make sure that my hair is [done], I get [my] groceries, nails, like you know just like maintenance things [then] understanding that that's not self-care. I'm still like on the go and be on the couch watching TV, staring at the ceiling doing whatever I need to do. I think that was definitely something that I realized I was like, wow, like this is nice, like just being able to actually relax to time for myself.

Kas D's thinking about self-care was like B. Grits, where she participated in performative actions that aligned more with self-maintenance than self-care. In the beginning, Kas D would use her weekends to engage in "self-care" activities like doing her hair, going grocery shopping, and getting her nails done. After realizing that she was participating in self-maintenance activities, Kas D decided to adjust her actions and redefine how she practices self-care. After this internal processing, Kas D began to enjoy being able to relax, watch television, and stare at the ceiling because that was a form of self-care. In another quote, Kas D shared that she now looks forward to her self-care days because they allow her to "recharge."

> . . . I also am working on blocking off 3 days out of the month just for self-care. I have only done one so far but having the day blocked helps me not feel like I have to play catch up for the rest of the week. My self-care days are what I look forward to and serve as a recharge. My self-care days used to consist of me getting my hair, nails, etc. Now, I want my self-care days to consist of doing absolutely nothing.

Scheduling time for self-care allowed Kas D to release the stress of feeling like she had "to play catch up for the rest of the week." Kas D intentionally blocks off a few days a month for self-care to alleviate feeling stressed. After participating in the internal process of distinguishing between self-care and self-maintenance, Kas D now wants her self-care days to "consist of doing absolutely nothing." While the pandemic helped B. Grits and Kas D distinguished between self-care versus self-maintenance, Freddie and DrTNS2022$ discussed the value of resting in the next section.

"You can't pour from an empty cup or empty base": Living in a Pandemic Gives New Meaning to Resting

BWGS in STEM rarely talk about resting or taking a break because of the demands of their STEM discipline. However, being productive and not resting can become costly for graduate students. Resting could help promote a good work-life balance for graduate students

and possible increase their productivity. Although it may be a foreign concept, resting can be rejuvenating and one-way BWGS in STEM could care for themselves. Freddie and DrTNS2022$ shared their experiences with resting as BWGS in STEM, in addition to how the pandemic facilitated them being able to rest. Freddie discusses the importance of resting and taking a break when she needs to rest.

> The COVID-19 pandemic has taught me that the world will not fall apart if I take a break, and I have taken that to heart. At the slightest hint of stress, I am off to take a nap because I don't have time for that.

In the quote above, Freddie discusses using rest whenever she feels the "slightest hint of stress." Her new outlook is attributed to her living in the COVID-19 pandemic and seeing the value in taking care of herself now more than ever. In another quote, Freddie shared that she caught COVID-19 during her first semester of graduate school, and after catching COVID-19, she began to implement "rest breaks" throughout her day to remain "sane." While the pandemic allowed Freddie the opportunity to rest, the pandemic allowed DrTNS2022$ to be "still and present" in her life.

> During the beginning stages of COVID, I often felt idle with nothing to really work on because it was as if time had stopped. I was able to explore new hobbies and really think about my future. For those moments, it was nice being still and present in my own life for once.

DrTNS2022$ articulated how the pandemic made her feel like time had stopped, making her feel like she had nothing to do. This time of idleness and having nothing to do helped DrTNS2022$ explore other aspects of her life and future.

"I'm a gentle Black woman; I'm not strong anymore": A Reframing of the Strong Black Woman and Superwoman Stereotypes

In addition to distinguishing between self-care and self-maintenance and resting, some of the participants decided to redefine and move away from the general meaning of the

superwoman (SW) and strong Black woman (SBW) stereotypes. Both stereotypes are used frequently by Black women and are synonymous with self-sacrificing and suppressing Black women's emotions (Abrams et al., 2019; Carter & Rossi, 2019; Liao et al., 2020; Woods-Giscombe et al., 2016).

As BWGS in STEM, Kally, Freddie, and Marie Anna provided varying viewpoints about the strong Black woman (SBW) and the superwoman (SW) stereotypes which prompted them to change how they define those terms if or when they decide to use them. Mainly, when these terms were discussed by the participants, the context was external to the STEM learning environment. This external context gave the participants a different vantage point regarding why they do not want to be associated with the SBW as it is currently defined.

Kally shared that the SBW is something that is embedded in Black culture, and it is ingrained in Black people at a young age and often is synonymous with not showing emotions. Like Kally, Freddie viewed the SBW as putting up with a lot of “bull-shit” and suffering. In addition, Freddie sees the SBW as always having to compartmentalize her feelings which prevents her from truly being herself. In contrast, Marie Anna’s experience with the SBW stereotype was different because before our conversation about these terms, Marie Anna never used or thought of those terms. Yet, despite their varying perspectives and where they learned about the SBW or the superwoman stereotypes, some of the women made a concerted effort to redefine the strong Black woman stereotype on their terms in case they decide to be the strong Black woman.

To counter the narrative about strength and showing a lack of emotions, the participants provided different perspectives regarding the SBW stereotype. Marie Anna, Freddie, and Kally communicated that they do not align with the current narrative about the SBW. Freddie and

Marie Anna said they are okay with being classified as "soft" if "being soft" meant their well-being was protected. In addition to their standpoint, Marie Anna and Kally shared how they expressed their emotions by centering their holistic well-being.

In our first focus group, Freddie discussed how society views the strong Black woman, which is different from how she sees herself as a Black woman.

> I feel like, in this day and age, a strong [B]lack woman is just synonymous with suffering. Because there is so much a [B]lack woman has to go through in the name of being a strong [B]lack woman. And I personally have decided that I am soft. And I don't have the energy to be strong; I am weak. I don't have the energy to be a strong [B]lack woman because I cannot suffer . . . And African Americans here as well as [B]lack people in Europe or whatever, having to go through so much having to police themselves so much, to present this front of gentleness and civility, to always be this instead of, to always have this wall in front of them instead of being who they truly are. So personal[ly], like in this day and age, to be a strong [B]lack woman is to put up with a lot of bullshit and go through a lot of suffering. And I have decided [not to] do that anymore. I am a gentle [B]lack woman. I'm not strong anymore.

Freddie shared how she sees the strong Black woman as synonymous with suffering because there is so much that Black women must endure. She also pointed out how the strong Black woman cannot truly be herself because of the "bullshit" she has to deal with on top of the suffering. After some consideration, Freddie opted to be looked at as "soft" or "weak" because she does not have the energy to be strong.

Marie Anna shared a similar viewpoint on the SBW stereotype and how she does not consider herself a strong Black woman.

> Oh, I just had to realize, like, you know, I'm soft. It's like, I had to be okay with being like, okay, well, so what if I'm sensitive, like, this is who I am, I can't change myself. And so, I feel like I just have never associated myself with being [a] strong [B]lack woman.

Marie Anna describes how she never associated herself with being a strong Black woman and is okay with being called "sensitive" because she cannot change herself. Based on how the SBW stereotype is currently defined and it is a part of Black womanhood, the participants do not

align themselves with being the SBW. Like Freddie, Marie Anna used the word "soft" to reclassify the strong Black woman because it signified that they could be themselves without suffering.

Another characteristic of the strong Black woman stereotype is the suppressing emotions which may lead to various problems for BWGS in STEM and their holistic well-being. Kally shared her viewpoint about the strong Black woman and how she was socialized at a young age to hide her emotions.

> I guess for me growing up, I always felt like being a strong [B]lack woman meant that I don't show emotions. So, for me, I guess for the longest [time] I kind of like train[ed] myself not to show emotions because I kind of like associated emotions still [as] a sign of weakness. So, I kind of like forced myself I like oh, no, I can't cry [in front of] people like they will see me as like being this weak person and not taking [me] seriously or anything like that. So, I kind of, I'm now learning to like, unlearn that because it's not true. Like your emotions are valid. [And] if you feel them that [means] they meant something to me.

Kally discusses how the strong Black woman stereotype is synonymous with suppressing emotions, which can harm her well-being. Kally's understanding of the strong Black woman stereotype comes from her childhood which associated showing emotions or crying as a sign of weakness. Kally decided to stop telling herself that she should not cry in front of people because her emotions are valid. Furthermore, Kally wants to unlearn what she was taught while growing up about expressing her emotions.

Likewise, Marie Anna and Kally shared how they do not align with the strong Black woman stereotype but choose to express their emotions. For example, Marie Anna uses her faith to process and express her emotions. In her narrative, Marie Anna spoke about how faith and STEM are not topics that go together, and her ability to have her faith as one of her salient identities as a graduate student was instrumental in her success as an engineer.

> I find often time STEM environments tend to be devoid of talk or expression of faith, so I tend to switch on a separate brain when in these environments. However, my faith is one of my largest ways of coping with things, and being able to call upon that during one of the most stressful steps [preparing for her preliminary exams] in my graduate career felt really good.

In her week two blog, Marie Anna highlighted how STEM environments are not the most welcoming space for students to express themselves through their faith. Marie Anna's faith helped her during stressful times as a graduate student and is one of her coping mechanisms. BWGS' in STEM faith could possibly help them not suppress their emotions but instead use their faith as a guide to express their emotions. Using their faith to counter the rhetoric around the suppression of emotions may also help BWGS in STEM make sense of their needs as well as how and by whom those needs can be met. Marie Anna utilized her faith during "one of the most stressful steps" in her program, and other graduate students may use their faith differently.

To counter the rhetoric about suppressing emotions, Kally processed her feelings through journaling. Journaling is a mechanism that allows Kally to reflect on what she wrote. For example, in the second focus group, Kally shared how journaling helps her make sense of her feelings.

> . . . I journal about my feelings because I don't always know how to like verbalize it, but I tend [to] like writing it down is just like word vomit. So, I just like write everything that comes to mind that helps me as well. And then I go back and try to like, read [processing] as a picture to make it make sense.

Kally discussed how journaling about her feelings helped her process her emotions. Journaling is another way the participants counter the narrative about Black women upholding the strong Black woman and the superwoman stereotypes that classify them as self-sacrificing and emotionally suppressed. Journaling allows Kally to revisit her writing to make sense of it all later. By journaling, Kally ensures that she has an outlet to process her emotions. In another blog

post, Kally mentioned that she is working on learning how to communicate her feelings because that is not something she is learning being in STEM.

On the contrary, Marie Anna explains in her week three blog what happens when she does not express her feelings and how she is working towards not "invalidating" her feelings" for the sake of progress."

> Another thing I'm working on doing is not invalidating my feeling for the sake of progress. I am afraid to feel because most feeling cloud your brain from being able to do anything other than think about whatever is making you feel that way. The result is feeling nothing, which is productive before the lack of feeling turns into [a] lack of motivation. So, I would toggle between feeling nothing to feeling overwhelming anxiety to motivate myself again, which is, exhausting, to say the least. In an effort to fight against being motivated by fear, I am allowing myself to feel things... which yeah sounds odd. I guess an easy tangible example is allowing myself room to be real about how I feel about my relationships. If I'm really excited to see someone, I don't tell myself to temper the excitement in case something goes wrong. If I feel hurt by someone, I don't tell myself I'm being too dramatic.

Expressing her feelings unapologetically and authentically allows Marie Anna to "fight against being motivated by fear." The statement calls attention to what happens when Marie Anna invalidates her feelings without addressing the root cause or what happens when she is afraid to feel. Marie Anna's decision to not temper her feelings shows growth in her and others like Kally, who are working towards creating a narrative where they are comfortable expressing all forms of themselves no matter the consequences. It is essential that Black women graduate students in STEM express and process their feelings for them to receive the proper help they need to be successful and thrive in their programs. Processing their emotions may also decrease or eradicate their need to use maladaptive strategies, like the strong Black woman and the superwoman stereotypes, by promoting adaptive techniques like journaling and talking about how they feel.

Section Summary

The narratives covered in this section indicated how the pandemic facilitated the participant's understanding of self-care versus self-maintenance. B. Grits and Kas D thought of self-care as their performative actions, including getting their hair and nails done. However, living in a pandemic helped both women understand that self-care was the time they spent making sure they were recharged. In addition, the pandemic helped the participants see the value of resting and its importance for their well-being. Reframing how they used the strong Black woman stereotype allowed the participants to express their emotions without guilt. This reframing also allowed participants to reject the narrative that they are weak if they express their feelings.

The participants shared how they benefited from expressing their emotions in myriad ways that foregrounded their well-being and, at times, liberated them from societal norms. Instead of internalizing their feelings, the participants decided to either journal their thoughts or lean into what they were feeling. Their strategies served dual purposes in their personal and academic lives. Marie Anna mentioned how faith helped her move past a stressful step as a graduate student, and Kally said journaling helped her put all her thoughts on paper. In the next section, I discuss the strategies the participants enacted to achieve holistic well-being, which answered my third research question.

Strategies BWGS in STEM Enacted to Achieve Holistic Well-being

The participants spoke about their strategies to achieve holistic well-being outside the STEM learning environment. Some of the activities they engaged in reminded them of their childhood. In contrast, other activities, like Freddie's crocheting, served a dual purpose. The participant's goal was to create opportunities to enjoy parts of themselves they usually do not get

to explore. At the core, the participants tried to incorporate different activities to promote their well-being, and some of the activities they used could be classified as unconventional and unique. These strategies included seeking therapy, creating boundaries, and participating in non-academic activities.

The Many Dimensions of Using Therapy

Some of the women discussed how going to therapy helped them as Black women graduate students in STEM. Using therapy in the Black community is often shunned because of the negative connotations associated with seeing a therapist. However, seeing a therapist helped the participants gain clarity about different aspects of their lives and influenced how they thought about their well-being. The participants highlighted several ways therapy was helpful in their narratives. Therapy helps to create balance in their lives, maintain their mental health, and help them understand why they revert to shutting down in difficult situations. Reframing why and how they used therapy helped some participants normalize seeking therapy as graduate students (Donovan & West, 2015). Overall, these women used therapy to promote adaptive coping strategies instead of maladaptive coping strategies to encourage healing and balance (Abrams et al., 2019). Three of the seven participants, DrPH23, DrTNS2022$, and Kally, explicitly discussed seeing a therapist and how therapy helped them sort out their feelings to create balance in their lives.

For example, DrPH23 decided to seek a therapist after her friend recommended it. Therapy helped DrPH23 create balance in her life and make sense of what she has going on. To "balance her schedule," DrPH23 began making a list of school and work-related tasks.

> So I think one of the ways that I coped with it [work and school life balance] was when a friend told me, you need to seek therapy and try to figure out what's going on. And when I started going to therapy, I started, you know, figuring out ways to cope with what's going on, either making a list of all the things I need to do to make myself balance my

> schedule, so that I can feel better to do the things that I needed to do, either if it was school, if it would have to do [with] work, just those balancing all three of those things. So that helped with balancing my well-being and how I felt it made me feel good.

In this quote, she discusses how seeing a therapist helped create balance and structure in her everyday schedule. Therapy helped DrPH23 create a structure that helped with her well-being. Therapy also allowed DrPH23 to take note of everything she had to juggle in her life. After creating structure, DrPH23 could envision a future where she could prioritize the academic and non-academic tasks, which made her feel good. BWGS in STEM are multifaceted human beings, more than solely students, so finding a way to integrate the other parts of their lives as graduate students is necessary. There are different milestones graduate students must accomplish to progress in their programs. Thus, balancing the various parts of their lives is essential for their well-being.

Similarly, DrTNS2022$ shared how therapy helped her "maintain" her mental health and gave her clarity.

> I honestly had to have several counseling sessions to maintain [my] mental health. Overall, I was able to persevere and thrive in STEM as I discovered my gifts and talents. I am passionate about teaching the next generation about all things STEM because I want future generations to be better and do better than my generation.

DrTNS2022$ and DrPH23 call attention to the numerous ways therapy can be beneficial based on the needs of graduate students. DrTNS2022$ shared how going to therapy helped her discover her "gifts and talents" and "persevere and thrive in STEM." Based on DrTNS2022$'s statement, therapy helped her realize her gifts. Discovering her gifts and talents inspired DrTNS2022$ to mentor future generations "about all things STEM," which is an integral part of DrTNS2022$'s journey. I shared in DrTNS2022$'s narrative that she did not have many mentors who were scientists growing up; thus, mentoring future generations is how DrTNS2022$ will

help those coming after her. For DrTNS2022$, therapy became the vehicle that facilitated her moving forward with her future endeavors.

Another way therapy was helpful for the participants was to understand why they resort to shutting down after encountering uncomfortable situations. In Kally's case, she named it her "fatal flaw" and shared how therapy helped her uncover the "root" of that mechanism. Kally shared:

> . . . my fatal flaw is shutting down. In the past, I guess for me, it was worse. So, if you don't show people like [h]ow you [are] feeling, they can never know that they, like hurt you or anything like that. So, like for me, it's like, whenever like, I get into like stress modes or like somebody like [did] something that I didn't like, I'll just immediately turned my nonchalant, button on, and just like [show] no expression, no feelings. And I just shut down as well. And I think for me, unlearning, that is finding the root of like how that mechanism even came about. And to do that, I think therapy has been my go-to, in trying to like, go through that process and explain it to somebody that can help me assess it.

Black women graduate students in STEM encounter uncomfortable situations (e.g., gendered racial microaggressions, conflicts) in STEM academic spaces, so knowing how to deal with these uncomfortable situations when they arise is instrumental to their success and ability to thrive as Black women graduate students in STEM. Kally used therapy to uncover the root cause of why she shuts down when she encounters challenging situations. Before seeking therapy, when Kally felt stressed or hurt by someone, she would resort to shutting down or "turn my nonchalant button on" to protect herself from her pain.

In another quote, Kally said therapy helped her in other ways. For example, therapy allowed Kally to process her emotions after she confided in her mother about "feeling down" after being told by her mother that "all you got to do is go to school." Unfortunately, Kally's mother's statement underscored how students' feelings are cast aside when they express feeling stressed in their programs because people assume school is not stressful. Kally used therapy as a

form of resistance to counter the secrecy and dread minoritized communities might feel when they are discussing using therapy.

In focus group one, B. Grits mentioned that she loved hearing Black people, especially Black women, talk about seeking therapy and that it is on her “to-do list for 2022.” Although B. Grits said nothing further about seeking therapy, she acknowledged its importance.

On the other hand, instead of seeking therapy, Freddie leaned on her friends and her mother to help her when she felt overwhelmed, and her "one go to" was to "shut down.”

> . . . I think, in the not-so-distant past, my, one go-to when I just felt overwhelmed is just to shut down. And I almost fell back into that. What was it three weeks ago? I don't know what it was? But that was just something that made me feel so defeated. So down, and I'm like, hello, we're not going through this again. So, with the help of my friends, and most, especially my mother, I was able to break out of that and realize that it's okay to feel down, but don't make being down your entire existence. . . But I'm trying to tell myself that it's okay to go through periods of sadness, [being] down, and depressed, and whatever; but as long as you know that that's not your forever, that there's something better on the horizon, I think that that's what pulled me out of that and made me realize that I can be sad as long as I get back up, dust myself off and continue on my path.

Shifting her perspective allowed Freddie not to resort to shutting down when she felt overwhelmed. Freddie's quote pointed to how vital her support system was to her not shutting down. In this instance, Freddie shifted her mindset when something made her feel defeated. Because she had experienced something similar previously, Freddie decided that she was not going that route again. Being able to shift her mindset is a skill that can be beneficial for BWGS in STEM. Knowing how to shift her mindset helped Freddie understand what she can handle and when she needs to reach out for help. Furthermore, Freddie recognized that "there's something better on the horizon" than being stuck in a place where she is depressed or sad. Her thought process may be helpful when she encounters difficult situations that may affect her well-being.

Kally, DrPH23, and DrTNS2022$ boldly stated why they seek therapy. Therapy can be transformative and help open the lines of communication, which may increase engagement in

academic and non-academic spaces. Although Freddie did not use therapy, she received the help she needed from her support system. Therapy was also instrumental to their healing and liberation as BWGS in STEM because it allowed them to process their different emotions and gain clarity about areas in their lives.

Setting Boundaries to Prioritize their Needs

Another strategy Black women graduate students in STEM used to enact holistic well-being was to create boundaries. Freddie, Kas D, and DrPH23 discuss how setting boundaries helps free up their schedules and time. Some of the participants set boundaries by saying no to people and their varying requests. In contrast, Kally discussed setting boundaries by saying no to herself. Saying no allowed the three women to dedicate more time to doing the things they love by focusing on the areas in their lives that needed their attention. As BWGS in STEM, they tend to overcommit themselves to a multitude of things which leaves them with less time to focus on their own needs. Thus, setting boundaries and saying no to people freed up some of the participant's time to do the things that benefited them.

In the second focus group, Freddie shared how saying no "frees" up her day to do other things or even to do nothing, which can help her to clear her headspace.

> I feel like giving myself the opportunity to say no frees up my day to do literally anything else. Because I tried to set out time every single day to have a couple of minutes or even an hour to do absolutely nothing. I don't have to answer to anyone. I don't have to be on my laptop or anything. So, I feel like setting a boundary, and specifically, the boundary of saying no, frees me up to do anything and everything. I need to be able to have time [for] self-meditation, reflection, whatever, what have you just time out of every day to relax and realize what did I do today? What do I have to do tomorrow? What didn't I get done? What can we push to tomorrow? What can we push to next week? I want to be able to have time to myself. And the fact that I keep saying yes to everything, [i] t's not good for me. I want to be able to be in a good headspace where I can; I don't know, have time just to myself to do anything. And me saying no gives me the opportunity to have time to do nothing.

Freddie discussed how saying no opens her day to focus on herself and her well-being. In addition, saying no gives her the freedom for "self-meditation and reflection." Creating this boundary in her life opens Freddie's schedule so she can plan and see the areas in her schedule and life that need her attention the most. Saying no helped Freddie refocus and see the big picture in her life and how she manages her day-to-day tasks. Similarly, in the second focus group, Kas D shares how she is "getting better at saying no" when people ask her to do things, she does not have the capacity to do at the moment.

> . . . I think I'm doing better as far as like the physical piece like people asking me to go do XYZ, I think I'm getting better at saying no, my issue is more so being away from my family and friends, well, most of them, I think, just like staying in touch and like keep in contact, like some days, I don't feel like talking or like answering the phone and like just even communicating or like by taking in everything that they're saying can be kind of exhausting sometimes, especially if I've already had like a long day or like, a day, especially a day full of tests and exams. So, I think that is my issue. Like not answering or just saying like, you know, I'll call you another day. And then understanding that as well.

Although Kas D is getting better at saying no to people, she is still in conflict with saying no to her family and friends who are far away or back home. Kas D also alluded to the emotional boundaries she has difficulty creating with her family and friends because some days she does not feel like talking or even communicating because the conversations can be "exhausting." Likewise, DrPH23 shared her experience setting boundaries and not being quick to say yes to others.

> I no longer [am] quick [to] say yes to help everyone, meaning I would leave what I had to do to help or assist someone else. Then regret say[ing] I would do it because I have so much to do for myself. Since I started doing this, I was able to prioritize my time to get [the] thing[s] I need to get done completed, [w]hich remove[s] some of the stress and me feel overwhelmed. I also make me feel content with myself.

DrPH23 shared why it was necessary for her to set some boundaries in her life. When DrPH23 does not set boundaries, she neglects what she needs to do for herself. Thinking before

saying yes to people's requests helps DrPH23 prioritize her time and the things she needs to get completed. And now that she has started saying no, DrPH23 can reduce her stress levels and feelings of being overwhelmed.

Whereas Freddie, Kas D, and DrPH23 shared their reasons for saying no to others, Kally shared a different viewpoint. Instead of saying no to others, Kally shared how she had to say no to herself because she was always doing schoolwork and not focusing on anything else.

> . . . I agree with [Freddie] on not being well, not knowing how to say no, or when to say no. And I think for me, I'm saying no to myself. Because like, I feel like a part of my, like, a lot of my identity has been wrapped around like school merits or academic merits. So having that boundary with myself in learning to be like, oh, okay, like, you're gonna do this to this from this time to this time, as students like stuff always ended up running overtime. And I feel like I'm always doing, like schoolwork or lab work, like on a 24/7 clock. And so like, so like, yeah, like I mentioned before, like, my Saturdays have been like, [one of] the boundaries that I've implemented recently, and not touching my emails. I always checked my emails, like text messages. And I thought it was kind of like, sickening. But yeah, learning to say no to people, friends, family, and myself, has been an issue, and I'm still learning, and somebody mentioned in chat that it gets easier. It slowly is. But yeah.

Kally decided to say no to herself because she felt like her identity was "wrapped around school merits and academic merits." Thus, once Kally started seeing that she could do other things unrelated to school, she welcomed that idea. Kally decided to have a set time when she would do schoolwork and stick to that timeframe because otherwise, she would work continuously. Once Kally implemented this structure, she could focus on other parts of herself. Now she uses Saturdays for activities that are not school-related.

Freddie, Kas D, and DrPH23 decided to set the boundary of saying no to people and their requests, while Kally made a conscious decision to say no to herself. All four participants demonstrated to themselves and others why it was necessary to say no. Saying no not only freed up their time to focus on the things they needed to do for themselves but saying no also served as a form of resistance. The women resisted the status quo that celebrates being busy and doing

things for others or that are school-related to the detriment of their well-being. In the next section, I call attention to some of the activities the women participated in and how they changed the participant's position on their well-being while simultaneously bringing them joy.

You Bring Me Joy: Participating in Non-academic Activities

In the previous section, I shared that Kally felt like all she did was schoolwork and how her identity was wrapped around being an academic. In this section, I discuss some of the non-academic activities the participants did and how the activities made them feel. Some of the activities include yoga, crocheting, using Saturdays as their non-negotiable time, and roller skating. The activities the women engaged in varied and could be considered unconventional. However, in each of their chosen activities, the women did what they wanted instead of being in their laboratory or doing schoolwork. Furthermore, these activities invigorated the participants in preparation for their work as BWGS in STEM.

Going to school during the pandemic served as the participants' wake-up call, forcing them to reprioritize their well-being. In her week three blog, Kas D shared what she did to prioritize her well-being.

> COVID, at first, was very difficult as I was uprooted from my dorm room in Texas back to my parent's house in Indy. However, when school was finished, and I could not go anywhere, [that] is when I started doing yoga and taking walks. COVID gave me the chance to do absolutely nothing and not feel bad about it. I think it was also a [wake-up] call that I need to make sure that I am prioritizing my well-being as I realized life is way too short.

At the onset of the pandemic, Kas D felt "uprooted" because she had to move back home from school. However, once school ended, Kas D had time to prioritize her well-being, so she began doing yoga and taking walks. Although the pandemic took many lives, living in the pandemic allowed Kas D to envision different possibilities when it came to her well-being. Kas

D's quote highlights some of the benefits of being in a pandemic. Besides doing yoga and taking walks, Kas D also found joy in being able to do "absolutely nothing" and not feel bad.

While Kas D decided to do yoga, Freddie's activity showed her creativity. Freddie discusses two things she did to center her well-being.

> Two things I have done to prioriti[z]ed my well-being are crochet and true crime. Over the break, I decided to stay in my apartment instead of going to spend time with family, and I welcomed the thought. It would be the first time in my life that I would be spending the holidays by myself. By the 2nd week, I was going a bit stir-crazy. I decided to crochet a little baby set for a former classmate I knew was expecting, and I made a blanket for myself that my parents have claimed from a continent away. . . Making these items was cathartic for me because I was able to put everything out of my head and just focus on doing what makes me happy. I have been struggling with what to make next because there's so many possible things for me to do. I feel like I want to do them all and do none of them at the same time .. . After participating in these activities, I feel a bit more calm and in control of myself as I have taken time to do something just for me.

Freddie took up crocheting over the holiday after being unable to go home. Crocheting made Freddie feel happy, especially since she could make some items for one of her classmates who was expecting. Freddie enjoyed crocheting because it served different purposes. Crocheting was "cathartic" because it allowed her to focus on the items she was making and essentially forget about school. In addition, crocheting and watching true crime helped Freddie prioritize her well-being. These activities made Freddie feel calmer and in control because she did something for herself. Freddie's activity brought out her creative side while also bringing happiness to both her and those who benefited from her crocheting.

Kally and DrTNS2022$ decided to use a whole day for their activity that was external to STEM. In our first focus group, Kally talked about how her Saturdays were her "non-negotiable" and her "sacred days" because that is when she can participate in non-school activities.

> I think my non-negotiable is my Saturdays, I treat my Saturdays [as] my sacred, like my sacred days, like, I don't really do. It's like my me time essentially. Like, to draw, [and] I don't go into the lab. I don't touch my phone, [and] I don't look at my email. But

> Saturdays are like my days, and then I get to reset and then start on Sunday. So over again, and I do that every week now.

Kally uses her Saturdays to reset before returning to her lab to do schoolwork. Saturdays served as her "non-negotiable" time where she creates a space to solely work on the things that are not school-related because once Sunday comes around, she shifts back to preparing for the week ahead. Thus, Kally uses Saturdays to pour into herself and do the things that make her happy. In Kally's case, she can focus on her love of drawing without being distracted from getting phone calls or checking her emails. Similarly, DrTNS2022$ shared how she used her Saturdays, which she calls her "sabbath," to do non-science-related work.

> [I] Think that was [Kally], who mentioned about taking one day so yeah, I've been taking my Saturday I call it my Sabbath, which is like from sundown Friday to sundown Saturday, just doing something that I want to do no science [n]o, no professionalism. No, no, it's just me. And yesterday I went on to a park and actually roller skate[d]. I love [to] roller skate. But I haven't done it in such a long time. And I'm talking old school, quad skates, roller skates. And I just love it. . . I felt refreshed. Honestly, I was like, wow, I missed that. You know, it's like saying, I miss me. And because that's a part of me, you know, I'm a multifaceted individual, not just, you know, a scientist and training and, you know, I just, it was very, very refreshing. Very refreshing. I'm like, Yeah, I'm gonna keep implementing this because this does. You know, I have sometimes felt like that guilt. Like [Freddie] said, you know, I didn't get anything done. I feel like I got 1,000,001 things to do, but I think i[t] 's better, you know, if we put ourselves on that list like, you know that [to-do] lists we should put ourselves on that list for mental health, wellness, and health overall. So, I'm definitely going to keep up the tradition of taking my Sabbath and doing something that benefits me mentally, physically, and spiritually.

DrTNS2022$ used her Saturdays as her "sabbath" to do the things she loves that did not pertain to science. Sabbath for DrTNS2022$ was from "sundown Friday to sundown Saturday." After going roller skating in the park, DrTNS2022$ felt "refreshed" because she loves to roller skate but has not had the time to do so. After participating in this activity, it reminded her about why Black women must put themselves on "the list." Roller skating on the weekend helped DrTNS2022$ remember how this simple act of kindness towards herself brought her joy. She

also recognized that she is a "multifaceted individual" who deserves to do things other than science.

DrTNS2022$ and the other three participants showed the importance of doing things you love that are non-academic because those activities can serve a dual purpose like helping with people's mental health and wellness while also bringing them joy. Kally reminded us of the importance of taking a day for ourselves to do the things we love. Drawing helped Kally reset for the upcoming week. Kally, Freddie, DrTNS2022$, and Kas D's decision to model taking time for themselves may help other BWGS in STEM to do the same. They are taking small steps to protect their well-being, which will hopefully help them take even more significant steps toward participating in other activities that center their well-being.

Theme Summary

In summary, the data in this section point to the varying ways Black women graduate students in STEM are reframing and reevaluating how they use therapy. Furthermore, therapy as a tool of resistance speaks to the change in tide regarding how therapy is viewed and used in the Black community. Through their actions, the women illustrated why therapy is necessary and how they utilize therapy in their lives. Therapy not only helped with their mental health but also gave them a roadmap to create balance and structure as Black women graduate students in STEM.

In addition, the pandemic allowed the participants to participate in activities that may have been unconventional pre-pandemic. A new process of self-discovery began when the women started participating in leisure activities like watching television and doing yoga. This self-discovery allowed the women to see that they can be happy and thrive as Black women graduate students in STEM while doing the things they love. Although some of the activities

were unconventional, those activities allowed the women to embrace the rush of euphoria they felt without regret. In the next section, I discuss the positive influences and barriers of the STEM environment at HBCUs that contribute to or detract from BWGS' in STEM well-being which answers my second research question.

The Influence of STEM Learning Environments at HBCUs on the Holistic Well-being of Black Women Graduate Students in STEM

The family-like environment at HBCUs helps Black women graduate students in STEM feel a sense of belonging so they can thrive. This type of environment found at HBCUs is made possible because of the community HBCUs cultivate. To answer research question two, I call attention to the positive influences and barriers of the STEM environments at HBCUs that contribute to or detract from BWGS in STEM well-being.

At HBCUs, BWGS in STEM see and interact with peers, faculty, administrators, and support staff who share similar, if not the same, identities. Furthermore, some of the faculty at HBCUs often go above and beyond for their students, contributing to the affirming environment at HBCUs. In the following section, I discuss the positive influences of the HBCU environment on BWGS' in STEM well-being as well as the barriers BWGS in STEM encounter at HBCUs that may detract from their holistic well-being.

Positive Influences at HBCUs that Promote Holistic Well-being

STEM learning environments can be problematic because of the lack of representation which may contribute to BWGS in STEM feeling isolated. However, in their narratives, the participants shared how their HBCU STEM environment positively influenced their well-being. Some of the positive influences include seeing others who share their different identities, faculty and advisors who invest in their well-being, and how their peers help facilitate their success.

Through the participant's stories, I demonstrated how the STEM environment at HBCUs' promotes BWGS in STEM holistic well-being.

"My existence was affirm[ed] at my HBCU": Shared Identity Builds Solidarity and Provides an Affirming Environment

Having an environment that affirms and uplifts the participant's culture, race, nationality, and gender is not something that is often seen in STEM, much less talked about by BWGS in STEM. Attending an HBCU has its rewards because it allows BWGS in STEM to see and interact with people who share their different identities. Being in an environment where people share similar identities can help alleviate some of the pressures of being the only one. HBCUs provide an environment that contrasts with other institutional types where BWGS in STEM run the risk of being the only one in their programs or classes, depending on where they are pursuing their graduate degrees.

The participants in this study call attention to how seeing varying types of representation at their HBCUs helps them feel at ease as BWGS in STEM. Some of the participants spoke candidly about the various ways they saw representation at their HBCUs including having a Black advisor, professor, and peers, and how that allowed them to be authentic. In addition, they were racially and culturally represented, resulting in a community that held them accountable, motivated them, and affirmed them, which helped influence their well-being.

For example, Kas D shared in her week two blog about the representation she sees in her program.

> Most of my classmates are [B]lack women. We have built a community of support. Although we share common racial background, my class has diverse personalities, ages, and personal backgrounds of how we have gotten here. We use our differences as strengths and to help build each other up. There is also a sense of accountability which I love. My courses are virtual right now. [H]owever, we still take the initiative to meet up on campus to obtain a classroom environment.

The Black women in Kas D's program were diverse, although they shared a "common racial background." Her classmates had different experiences and backgrounds, which served as "strengths and to help build each other up." They used their differences as strengths to build a community of support. In addition, the Black women in her program helped Kas D build a "sense of accountability." Similarly, DrPH23 shared how her community influenced her well-being positively and held her accountable.

> The community has influenced my well-being by holding me accountable. Finishing out this program, like [I] mention[ed] in the last post, I wanted to drop out so many time[s]; but have individuals in my community helped. That support system [is] very important [be]cause without it, it can be a very long and lonely journey. The time they invest[ed] in listen[ing] to me provided me with positive insight.

DrPH23's experience highlighted how BWGS' in STEM community contributes to their well-being. DrPH23's community positively impacted her well-being because her community invested the time to listen and provide her with "positive insight." Her community prevented DrPH23 from dropping out of her program when she wanted to leave many times. DrPH23's community provided positive reassurance that alleviated her loneliness.

Marie Anna shared her experience with imposter syndrome and the value of having colleagues who look like her. In addition to accountability, the participants' STEM environment at their HBCUs helped alleviate additional stressors like feelings of being an imposter and how being amongst other Black students helped to combat those feelings.

> Meanwhile, being a [B]lack wom[a]n in STEM imposter syndrome is really strong as I never know if I've gotten an opportunity from my merit or because I'm a [B]lack woman. I do appreciate the fact that I have other colleagues who look like me, though, because it helped me realize earlier than I would suspect most that everyone deals with these thoughts, and they are perfectly natural. I could only imagine how much worse my graduate student experience would have been if I hadn't come to this realization.

Marie Anna appreciated having a group of people who shared the same identity to get her through the tough times when she felt like an imposter. Being amongst her peers helped Marie Anna realize that it is "perfectly natural" to have those thoughts because her peers also shared similar experiences. So, knowing she is not alone in the process helped Marie Anna reframe how she thinks of herself as a BWGS in STEM. In another quote, Marie Anna discussed how being amongst her Black colleagues allowed her to be authentic. She articulated that feeling through an experience she had during her third year of graduate school.

> [In] the third year of my graduate school career, my advisor added more graduate students under him who[m] all happen to be [B]lack. Although this isn't necessarily a singular experience, when everyone under Dr. [Hatfield] (my advisor) is in the graduate student office, I feel like there is an aspect of me that can be more authentic around them. I find the people in this cohort are more real with how difficult coursework is and the imposter syndrome that exists rather than always throwing around big words and trying to seem intimidating.

Showing up authentically as BWGS in STEM can be difficult because graduate students are socialized into thinking they must know everything. However, Marie Anna's cohort, which consisted of other Black graduate students, allowed her to be herself and be truthful about how she managed her coursework without feeling intimidated. Moreover, the Black students in her cohort made Marie Anna feel more relaxed about expressing her feelings of imposter syndrome without throwing around big words.

Kas D shared a similar experience where she felt comfortable being herself without worrying about having to put up a "front" that she knows everything all the time. In her week two blog, Kas D articulated how attending an HBCU helps her feel a "sense of belonging."

> Attending an HBCU has given me [a sense] of belonging. Jedidah Isler University was my safe place where I was able to ask questions and be real with myself and others. I did not have to put up this "front" that I knew what was going on all the time and feared that it would jeopardize or leave room for others to question if I am supposed to be there or major in Biology.

Kas D's quote highlights the importance of having an environment where students can be themselves and ask questions without fear. Kas D's experience is not shared by many BWGS in STEM, especially at different institution types. Furthermore, her HBCU experience seems to have given her room to be herself without any judgments, compartmentalization, or having to "put up a front."

Like Kas D's experience with having Black women in her program, B. Grits shared her experience of being in an environment with other Black women. B. Grits discusses her intentionality behind ensuring that her advisor was a Black woman in her public health program because of the work B. Grits do on her campus. B. Grits articulated:

> So, in the IPH [Institute of Public Health] program here [AEU], [Winter Walker] is over it, she's a [B]lack woman, she started the IPH, the Institute of Public Health. She's Associate Dean of the pharmacy school because she's over the public health. My advisor is a [B]lack woman. That was by choice and on purpose, and intentional. Yeah, like, with the grant that I work with, I see all of the [B]lack women on this campus. And there's a common thread among them. So yeah, I think that the representation is very important. Especially at [AEU] because the majority of the students in STEM fields are women.

B. Grits discusses the importance of representation at her institution because "the majority of the students in STEM fields are women." As a public health graduate student, B Grits sees and interacts with Black women daily in her program and on campus. B. Grits sees and interacts with Black women from different administration levels and has a Black woman as her advisor. I shared in B. Grits' narrative that she oversees a grant that is designed to reduce the inequities of women in STEM, so ensuring she is working closely with Black women in STEM allows her to do the work she desires, which is made possible because of the representation at B. Grits institution and in her program.

In another quote, B. Grits articulated how attending an HBCU was affirming and influenced her well-being.

> I think I've already talked about how affirming attending an HBCU was for me [in] my comments to my week one post... to elaborate on that in reference to my well-being, I would say it was motivational. But different from the motivation I experience in high school. In high school, I was in competition with the white children (that had parents that could help them with HW [homework] or the resources to get them a tutor), and I felt like I had something to prove to them and to my Black classmates who kind of judged me for taking the honors/AP [advanced placement] classes. The motivation I experienced at my HBCU was more of a community... at [Winter University], like all HBCUs, we were cocky! ...like "We are the best AT EVERYTHING, so let's go show the world!" I still felt pressure to do well (i.e., if I lost my scholarship, I was going back home because I didn't have a college fund) but it was a healthier mental space. I also didn't worry as much about my body image. I was still talking about trying to lose weight (that is a complex mental issue embedded DEEP down in there) but I had accepted that I was bottom heavy and that I didn't need to be thin to cheer. So, I ATE... every morning, we went to the cafe after practice, and I did not miss one Soul Food Wednesday! LOL! .

Here, B. Grits talks about how attending her HBCU put her in a "healthier mental space" because she did not have to worry about her "body image," which allowed her to be her authentic self without needing to leave out certain parts of herself. Furthermore, the HBCU experience made her feel "cocky" because she was in an environment where her peers were thriving, which motivated her. Being in an affirming environment led B. Grits to be her unapologetic and authentic self without judgment.

Freddie spoke about the cultural representation she saw on her campus. In her narrative, I shared that Freddie is Nigerian, although she was born in Austria. Being in an environment where her culture is represented influenced Freddie's well-being.

> And I think there is, well, I know there's a huge Nigerian presence here because one thing about Nigerians is that we're everywhere. So, there's always a lot of Nigerians. And I think there might be a Nigerian citizen Association, but I could be wrong. But I do know that there is that sense of familiarity and home with the Nigerian students here.

While the other participants spoke about racial and gender representation, Freddie's culture was represented at her HBCU. This experience made Freddie feel a "sense of familiarity and home with the Nigerian students" on her campus. For a student, especially BWGS in STEM, seeing peers, faculty members, and advisors who share similar identities can help build solidarity

amongst each other and allow them to express themselves easily and without judgment. In the next section, I discuss the different dimensions of peer support and its influence on the participant's well-being.

"There is room for all of us to succeed": The Different Dimensions of Peer Support

Some of the participants call attention to the ways they received support from their peers while pursuing their degrees. They received support through advice and forming study groups. Some of the participant's narratives underscore how more than one person can succeed in an environment despite the competitive nature of a program or the people within the program. For example, Kas D shared how her classmates uplifted her during a difficult time in her program when she could not take her Medical College Admission Test [MCAT].

> . . . Um, and then even with going to [Gladys West Medical College], so this is my first year, and just that support, it hasn't stopped. And I just even think with the students, I actually ended up getting COVID, the week of my MCAT, and I studied with a group of students. Um, it's been like, what maybe like two months and so they were able to take their MCAT [and] I wasn't, of course, I was a little upset about it. But the fact that my classmates, they were like, you know it, [Kas D], it's okay. You never know, like, this is God's timing, this is, you know, everything's gonna work out even if we have to come and study with you. Keep in mind [that] they [have] already taken the MCAT. And just to continue to keep studying with me, I just think that level of support has just been something I have never experienced. And yes, I knew that, you know, they always talk about the support with HBCUs. But what I have experienced has like, it's just wow.

I shared in Kas D's narrative that her future aspiration is to attend medical school, so taking the Medical College Admission Test and getting a good score is needed for her medical school application. Plus, her program is only one year, so she needed to take the test in the allotted timeframe to meet the application cycle deadline. Kas D articulated how her peers supported her when she could not take her Medical College Admission Test because she caught the COVID-19 virus, although she studied for months. Kas D's peers supported her during a difficult time in her program, which is something she had "never experienced" before then and

attributed this experience to her attending an HBCU. Although her peers had already taken their Medical College Admission Test, they still offered to study with Kas D if she needed it.

Another way peer support materialized in the study was by giving advice and passing down information about navigating the system to make the most of the graduate experiences. Passing down information is a part of Black womanhood and has been attributed to their success. B. Grits shared advice with the women in the group about the importance of finding mentors and how to look for different support systems.

> But finding a mentor and a mentor for what you need them for because one mentor, so you have a professional mentor, they're not going to be able to help you with your life transition. So, it's okay to have more than one mentor in different areas on different things. And then also your colleagues. There's been a shift, I think kind for graduate students, but when I first started, um, it was the ones who were just before me, and the ones that I came in with, we were in the fight together. And we drag each other out like I'm not going without you, girl, come on. Um, so I didn't have to rely as much when I felt like I didn't know what was going on and what was coming next, I went to another student, and that's who helped me more so than any of the advisors or mentors [a]t that time, so, um, I think finding that support system… But finding someone, like on your level can be very, very helpful. And I think that's kind of how I go through and that's how my health was protected . . . So that was my recommendation.

B. Grits' quote illustrates that peer support comes in many forms. Her quote underscores how B. Grits' lived experiences were instrumental in imparting knowledge to the women in the group. She shared how they can navigate their graduate experiences while explaining the importance of having a mentor to help them along the way. B. Grits' comments highlight the nuances of peer support. She shared how she went to her peers for information when she "didn't know what was going on and what was coming next," and at that moment, the help she received from her peers helped her more "than any of the advisors or mentors at that time." B. Grits' advice shows another dimension of peer support regarding the socialization process in graduate school. B. Grits spoke about how her colleagues would make sure she was not left behind and how she valued their support because when she did not know what was happening in her

program, she relied on her peers to help her through. In the next section, I discuss how some of the participant's faculty and advisor's actions promoted the holistic well-being of BWGS in STEM.

Faculty and Advisors' Actions Promote Students' Well-being

Going through the rigors of a graduate program can tax one's well-being, and graduate students often neglect their basic needs. Thus, having faculty members who care for their students beyond their academics can be instrumental. Three of the seven participants, Kally, Kas D, and Marie Anna, explicitly shared instances where a faculty or advisor did something deliberate to ensure their well-being was a priority. Some of the ways included incorporating a well-being activity in the curriculum, planning social events, and using prayer to combat stress.

Kally shared a memorable experience she had in her calculus three class where her professor was concerned about their "school-life balance."

> The first memorable experience [at AEU] that came to mind for me was taking my calculus three course. My professor made it an extra credit assignment for us to take the time out of our days to exercise and take care of ourselves. He did thi[s] because most of us would come to class either sleep from pulling an all-nighter on an assignment or whatever else, and he was concerned about our school-life balance. He knew that if he made it an extra credit assignment, we would actually try to do it because we had to document our workout sessions as evidence. It was memorable because he did not have to, but he chose to.

Kally describes how her calculus three professor promoted the well-being of the class. Her Black professor intervened when he saw that the class was sleep-deprived after "pulling an all-nighter on an assignment." Kally's quote emphasized that her professor was more concerned with their school-life balance than their assignments and made a concerted effort to intervene. To ensure that the students took time out of their days to take care of themselves, Kally's professor incentivized their actions and assigned "extra credit" to those who completed the task. Her professor's incorporation of a well-being activity in the curriculum showed that he was more

concerned about their well-being than the assignments. This interaction with her teacher became one of her memorable experiences in her program.

Kas D shared a similar experience at her HBCU with her advisor, a Black woman. In the first week of her program, Kas D's advisor planned a social event after she saw that Kas D was stressed and overwhelmed.

> A memorable experience I have had at my current HBCU has been going to my advisor's office and her welcoming me with open arms. I can talk to her about how I am really feeling, completely judgment-free, and in confidence. I remember walking into her office and feeling so overwhelmed. She reassured me that I would be ok, gave me her personal contact, and offered her office as a safe haven to be able to study.. . She also took it upon herself to coordinate a social event to get our minds off school. From only knowing her for a week and taking the time to really care reassured me that I chose the right place, and I am forever grateful.

Kas D explains how she was comforted by her advisor despite only knowing her for a short period of time. In Kas D's narrative, I shared that she is enrolled in a one-year intensive health science program, so it is unsurprising that she felt overwhelmed in her first week. Because of what her advisor did for her, Kas D felt a sense of belonging, and the care Kas D's advisor showed reassured her.

Similar to Kally's interaction with her calculus three professor, Marie Anna shared a story about one of her professors who prayed for her after feeling anxious before defending her preliminary exam. Marie Anna stated:

> During my second year of graduate school, I had to take my preliminary exams to officially be accepted into the Ph.D. program. The exam is where you are questioned by three professors who are in your specified field of study while your advisor is in the room also watching. Before we started, my professor asked how I was doing, and I told him I was really nervous. He then took me outside and asked if it was okay if we prayed together, which was something I appreciated since we both had a previous understanding that we were both religious. This experience was special to me because I find often time STEM environments tend to be devoid of talk or expression of faith, so I tend to switch on a separate brain when in these environments. However, my faith is one of my largest ways of coping with things, and being able to call upon that during one of the most stressful steps in my graduate career felt really good.

Marie Anna's quote call attention to another part of BWGS in STEM lived experiences and how their faith is instrumental as graduate students in STEM. Expression of faith and STEM are not two topics we hear about from graduate students because more importance is placed upon the production side of the degree as opposed to the religious side. Marie Anna's professor recognized at that moment that she needed a different type of support, and he answered that call. Because of their previous conversations, Marie Anna's professor realized she needed additional support, even if that meant a brief delay in her preliminary exam. The trust between Marie Anna and her professor made him ask her if he could pray for her. At that moment, Marie Anna's well-being was more important than a presentation. Because her professor knew her beyond the classroom setting, he was able to offer the support she needed.

Section Summary

In this section, I shared the participant's experiences regarding some of the positive influences in STEM environments at HBCUs. I discussed how HBCUs provided an environment where the women saw their race, gender, and culture represented. Having this representation allowed the women to feel affirmed and show up authentically. I also provided instances where the participants were supported by their peers as BWGS in STEM to ensure their success.

The women described the varying ways they received support from their peers. Receiving advice from a near-peer can go a long way when completing their graduate degree. Like B. Grits mentioned, when she did not know what was happening, she would seek out her peers first and foremost to help her understand. Furthermore, the HBCU experience affirmed the women's different identities and pointed to the richness of being amongst other students with different experiences. Kas D's experiences at her HBCU pointed to the diversity she saw amongst the Black women in her program, which served as their strengths.

Lastly, I shared how Kally, Kas D, and Marie Anna's professors and advisors planned and implemented activities centered on their students' well-being. Advising and teaching during a pandemic are not easy; thus, having an advisor or a professor who is intentional about their students' well-being is important because what they do outside the classroom has implications for how they show up inside the classroom. In the next section, I discuss some of the barriers BWGS in STEM at HBCUs experience that detracts from their well-being.

Barriers to BWGS' in STEM Holistic Well-being at HBCUs

In the previous section, I discussed some of the positive influences of the STEM environments at HBCUs on the well-being of BWGS in STEM. Based on the participants' experiences, STEM environments at HBCUs impacted their well-being negatively because of the lack of structure and direction they received in their programs. Some of the barriers the participants shared include needing more direction from their research mentors and STEM discipline about the graduate school process, including how to complete the dissertation. In addition, some of the participants spoke to needing more professional development activities that are broader than pursuing academic jobs after degree completion.

Challenges and roadblocks, I need more than what I am getting: Expressing Frustrations about the Graduate School Process

Pursuing a graduate degree can be challenging, especially when programs do not give students the direction they need. Some of the challenges the participants shared include needing additional support from their programs to understand the graduate process, support from their advisor about how to structure the dissertation and preparing them for life after graduate school. For example, Freddie shares what is lacking in her graduate process.

> I need the school itself, like the school of The FCMs to at least tell me that if this is what you're doing, this is what you can expect. And this is what you need to do to achieve that.

> And I think that that is just severely lacking… So I feel like just a little, a little support system, a little tiny support system just to tell us, this is what you can expect that [can] go a long way into relieving some of the pressure that we have on us.

Freddie's statement calls attention to what she needs in her program to make progress and relieve some of the pressures she is experiencing in her program. She needs specific directions from her program about what to expect when she chooses a particular path. Receiving better support from her school about their expectations might help relieve "some of the pressure" Freddie is experiencing in graduate school. The challenge is that many programs are not very structured, making it impossible for students to navigate the landscape of graduate school.

Completing the dissertation is another part of the graduate school process where graduate students need more direction and support. DrPH23 shared her experience regarding completing her dissertation and how she lacks clear direction from her advisor about what steps to take to complete her dissertation.

> I think the lack of support from your professors, I know working, I've just finished, I'm starting [to] work on my dissertation for my DrPH. And one of the things is like they throw you in for the wolves and trying to figure out what steps you're going to take to either write it [the dissertation], [and] do your data collection, it's like you're all on your own. And when you meet with them, if I, okay, [ask] what's next? What have you done, and there's no support. And so, with that lack of support, a lot of us, especially [B]lack women, we have other things at home. So, it's like, I thought she [my advisor] would be there as my support system, you know, telling me, hey, yeah, that looks fine to do this or giving me advice. It's like, oh, that's not good. You try to figure out what you want to do.

DrPH23 is at the beginning stages of her dissertation. However, she does not feel fully supported by her advisor and needs more direction about the dissertation and the data collection process. Without her advisor's guidance, DrPH23 feels like she is alone in the process. Moreover, when it comes to figuring out what steps to take to either write the dissertation or collect data, DrPH23 feels like "they throw you in for the wolves." Like DrPH23, Marie Anna shared an encounter she had with her advisor about her research:

> Elaborating on what [DrPH23] said, I think, I also have an experience of like my professors like, I mean, I meet up with them weekly, but like when my advisor, but it's just like, they kind of just don't even remember your research. And they expect you to kind of like, figure it out on your own.

Marie Anna shared how her advisor hardly remembers her research despite meeting with them every week. Like DrPH23's experience, Marie Anna feels like she must figure out how to do her research on her own without the help of her research professor. Like DrPH23, Marie Anna's experience with her advisor has not been helpful. Both participants are trying to figure out how to write their dissertation on their own as opposed to receiving guidance from their advisors. Kally further elaborates how not knowing her next steps makes doing her research challenging, in addition to the pressure and expectations from her program about her knowledge. She shared:

> I feel like my main problem is not really knowing what my next step is, which makes doing my research a bit more challenging. Because I really don't see what my end goal is that make[s] sense just to piggyback off what [Freddie] said. Um, so that's where my challenge comes in not knowing what I want to do after I finish this process. And also, I think, for me is like the pressure and expectations like placed on what you should know, what you should be doing because I switch[ed] from my undergrad degree, which was primarily chemical engineering. So, our focus is on chemicals, like understanding how they react to make stuff on a batch scale, like a large scale. And I switch to biomedical in I don't really have a lot of biology background or understanding, like, how that cancer stuff [works on] cells, I don't really have much of that. So, transitioning from a chemical background to a biomedical background, and I do a lot of like cell culture is like, like, within the first year, like, I feel like I was expected to know a lot of the stuff that I didn't. So that pressure, in addition to like, trying to, like do experiments and stuff, not even knowing where to start was a bit like, challenging. But other than that, I feel like my advisor is somebody that I can talk to. I just don't know how to bring it up.

Not knowing her next steps makes it challenging for Kally to do research. Furthermore, transitioning from a chemical engineer to a biomedical engineer major made it difficult for Kally to fully grasp the concepts associated with her new discipline. As a chemical engineer, Kally focused more on chemicals and how they react to make items on a batch scale than on understanding the biological properties. However, now that Kally has switched to being a

biomedical engineer, she needs to understand concepts like cell culture and other biology-related concepts. Trying to learn these new concepts and simultaneously conducting her research without the guidance of her advisor made it challenging for Kally. There are certain fundamentals a graduate student needs to know regarding conducting cell culture, and that knowledge often comes from their research advisor. So, not having guidance early on in their program can become frustrating and increase graduate students' stress levels. Therefore, having an advisor or principal investigator (PI) who takes the time to educate their graduate students about certain processes can lessen their stress.

Freddie's need differs slightly from Kally's and the others in that she asks for a "little bit of empathy" because she is "terrified of what the future holds."

> I think a little bit of empathy goes a long way, because I am terrified of what the future holds. And I just need someone who understands that and can kind of tell me anything of what I might expect. Like, I'm not saying like [to] lie to me, but at least tell me, oh, these are the options that you have, if you decide to go on this route, versus if you decided to go that route. And I think that is severely lacking.

Asking for empathy and more direction emphasizes that students are not getting what they desire out of their programs. Freddie is terrified of what the future may hold for her, which can possibly affect her well-being negatively. She needs more directions to decipher what will happen if she chooses a certain path compared to another. Freddie is not alone in her requests about needing additional support and direction. DrPH23, Kally, and Marie Anna all shared their frustrations and viewpoints about their needs. Next, I will discuss the varying ways graduate students are funneled into one type of career pathway.

"I'm doing all this work just to be stuck here in academia": Varying Perspectives on Career Socialization

Becoming a researcher and pursuing the professoriate after degree completion is often the focus of graduate programs. When it comes to professional development, most of the talks are centered around pursuing academic jobs instead of providing graduate students with different career options. Three of the seven participants, Kally, Marie Anna, and Freddie shared that most of their programs encourage life as an academic with no other options. In addition, Freddie discussed how she is being pressured into pursuing her Ph.D. after completing her master's program. In our first focus group, Kally shared how she mostly hears about academic jobs from her engineering professors.

> Because like when you hear professors talk, I don't know if it's in all STEM areas, but in engineering, like the paradigm is towards academia, you're going to get your graduate degree do this postdoc and go be a professor somewhere and they do frown upon internships. They want you to do the whole graduating and like your five-year term, and you can't go past that or whatever. And it just makes it a little bit less enjoyable, like dang I'm doing all this work just to be stuck here in academia like I do not want to see another classroom after I'm done with this, so yeah.

Kally's quote highlights how her program's paradigm preferences going into academia after graduate students complete their degrees. However, the time constraints Kally's engineering program enforces make it impossible for students to consider other options. Participating in internships is one way graduate students can get additional experiences that are outside the classroom; however, in Kally's program, internships are "frown upon" which can leave the students feeling like they are "stuck" in academia or make pursuing the degree "less enjoyable." Furthermore, Kally's program's enforcement of graduating in five years makes it difficult for students to explore other interests. Similarly, Marie Anna feels like everyone is being funneled into academic positions after finishing their degrees:

> Because I feel like, in my position, everyone is just trying to funnel you into doing a postdoc and becoming a professor. And that's cool for a lot of people. But most PhDs aren't going to become professors, there [are] just not that many jobs, and there [are] so many jobs out there that hire PhDs that will pay you a lot more than like, professors. But that never really gets talked about, at least in my like field.

Marie Anna shared that although her program funnels students into academia after completing their degrees, most graduate students do not want to become a professor. For example, in Marie Anna's narrative, I shared that her career trajectory is to work outside of academia. Working outside of academia provides more flexibility and allows Marie Anna to be more creative. Additionally, Marie Anna's quote also calls attention to the fact that non-academic jobs compensate their employees more than academic jobs; however, the topic of compensation "never really gets talked about." Like Kally, Marie Anna wants her program to do more about how graduate students are socialized to pursue only one type of career and instead provide graduate students with different options to make a more informed decision.

In another quote, Marie Anna shared what she thinks would be helpful in her program as a BWGS in STEM regarding the job market.

> I think what would be helpful for grad students especially, it's just being like, hey, like, there's a world out there and like the school stuff like it, it this isn't the real world, there are other people who hire you outside of academia. And if you like academia, that's cool. But like, people function totally differently than how they do in academia. And I think just showing that to students ahead of time would be helpful because I think you get so funneled into academia, especially because you've just been doing school all of your life, you don't even know like, what is out there.

Marie Anna's quote speaks to how being in school and taking classes is not "the real world," and that it is imperative that programs talk to students earlier in their programs about the different options for their career trajectory. Work in academic and non-academic environments is different. It would be helpful for graduate students to have an idea of these different

environments to help them make informed decisions about what to do after completing their degrees.

In contrast, Freddie shared a different type of pressure she faces as she nears the end of her master's program. Freddie discusses being pressured by multiple sources to pursue her Ph.D. after completing her master's degree and how those pressures affect her mental well-being.

> And then I'm also hearing pressures of both my professors, my classmates, [and] my parents, trying to push me towards a Ph.D. I don't even know what I'm doing. Honestly, I don't know what I'm doing. And I don't know what I'm going to do after I graduate. And the fact that there is that impending thought of a Ph.D. right hanging right over my head. I feel like I'm just ready to let go of everything and just disappear. So, the combination of everything is kind of being very negative for my mental health and my mental well-being.

Although she does not know what is next after graduation, Freddie shared that she receives pressure from multiple sources to pursue her Ph.D., and it is negatively impacting her mental health and mental well-being. In Freddie's narrative, I shared that if she decides to pursue a Ph.D., she will be the first doctor in her family. The impending pressure of not knowing what her next step will be, in addition to hearing that she should pursue the Ph.D., is affecting Freddie's mental health.

The women in this section discussed how their programs focus only on academic careers instead of providing their students with different career options. Internships most often can help graduate students decide what type of career is best for them. However, Kally mentioned how her program frowns upon internships and enforces graduating in five years. Although some graduate students may want to pursue the professoriate or research route, others tend to dread being in academia after spending so many years pursuing their degree. Marie Anna provided a different perspective regarding academic and non-academic working environments and why it is essential to be aware of both.

Theme Summary

The narratives included in this section underscored the positive influences and the barriers of the STEM learning environment at HBCUs. Some of the positive influences discussed illustrate an environment where the participants were affirmed in their different identities. In addition, the actions of their faculty and advisors allowed the participants to engage in activities that promoted a healthy lifestyle which was essential to their holistic well-being.

Lastly, I discussed some of the barriers the participants experienced that created unnecessary pressures while matriculating through their programs. The participants speak to needing more direction about the graduate school process, including the dissertation, what to do after completing their degree, and more career options that did not solely focus on academic careers.

Chapter Summary

The purpose of this chapter was to analyze the meaning-making processes and experiences of the seven Black women graduate students in STEM with close attention to emphasizing the stories and examples that modeled how they thrived as Black women graduate students in STEM. In addition, the negative cases were also covered to show the dynamic nature of the seven participants' experiences as Black women graduate students in STEM. Two major themes were generated across the participant's narratives: (1) Being in a “good headspace”: Black women graduate students in STEM meaning making process and the strategies they enact to achieve holistic well-being; and (2) The influence of STEM learning environments at HBCUs on the holistic well-being of Black women graduate students in STEM.

By exploring the data, we learned the different ways these Black women graduate students in STEM make meaning of their well-being, how they define holistic well-being, and

the components included in their definitions. Their narratives also revealed the internal processing they engaged in to achieve holistic well-being and their purpose in their liberation and healing. Some of the factors that depicted these outcomes include differentiating between self-care and self-maintenance, reframing how they use the strong Black woman (SBW) and the superwoman (SW) stereotypes, having professors and advisors' model how to take better care of themselves by implementing different strategies in the curriculum, seeking therapy, and expressing their emotions to counter the narrative around suppressing their emotions. In addition, I discussed the participant's frustrations with the graduate school process and career options. In the final chapter, I draw upon the psychological framework of radical healing (PFRH) and the participant's narratives to further discuss implications for research and practice that are internal and external to higher education.

Chapter Six: Discussion and Implications

In this chapter, I summarize the study and provide an overview of the findings. I also create connections between different parts of the study to answer my research questions. Finally, I offer recommendations for Black women graduate students in STEM and implications for the academy and research.

Summary of Study

This study aimed to explore the meaning-making process of the holistic well-being of Black women graduate students (BWGS) in STEM. Generally, the literature on Black women graduate students in STEM focuses on their negative experiences without balancing those negative experiences with studies about their well-being (Alexander & Bodenhorn, 2015; Alexander & Hermann, 2016; Joseph, 2012). Moreover, the literature on well-being tends to focus heavily on the social sciences (Haynes et al., 2012; Schmidt & Hansson, 2018; Sverdlik & Hall, 2020) as opposed to the natural sciences like STEM or use ambiguous terms to classify disciplines (Hunter & Devine, 2016). In addition, the research on the graduate experience of Black women in STEM focuses on the racially chilly and racially hostile climate of the STEM learning environment, which is a barrier to Black women's success (Alexander & Hermann, 2016; McGee et al., 2019).

Black women graduate students in STEM need radical healing because of the sacrifices they make for others to the detriment of their well-being. Radical healing is grounded in health promoting practices and help People of Color and Indigenous individuals (POCI) move towards healing and liberation (French et al., 2020). Furthermore, French and colleagues defined radical healing "as being able to sit in a dialectic and exist in both spaces of resisting oppression and moving toward freedom" (p. 24). BWGS in STEM have juggled living in the state of oppression

while simultaneously striving for freedom. The STEM learning environment is a sight of oppression for Black women graduate students and the strong Black woman (SBW), and superwoman (SW) stereotypes used to describe them is another form of oppression Black women have to overcome.

The strong Black woman and the superwoman stereotypes classify Black women as self-sacrificing, resilient, and emotionally suppressed (Donovan & West, 2015; Woods-Giscombe et al., 2016) and Black women have used these different stereotypes as coping mechanisms. The strong Black woman and superwoman stereotypes materialize when BWGS in STEM suppress their needs and emotions to benefit others, undertake the labor to create a welcoming environment for other Black students, or the ways in which Black students engage in race-based conversations to address racial incidents in order to uplift their community (Dortch, 2020) instead of their programs and institution doing the work. Taking on these different types of labor, although sometimes empowering for Black students, can be burdensome because the systemic racism cannot be fixed by the very population that racism is subjugating. Thus, upholding the strong Black woman and the superwoman stereotypes is a prime example that shows how Black women graduate students in STEM sacrifice themselves and their well-being to benefit others and why radical healing is critical for them to thrive.

HBCUs served as the site for reporting BWGS' in STEM stories because of their rich history and family-like supportive environment (Fries-Britt et al., 2010; Lockett et al., 2018; (Perna, Lundy-Wagner, Drezner, et al., 2009; Perna, Gasman, Gary, et al., 2010). The reality of BWGS in STEM is that their stories are often viewed using a lens that assumes all BWGS in STEM are suffering, given the bodies they occupy. Contrary to that belief, BWGS in STEM stories can benefit from using a framework that foregrounds their strengths which is a source of

knowledge. As such, this study aimed to center and amplify BWGS' in STEM holistic well-being and the strategies they have used that contribute to their success and radical healing. The primary research questions were:

4. How do Black women in graduate STEM programs at HBCUs make meaning of their holistic well-being?
5. In what ways have STEM learning environments at HBCUs influenced Black women graduate students' holistic well-being?
6. What strategies, if any, have Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being?

Given that Black women's experiences are a source of knowledge, I used Black feminist epistemology (Collins, 2000) to underline my positionality as a Black woman researching other Black women. Collins' dimensions of Black feminist epistemology (BFE): lived experience as a criterion of meaning; the use of dialogue in assessing knowledge claims; ethics of caring; and ethic of personal accountability, foregrounded how I interacted with the women in my study because I recognized that their experiences were valuable and sharing their stories is a form of knowledge production. The ethic of caring dimension of Black feminist epistemology helped me understand the uniqueness and nuances in the women's stories and experiences, as they pursued a STEM discipline.

French et al.'s (2020) Psychological Framework of Radical Healing (PFRH) was the conceptual framework used in this study and chosen to align with the Black feminist epistemology. The original goal of the framework centers on People of Color and Indigenous individuals' (POCI) strengths and how they attain radical healing and liberation which was appropriate to study the holistic well-being of BWGS in STEM. The PFRH builds on existing

frameworks rooted in social justice education and activism to describe how radical healing transforms POCI's lives (French et al., 2020). Moreover, the framework integrates elements of liberation psychology, Black psychology, ethnopolitical psychology, and intersectionality which foregrounds how People of Color and Indigenous individuals' different identities assisted in their healing and liberation. Using the radical healing framework to study the holistic well-being of BWGS in STEM is fitting to provide insight about the specific activities they engage in that center their wellness and how those activities promoted radical healing. Moreover, this framework that positions POCI's various identities, their communities, and their joy as strengths that are equally important is not often seen in frameworks that study the experiences of Black women.

The PFRH and my qualitative approach guided the data collection and analysis for this study. Because of the framework's strength-based approach to studying People of Color and Indigenous individuals' (POCI) experiences, it is a suitable one for reporting BWGS' in STEM narrative that is not steeped in brokenness and negativity because the framework helps portray BWGS' in STEM experiences where they are thriving instead of struggling.

Reporting BWGS' in STEM stories and taking a strength-based approach to studying the holistic well-being of BWGS in STEM required a methodology that amplified their experiences. I used narrative inquiry because it aims to understand people's lived experiences through dialogue and conversations (Clandinin, 2013). Narrative inquiry prioritizes storytelling, an essential part of African American culture and how information is passed down. Because of its emphasis on people's lived experiences and dialogue, I used narrative inquiry methodology because it coincides with the lived experience as a criterion of meaning, and the use of dialogue in assessing knowledge claims dimensions of Collins' (2000) Black feminist epistemology, my

epistemological approach, and the PFRH conceptual framework. BWGS in STEM benefited from using these avenues to study and report their stories regarding their well-being and liberation because they allowed the women engaged in authentic conversations about their lived experiences.

I recruited seven BWGS in STEM to participate in the study. The participants in this study represented four different historically Black colleges and universities (HBCUs) primarily found in the southern part of the United States. I limited my recruitment to HBCUs because of their rich history. HBCUs graduate a higher percentage of Black women with a STEM degree than any other institutional type (Borden & Brown, 2014; Perna et al., 2009). HBCU's rich history and familial environment proved to be the ideal environment to study the holistic well-being of BWGS in STEM. The women represented a variety of STEM disciplines (e.g., health science, biomedical, robotics, engineering, public health, and biology), graduate level (e.g., masters and doctoral), and they all self-identified as Black or African American.

These BWGS participated in two 60- to 90-minute in-depth, semi-structured focus groups via Zoom and blogged for four weeks using the WordPress platform. I used the first focus group to initiate community building with the BWGS. In addition, I allowed the women to ask questions about the research process. Through this process, I gained insight into the BWGS' STEM journey, their experience with community building at HBCUs, their understanding of the strong Black woman and superwoman stereotypes, and their knowledge about holistic well-being. In the second focus group, I expanded on what was learned in the first focus group and incorporated the information from their blogs to interrogate how they made meaning of holistic well-being. They blogged for four weeks, answering questions about community building, their HBCU experience, well-being, and overall STEM journey as BWGS in STEM. Using the focus

groups, I encouraged the women to tell their authentic stories because their lived experiences are a valid source of knowledge. Coupled with narrative inquiry, the focus groups served as the conduit for the women's storytelling because the conversations that occurred amongst the women built upon their experiences as BWGS in STEM. Both focus groups were recorded via Zoom and transcribed by a third party.

The data were analyzed using Braun and Clarke's (2006) six steps of thematic analysis and Bingham and Witkowsky's (2021) five-cycle process. Both processes were useful because they help me track and report the women's stories efficiently and in an organized manner. The analysis process required continual engagement in the study to fully understand the participant's narratives about the meaning-making process of holistic well-being as BWGS in STEM. Bingham and Witkowsky's (2021) five-cycle process helped deepen my engagement with the data and kept me organized. To ensure my reporting accurately depicted their lived experiences, I engaged in member check-in, where I sent the participants a summary of their narratives, and I shared a summary of a theme and its raw data for their input. Member check-in was necessary because the participants' knowledge and stories took precedent in my analysis, and their feedback was essential to the data analysis process. Additionally, the member check-in served as a point of clarification to ensure the participants' voices were amplified and their stories told accurately.

Overview of the Findings

The findings of this study produced two central themes that answered my research questions: (1) Being in a "good headspace": Black women graduate students in STEM meaning making process and the strategies they enact to achieve holistic well-being; and (2) The influence

of STEM learning environments at HBCUs on the holistic well-being of Black women graduate students in STEM.

Theme 1: Being in a "good headspace": Black Women Graduate Students' in STEM Meaning Making Process and the Strategies they Enact to Achieve Holistic Well-being

This theme answered research questions one and three because the data revealed that the women's engagement in internal and external processes to make meaning of holistic well-being was intertwined. How the participants defined holistic well-being informed the strategies they enacted to achieve holistic well-being. In Chapter Five, I offered subthemes that illustrated the participant's meaning-making process and strategies, including: defining holistic well-being and its components; internal processes to live out holistic well-being; and strategies BWGS in STEM enacted to achieve holistic well-being.

In defining holistic well-being and its components, the participants shared their definition of holistic well-being, which consisted of the interconnection of their mind, body, and soul. Freddie included happiness as a component while B. Grits had social interaction and defined holistic well-being using a public health lens. All the participants took a strength-based approach to define holistic well-being, which diverged from how the literature reports graduate students' well-being. I expanded on how the participants achieved holistic well-being, which was notably away from academic spaces and often with their families or when they were on vacation. Freddie and B. Grits both shared that achieving holistic well-being is like a release and makes them feel happy. On the other hand, Kally discussed not knowing if she ever reached holistic well-being, which became her goal for the year.

Under the subtheme of internal processes to live out holistic well-being, I included narratives of how the BWGS distinguished between self-care and self-maintenance. Initially,

their definition of self-care was their performative actions, which included getting their hair and nails done. However, living in a pandemic helped them redefine self-care, which now meant spending the day doing nothing, a sentiment shared by both Kas D and B. Grits. Resting and reframing the SBW and SW stereotypes were also a part of their internal processing to achieve holistic well-being. Freddie used resting to destress while DrTNS2022$ rested by being still, which allowed her to be present in her life. Although the forms presented are different, these BWGS made a conscious effort to care for themselves. Reframing the SBW and SW stereotypes delineated the women's misalignment with these stereotypes. The women discussed their misalignment with the strong Black woman and the superwoman stereotypes by calling out how problematic "being strong" is when it is harmful to their well-being. Marie Anna prefers to be called "soft" if their well-being is prioritized. Kally shared a different perspective on the stereotypes regarding emotional suppression and that suppressing one's emotions is learned at a young age in the Black community. However, Kally discussed that she is trying to unlearn that tactic because emotions are valid.

Strategies BWGS in STEM enacted to achieve holistic well-being is the third subtheme that answered research question three. The BWGS in STEM used conventional and non-conventional ways to live out their holistic well-being. The activities included going to therapy, creating boundaries, and engaging in activities outside the STEM learning environment. Notably, the strategies the women used were away from the academic space. However, those activities helped the participants feel rejuvenated and refreshed once they returned to their respective educational areas.

The many dimensions of using therapy underscored the variety of ways these BWGS in STEM used therapy and its outcome. Therapy helped DrPH23 create balance in her daily life

after realizing how many things she must juggle as a student and a professional. Seeing a therapist helped the participants restructure their lifestyle and help maintain their mental health. In addition, therapy helped the women figure out why they reverted to shutting down when they encountered difficult situations. Depending on their needs, therapy provided the participants with different results, while simultaneously normalizing seeking therapy as graduate students. Setting boundaries to prioritize their needs illustrated how the participants became empowered to say no to people and things that distracted them from achieving holistic well-being. Saying no to people helped Kas D, Freddie, and DrPH23 reclaim their time to focus on their needs. Freddie shared how saying no helped her to relax and meditate, which kept her in a good headspace. Kally, however, created the boundary between her personal life and school life because her identity was tied to her academic and school merits. You bring me joy: Participating in non-academic activities, focused on the participants' activities that promoted their well-being. Mainly, DrTNS2023 and Kally used their Saturdays or the sabbath to recenter and refocus. During this time, the participants deliberately participated in non-school and research-related activities. Kally called her Saturdays her “non-negotiable” time. Freddie’s activity served a dual purpose because the items she made when she crocheted, she gave as gifts.

Taken together and based on their narratives, my study adds to the literature on well-being by providing a definition for holistic well-being based on the experiences of Black women graduate students in STEM. Holistic well-being is a state of happiness, being in a “good headspace,” having good social interactions, setting boundaries, and creating work-life balance that centers on the connection between ones mental, spiritual, emotional, and physical state to promote living a life filled with joy, and authenticity.

Theme 2: The Influence of STEM Learning Environments at HBCUs on the Holistic Well-being of Black Women Graduate Students in STEM

The second major theme was the influence of STEM learning environments on the holistic well-being of Black women graduate students in STEM. Theme two answered research question two and was comprised of two subthemes. This theme highlighted the positive influences and barriers of HBCU STEM learning environments that contributed to or detract from BWGS' in STEM holistic well-being. The subthemes that comprised this theme were: positive influences at HBCUs that promote holistic well-being; and barriers to BWGS in STEM holistic well-being at HBCUs.

The first sub-theme, positive influences at HBCUs that promote holistic well-being, comprised of three subsections and focused on how the participants' identities were affirmed at their HBCUs because they saw people who shared their different identities, how their peers supported them, and how some of the participants' faculty and advisors' actions promoted their student's well-being.

The first subsection "My existence was affirm[ed] at my HBCU": Shared identities build solidarity and provide an affirming environment, encompassed narratives from some participants that highlighted how seeing their race, gender, and culture represented in their programs affirmed their identities as BWGS in STEM. For example, Kas D commented that her program included Black women from different backgrounds and how their differences served as their strengths. B. Grits, on the other hand, shared how she was intentional in making sure that her advisor was a Black woman and that she interacted with Black women from different administrative levels every day. Meanwhile, Marie Anna and Kas D stated how having Black students around allowed

them to be honest about their experiences without having to pretend or put up a front about their knowledge. As a result, having this experience helped the participants show up authentically.

The second subsection, “There is room for all of us to succeed”: The different dimensions of peer support demonstrated another positive influence of the HBCU STEM learning environment. For example, Kas D shared how her classmates supported her when she could not take the Medical College Admission Test (MCAT) after catching the COVID-19 virus. Kas D’s classmates offered to continue studying with her after their exams. Her classmate’s actions uplifted her spirit at a crucial time. B. Grits commented that it was her peers whom she went to when she did not know what was happening in her program, and they helped her more than her advisors or mentors.

The third subsection, Faculty and advisors’ actions promote their students’ well-being draw connections between the participant’s well-being and their faculty and advisors’ efforts. Kally, Kas D, and Marie Anna shared stories about these different instances. For example, Kally’s professor incorporated a well-being activity in their curriculum and incentivized it with extra credit. On the other hand, Marie Anna’s professor prayed for her before her preliminary exam after noticing Marie Anna’s anxiousness. Kas D’s advisor decided to plan a social event as a stress reliever for Kas D. As a result, the participants felt like they were seen as more than a student. Their well-being was important than an assignment.

The second sub-theme, barriers to BWGS in STEM holistic well-being at HBCUs, demonstrated some of the participants’ frustrations with their programs and career trajectory as BWGS in STEM, and comprised of two subsections. The first subsection, Challenges and roadblocks, I need more than what I am getting: Expressing frustrations about the graduate school process, focused on the participants’ needing to know more about the graduate school

process and expectation from their programs and wanting more direction from their advisors to complete the dissertation. Marie Anna and DrPH23 commented that they needed more direction while conducting their research and wrote their dissertation because they felt they were left alone to figure it out. As a result of their frustrations, the participants were overcome with stress. Additionally, Freddie asked for empathy and support from her program because she did not know what was next after completing her degree.

The second subsection, "I'm doing all this work just to be stuck here in academia": Varying perspectives on career socialization calls attention to how graduate students are socialized into one type of profession, the professoriate or research. Marie Anna and Kally commented how the paradigm in their programs when careers are discussed is towards staying in academia. However, only some students who graduate want to pursue academic jobs. The participants discussed wanting other options, so they would not feel pressured into pursuing the professoriate or research. Marie Anna suggested that a part of the socialization process should include learning about working environments that are external to academia because they are entirely different.

Discussion of Research Questions

The purpose of this study is to examine how BWGS in STEM make meaning of their holistic well-being. Particular attention was paid to how the participants defined holistic well-being, the strategies they used to achieve holistic well-being, and how the STEM learning environment at HBCUs influences their well-being. I discuss how these data addressed each research question in relation to the extant literature. I then give recommendations for BWGS in STEM, the academy, and for research.

How Do Black Women in Graduate STEM Programs at HBCUs Make Meaning of their Holistic Well-being?

My study adds to the literature by explicitly sharing when BWGS in STEM achieve holistic well-being based on their definitions. For the women, being away from their academic spaces and with their loved ones is when they achieved holistic well-being. Freddie achieved holistic well-being when she visited her homeland of Nigeria during the holidays, where she saw her family. Seeing her family made Freddie feel happy and calmer. Similarly, B. Grits experienced holistic well-being while on vacation and in the company of her loved ones, which included her partner, her family, and her friend. Both women had similar experiences where being with their families made them feel whole and happy because they were in a nurturing environment. Based on their narratives, academic spaces are not equipped for them to achieve holistic well-being while simultaneously pursuing their degrees without returning to home spaces.

In congruence with positive psychologists and how they define well-being, the participants' definition of holistic well-being used a strength perspective that coincides with the literature on well-being that human lives are more than their negative experiences (Diener, 1984; Keyes, 1998; Ryff, 1989; Seligman, 2018; Witmer & Sweeney, 1992). Their definitions also included similar components used by positive psychologists who previously studied well-being. For example, Marie Anna, Kally, and B. Grits' explained that their holistic well-being comprised of their mind, body, soul, and spirit because they are interconnected, which mirrors the Wheel of Wellness model holistic approach (Hattie et al., 2004; Witmer & Sweeney, 1992). Freddie and B. Grits also said that holistic well-being is being in a good headspace, having good social interaction, and being happy, which is also congruent with the Wheel of Wellness model.

The Wheel of Wellness model incorporates five life tasks: friendship; love; self-definition; spirituality; work and leisure; and, self-direction (Hattie et al., 2004). The life tasks are interconnected and interrelated because they are characteristics of healthy functioning and a major component of wellness. The self-direction life task was further divided into 12 additional life tasks including but not limited to self-care, emotional awareness and coping, cultural identity and stress management (Hattie et al., 2004). The life tasks discussed above in the Wheel of Wellness aligned with the participants' narratives about their holistic well-being. Each of the life tasks covered in the Wheel of Wellness model rung throughout the women's narratives. Under the self-direction life task, the women articulated that having peers and faculty members who shared their gender and cultural identity influenced their well-being positively. Furthermore, friendship and love were at the core when the women spoke about their community and how they contributed to their well-being.

Based on the women's experiences, their holistic well-being required multiple dimensions that are intertwined to achieve holistic well-being and they interact dynamically with other entities like their family, education, and community. The women in the study explicitly stated how their community and family contributed to their achieving holistic well-being and helped to reduce their stress levels or stress management (Hattie et al., 2004). Furthermore, holistic well-being positioned the women to reflect deeply and take actions towards prioritizing how they care for themselves.

In addition, Keyes' (1998) concepts of social well-being included social integration, the degree to which one feels like they belong to their communities and society, aligned with B. Grits definition. Diener's (1984) subjective well-being, which relies on the standard individuals hold to measure what they consider a good life, also confirmed how my participants defined

holistic well-being. Making meaning of holistic well-being was multi-dimensional and encompassed deep reflection and, at times, resistance to how they were portrayed as BWGS in STEM. Each participant's definition of holistic well-being or well-being in general confirmed but also diverged from how the literature reported well-being. Whereas the literature published in the medical sciences measured well-being by looking at students' psychological distress (Dyrbye,Thomas, Eacker, et al., 2007; Dyrbye, Szydlo, Downing, et al., 2010), the participants measured their well-being based on what makes them feel happy, which lessens their stress levels.

The Wheel of Wellness supports the idea that viewing the person as a whole benefits their well-being (Hattie et al., 2004). My study on the holistic well-being of BWGS in STEM was congruent with the idea above because viewing the person as a whole provides a better understanding of the totality of their experiences and how those experiences influence their well-being. The tendency for the women to view their well-being as a source of strength and not from a vantage point where they are stressed or exhausted points to how they value their well-being and living a lifestyle that centers their wellness. Studying BWGS in STEM well-being moves away from damage-centered research, where Black women are portrayed as broken or defeated (Tuck, 2009). My study points to how the women are refuting the narratives that study graduate students' well-being from a place of stress, psychological distress, or exhaustion. Instead, graduate students' well-being, especially BWGS in STEM, should be researched without centering their trauma and stress.

Another side of the meaning-making process for these BWGS in STEM was taking part in internal processing, which gave them a new outlook on holistic well-being. Distinguishing between self-care and self-maintenance, resting, and reframing the narratives around the strong

Black woman (SBW) and the superwoman (SW) stereotypes was how these women engaged in internal processing that promoted their holistic well-being intentions. Because this study occurred while we were experiencing a pandemic, the pandemic sometimes served as the impetus for change and how the women became critically aware of their circumstances while revealing the effects of racism which Shavers and Moore (2014) referred to as double-edged sword. Congruent with #ShutDownAcademia and #ShutDownSTEM during the pandemic, the women decided to prioritize their well-being by resting. As BWGS in STEM and due to the demands of their programs, resting may not be a priority but is a necessity to ensure they are recharging for the work they are doing as women and scientists. Contrary to McGee et al.'s (2019) study where Black graduate students sought success over taking care of their mental and physical health, my study contributes to the literature by illustrating that the women demonstrated how they prioritized their self-care and well-being as opposed to pushing for success and seeking to meet the demands of their programs which could be costly to their well-being.

Given that these BWGS in STEM can hardly find the time for their needs, living and going to school during a pandemic helped change their relationship with how they thought about self-care and self-maintenance which was instrumental in helping to reduce their stress levels. Although previous literature has demonstrated the many stressors graduate students endure that affects their well-being in their programs like figuring a good work-life balance (Cabay et al., 2018; Evans et al., 2018; Martinez et al., 2013; Schmidt & Hansson, 2018), the data from my study detail how the women were working towards shifting their views on work-life balance by engaging in self-care activities that can reduce the stress and pressure they faced daily as graduate students. By shifting their thinking around how they defined self-care, Kas D and B.

Grits realized that self-care is doing the things that help them reenergize for their work as BWGS in STEM. In hearing directly from the participants about how they are distinguishing between self-care and self-maintenance, we are also able to hear how they are creating a good work-life balance as Black women and graduate students. Knowing how and when to shift their mindset is a skill that can benefit current and future BWGS in STEM and how they achieve holistic well-being.

Another contribution my research makes is in how BWGS in STEM resist the John Henryism ideology where Black graduate students and postdocs seek success to overcome chronic stress by working twice as hard without safeguarding their mental or physical health (McGee et al., 2019). Some of the participants, such as Freddie and DrTNS2022$, outrightly chose to rest to combat the John Henryism ideology. Before this finding, the narrative around BWGS in STEM was to work hard and push through to the detriment of their well-being. However, some participants illustrated how that notion is archaic and needs to change. Resting promotes holistic well-being, and although this act is not something BWGS in STEM get the chance to do often, the BWGS in my study modeled for other Black women in STEM how to rest and the benefits of resting.

Elements of French et al.'s (2020) psychological framework of radical healing (PFRH) are represented throughout the study discussing how BWGS in STEM are positioned to take better care of themselves. Resting and choosing not to adhere to the John Henryism ideology allows the women to improve their human existence while giving them a sense of agency to change things for the greater good is congruent with the radical hope tenet of the framework. This realization also aligns with the critical consciousness tenet of the framework because the

women decided to act after acknowledging how problematic it is to continue to push themselves without resting.

To be the strong Black woman or the superwoman meant that Black women had to sacrifice themselves, be docile, and suppress their emotions (Carter & Rossi, 2019; Woods-Giscombe et al., 2016), which contributed to the deterioration of Black women's psychological and physical well-being (Abrams et al., 2019; Donovan & West, 2015; Liao et al., 2020). On the contrary, my study illustrates that not all Black women subscribe to these limited portrayals that society imposes. Marie Anna and Freddie shared how those stereotypes do not align with how they see themselves as Black women in STEM. To counter societal norms of the strong Black woman, Freddie and Marie Anna prefer to be considered "soft" because of the negative connotation associated with the strong Black woman stereotypes. Because Freddie refuses to struggle or suffer, embodying a different type of strong Black woman where her well-being was prioritized is how she classified herself.

Similarly, Marie Anna prefers to lean into her sensitivity rather than sacrificing parts of herself which do not promote her well-being. Because the women did not subscribe to the traditional definition of the strong Black woman, they did not internalize these stereotypes that could have increased their stress levels and depressive symptomology (Liao et al., 2020). The participants' experiences did not align with the literature where internalizing the strong Black woman stereotypes causes them to embody maladaptive imperfection over self-compassion and collective coping (Liao et al., 2020). Instead, based on their actions, the women willfully pushed back on the long-standing narratives that say in order to be strong, they have to deprioritize their needs.

Interestingly, my participants outrightly resisted these stereotypes because of their negative influence on their well-being as BWGS in STEM. As indicated throughout the literature, the strong Black woman suppresses her emotions and is used as a survival mechanism (Woods-Giscombe et al., 2016). She is also self-contained and self-sacrificing. However, my study was incongruent with that reporting in the literature. Instead, some of the participants, Marie Anna and Kally, articulated how they are moving away from using the standard definitions of the strong Black woman and the superwoman by expressing their emotions. Typically, Black women would suffer in silence and use their strength performatively, suggesting they must always be strong to their demise.

Kally and Marie Anna dispelled that way of thinking and shared specific things that promoted promote expressing their feelings. For example, Kally said how those terms are learned behavior instilled in Black people at a young age. So, to counter what she was taught when she was young, Kally decided to use journaling to process her feelings because she recognized that her feelings are valid and should not be disregarded. In her narrative, Kally mentioned that journaling allows her to revisit her thoughts later so she can reflect on her experiences. On the other hand, Marie Anna used her faith as an avenue to process and expressed her feelings. In the Black community, faith is used to cope with different problems and in lieu of seeking mental health services (Dessio et al., 2004). My study partially confirmed this because although Maria Anna used faith to cope, other women sought mental health services for guidance. Marie Anna's using faith to express her feelings shows the complexities of their experiences and strategies, and by examining a distinct population of Black women, BWGS in STEM, my research is adding to the literature on the role religion plays in the lives of BWGS in STEM.

From a radical healing perspective, the participants engaged in strength and resistance to remove barriers of their oppression when the strong Black woman stereotype was utilized. Based on their narratives, Kally, Freddie, and Marie Anna shared how rejecting those stereotypes helped them find a release and promote living a life they can love and appreciate. Furthermore, radical hope ensued once the participants saw how reframing the way the strong Black woman and the superwoman stereotypes were conceptualized led to different possibilities.

In What Ways have STEM Learning Environments at HBCUs Influenced Black Women Graduate Students' Holistic Well-being?

The data from the study revealed that BWGS have varying experiences pursuing their graduate degree in STEM at HBCUs. As predicted by the extant literature, the study participants highlighted the family atmosphere at their HBCUs and its positive influence on their well-being (Joseph, 2012; Lockett et al., 2018). They also shared their frustrations about the socialization process of graduate school and how it prioritizes academic jobs over non-academic jobs.

The participant's experiences aligned with Shavers and Moore's (2014) concept of "the double-edged sword." A double-edged sword is where the participants' experiences can positively affect their well-being; however, those experiences can also threaten their holistic well-being, which can have devasting effects. These BWGS in STEM emphasized some of the positive influences that promoted their well-being. Those experiences include being in an environment with others who share their different identities, experiencing the various dimensions of peer support, and having faculty and advisors who prioritize their student's well-being. However, the negative sides of their experiences dealt with the socialization process that enforces academic jobs and needing more direction about the graduate school process and requirements.

In alignment with the literature on HBCUs, most participants experienced representation on multiple levels, which affirmed their identities (Joseph, 2012; Lockett et al., 2018). By seeing their race, gender, and culture represented both on campus and in their departments, these women's identities were affirmed, promoting authenticity. These findings also align with the cultural authenticity and self-knowledge tenet of French et al.'s (2020) radical healing framework. Cultural authenticity and self-knowledge highlight People of Color and Indigenous individuals race and ethnicity's role in their ability to live authentically because their oppressors do not define them.

Kas D called attention to the diversity amongst the Black women in her program and how the Black women's differences were their strengths. Although the women shared the same race, they were of different ages, backgrounds, and personalities, which was instrumental in Kas D's building community with the other Black women in her program. For example, some of the participants commented how having Black women and students in their programs helped them express themselves without feeling like they would be judged and increased their sense of belonging. Marie Anna noted that having Black women and colleagues helped dissipate her feeling like an imposter when she began questioning if she received an opportunity because of her race or because she was qualified. Being surrounded by her Black peers made Marie Anna feel like it was a natural part of her experiences instead of feeling alone. However, Freddie highlighted the cultural piece of her experiences and how seeing Nigerians around promoted a sense of familiarity and home amongst each other.

My study also revealed how shared identity decreased the Black women graduate students in STEM need to compete against each other, which aligns with Perna et al.'s (2009) study conducted at a single-sex HBCU. The literature published on Black women's STEM

experiences points to the competitiveness of STEM and its racially chilly and racially hostile environment, which can detract from the real purpose of pursuing a graduate degree (Alexander & Hermann, 2016; McGee et al., 2019). However, this was incongruent with my study. The women felt they could accomplish anything they set out to achieve and did not experience discrimination. As BWGS in STEM at their HBCUs, they could be truthful about their knowledge and the areas where they needed help. B. Grits commented how attending an HBCU put her in a healthier mental space because she felt affirmed and motivated.

The support system fostered at HBCUs ensures accountability instead of competition amongst these BWGS in STEM because the HBCU experience rests on the family atmosphere and community building. My study confirmed this from the extant literature. My study was also consistent with Alexander and Bodenhorn's (2015) findings that Black women in graduate programs lean on different support systems, usually external to academia. However, my study contributes to the literature by giving specific examples where these BWGS in STEM received support from their peers who are in academic spaces.

Some women highlighted how their peers supported them as BWGS in STEM. Peer support was experienced in ways that differ from what is reported in the literature. Specifically, peer support promotes the participant's well-being through accountability and giving advice. DrPH23, Kas D, and B. Grits provided different insights about how they felt supported by their peers in their academic space. For example, DrPH23 noted how her peers held her accountable when she wanted to leave her program and provided her with positive insight, which positively influenced her well-being. Likewise, Kas D shared how catching COVID-19 the week of her Medical College Admission Test (MCAT) prevented her from taking her exam. Kas D’s colleagues banded together and offered to continue studying with her even though they had

already taken their tests. Likewise, B. Grits confirmed that her peers gave her advice when she needed it the most and more than her advisor and mentor. In these examples, French et al.'s (2020) collectivism tenet of their framework was portrayed because these women created community amongst each other as a source of social support.

Jones et al.'s (2013) study about using a Black feminist approach to doctoral advising was consistent with my research. Furthermore, scholars within the field emphasized the importance of the advisor-advisee relationship (Barnes & Austin, 2009; Jones et al., 2013; Williams et al., 2005). My study contributed to the literature in that this finding detailed specific actions of these BWGS in STEM advisors and professors and how those actions promote their well-being. Some participants shared how their advisors' and professors' efforts promoted well-being tendencies. Kas D shared how her advisor planned an event that alleviated her stress levels after noticing how overwhelmed she was during the first week of school. However, Kally and Marie Anna shared how their professors used different strategies to promote their students' well-being. For example, Kally's professor incorporated a well-being activity in the curriculum and incentivized it with extra credit to ensure the students participated. Marie Anna's professor decided to pray for her before her preliminary exam after noticing her anxiety. Kally and Marie Anna's professors foregrounded an ethic of caring in their interaction with their students. In these examples, my study illustrated how faculty members' and advisors' intentions toward their students' well-being emphasize how the ethic of caring can be used in the classroom and the advising process. This approach encouraged the participants and signified that their advisors and professors cared about their well-being as BWGS in STEM.

As predicted by the existing literature, the study participants' experience consisted of being socialized into teaching and faculty careers which is traditionally how graduate students

are socialized (Felder, 2010; Gildersleeve et al., 2011; Gopaul, 2011; E. Taylor & Antony, 2000). In addition to the traditional socialization process, some participants shared being frustrated with other parts of the graduate process, including needing empathy and more guidance to complete the dissertation and what to expect after completing the program. Kally and Marie Anna shared that their programs push students towards seeking academic jobs without acknowledging other professions or knowing if their students want to pursue academic employment. My research adds to the literature by sharing what these BWGS in STEM need while completing their programs. Freddie asked for empathy and support from her program to help facilitate the graduate school process because she was terrified of what was next after she finished her degree. Meanwhile, Marie Anna would like her program to share resources about the other professions that are not academic because how people function in non-academic jobs is very different from how they operate in academia.

Completing the dissertation requires guidance from faculty advisors who can provide the proper support needed to complete their project (Barnes & Austin, 2009). My study findings indicate that these BWGS in STEM lacked support from their faculty advisors, negatively impacting their well-being. For example, DrPH23 shared that her advisor does not provide the proper help she needs to complete the dissertation or to carry out the data collection for her dissertation. Similarly, Marie Anna shared how her advisor does not remember her project despite meeting with them weekly. In these examples, the participants reinforced what they needed and how the programs could be improved to serve them as students better.

The participants' actions illustrate how they challenge graduate school's socialization process. As demonstrated by radical hope, the participants asking for help with their dissertation and asking for empathy from their advisors is how they are envisioning new possibilities for their

futures. Based on their actions, they are believing in a graduate student socialization process that is more equitable and one that aligns with their values and their future selves. It takes courage for these BWGS in STEM to ask for what they need to be successful rather than suffer during the process.

What Strategies, if any, have Black Women Used in their Graduate STEM Programs at HBCUs to Nurture their Holistic Well-being?

The third research question, which is the focus of this section, addresses what strategies, if any, did these Black women used in their graduate STEM programs at HBCUs to nurture their holistic well-being. The findings of this study suggest that these women used a variety of strategies to promote their well-being, with most of those being external to the STEM learning environment. To liberate themselves from the confines of academia and the traditional methods used to foster well-being, the participants intentionally engaged in activities that were not school related or based on societal norms.

Throughout the study, participants described strategies to nurture their holistic well-being, including seeking therapy, creating boundaries with themselves and others, and participating in non-academic activities. Therapy has proven transformational to those who have benefited from seeing a therapist. However, Black women students have not had the privilege even though seeing a therapist may help alleviate their emotional suppression and suffering (Donovan & West, 2015; Woods-Giscombe et al., 2016). Similar to the literature on Black women's experience with mental health services, there is a stigma of weakness that is attached to seeking a therapist because it is perceived that African American women do not seek therapy and instead they choose to suffer without assistance to show strength (Woods-Giscombe et al., 2016). Furthermore, there is a cultural expectation to rely on their religion to get them through tough

times rather than seeking therapy (Dessio et al., 2004). This learned behavior of showing strength is engrained in Black womanhood and originated during slavery which was how they endured the harsh and brutal treatment during slavery (Abrams et al., 2019; Carter & Rossi, 2019; Donovan & West, 2015).

The data demonstrate how the women in my study normalized seeking therapy as BWGS in STEM and the healing and liberation that ensued. Some women, DrPH23, DrTNS2022$ and Kally, recounted how therapy helped them in their daily lives. Interestingly, some participants chose to seek therapy instead of shutting down or isolating themselves. Seeking therapy helped the women sort out their feelings and emotions and understand why they reverted to shutting down when they encountered challenging situations. These findings contribute to the literature in that the participants detailed specific ways they benefitted from and normalized seeking therapy and does not align with the existing literature that suggests that Black women tend to resort to shutting down and not seek therapy (Donovan & West, 2015).

DrPH23 sought therapy because she needed to create balance in her schedule and her life. Meanwhile, DrTNS2022$ sought therapy to maintain her mental health. The women seeking therapy aligns with the narrative about therapy helping others. My study also adds to the literature about how these BWGS in STEM utilize therapy and how therapy helps promote their well-being. BWGS in STEM are multifaceted human beings; depending on their needs, their therapy sessions will provide different outcomes.

French et al.'s (2020) strength and resistance tenet of their framework rests on People of Color and Ingenious individuals' ability to live joy-filled lives. These BWGS' in STEM seeking therapy allowed them to visualize a future where their well-being and happiness were their focal point. Seeking therapy helped the women create opportunities to heal where they were not

resorting to using the strong Black woman and the superwoman stereotypes as maladaptive coping mechanisms. Instead, using therapy to interrogate their experiences acknowledges their strengths and BWGS in STEM.

As indicated throughout the literature review, Black women are a valuable source of knowledge (Collins, 2000). Consistent with what was presented in Chapter Two, these BWGS in STEM used dialogue and self-definition to exchange knowledge and empower each other. This knowledge transfer occurred throughout the study when one Black woman would share their experience and another Black woman would put into practice what they heard. For example, Kally used therapy to understand why she resorted to shutting down when she faced challenges and acknowledged that it was her fatal flaw. After hearing the women confidently proclaim they used therapy, B. Grits commented that she would include seeing a therapist on her to-do list in the future. BWGS in STEM passing down knowledge to each other is a part of their culture and was confirmed by my research study.

BWGS in STEM value their community, and their community is instrumental in their healing and liberation. In Freddie's narrative, she sought help from her community after feeling defeated and triggered. This finding aligns with of Tierney (1991) and Winkle-Wagner (2009, 2015) who concluded that severing ties to one's community is counterproductive for Black women in college and how their community contributes to their success in college. Not assimilating to her environment and forgetting about her community assisted Freddie when she felt overwhelmed and was triggered. Freddie's story and the other participants disproved the literature about Black women resorting to the strong Black woman and superwoman stereotypes as coping mechanisms. Instead, my study demonstrates how these BWGS in STEM use strategies like therapy and their community to promote holistic well-being. These findings

aligned with the collectivism tenet of the radical healing framework, in which the community of People of Color and Ingenious individuals plays an integral role in their healing and liberation and which is confirmed by these women's lived experience.

Creating boundaries helps BWGS in STEM who face role conflicts that prevent them from focusing on their well-being (Haynes et al., 2012; Hunter & Devine, 2016). Volunteering their time and joining committees and boards can wreak havoc on doctoral students' well-being because of the multiple roles that require emotional energy (Haynes et al., 2012). Freddie, Kas D, and DrPH23 seemingly took a different approach to prevent overextending themselves. They discussed how saying no to people frees up their time immensely. With this free time, Freddie could use her time to reflect and meditate on the things she needed to do for herself.

Likewise, creating boundaries allowed DrPH23 to feel less overwhelmed or stressed. On the other hand, Kally brought a new perspective on setting boundaries and decided to establish a boundary between herself and her schoolwork. This idea was challenging for Kally because her identity was tied to her academic and scholastic merit. Once she liberated herself from that way of thinking, Kally recreated a structure that worked for her by implementing activities that made her reconnect to the things she loved, like painting.

Defining what it means to be a BWGS in STEM and incorporating non-STEM activities rejuvenated the participants. Partaking in non-academic activities allowed the participants to enjoy another side of their lives. Some of the activities were unconventional in that the activities were unique to each person. This findings was congruent with (Charles et al., 2021) study regarding the positive factors that are associated with reducing graduate students stress levels. For instance, Kas D used yoga which can be considered a traditional way to nurture one's well-being; DrTNS2022$ went roller skating and took her sabbath; Freddie crocheted; and, Kally

classified her Saturdays as her “non-negotiable” and “scared time.” These activities can be considered foreign and non-traditional because only the academic experiences of BWGS in STEM are often researched.

The rhetoric for BWGS in STEM centers on working in the laboratory or working on school tasks to be successful. Yet, this way of thinking has come at a cost to their well-being. The women in my study modeled how BWGS in STEM could be scientists and partake in unconventional activities that bring them joy. Black women are a source of knowledge. Reading about the strategies and activities other Black women in STEM enacted to nurture their holistic well-being can empower other Black women to do the same. Thus, sharing these different strategies is an additional way my research contributes to the lived experiences of BWGS in STEM new narratives.

Implications for Black Women Graduate Students in STEM, Research, and the Academy

This study aimed to broaden the literature on the holistic well-being of Black women graduate students in STEM and the strategies they enact that promoted their well-being. Specifically, I focused on Black women graduate students attending historically Black colleges and universities (HBCUs) to highlight how their environment influenced their well-being practices and how the family-like environment allowed them to thrive. In this section, I provide implications for practice for Black women graduate students in STEM, for future research, and the academy.

Implications for Black Women Graduate Students in STEM

The first part of my dissertation title is “I’m Not Your Superwoman!!!” I chose that title because, as Black women, we often overextend ourselves by doing so much for others and forget about ourselves. It is also the title of a song by Karyn White. The song talks about the different

things she did for her partner and essentially is not appreciated for her time and effort. That is us as Black women and graduate students. We volunteer to be on committees about student issues because that is what we do. We are the "fixer." We try to create space for other Black women and incoming students, so they know they matter and belong. Doing this work often comes at the expense of our health and well-being.

B. Grits, one of the participants, said it best, "you can't pour from an empty cup or base." I am not suggesting we stop helping others. Rather, creating boundaries that allow for a simultaneous focus on one's personal needs is essential. Being a superwoman takes significant time and energy, often to the detriment of oneself. Furthermore, as Black women in STEM, your time is already monopolized by the different requirements and milestones you need to accomplish (Gardner, 2007; Lovitts, 2008). When you reflect on your experiences, what memories will you have about the journey? I hope your memories will not solely be about the struggles you had in your program but also about the joys and friendships you gained along the way.

Here are my suggestions for you. Take it back to the basics. Make a list of all the things you enjoy that are not school related. Remember, your life does not start and end with school. You are multifaceted human beings and have interests outside the walls of the Ivory Tower. What are the things that brings you joy? Remember that list I told you to make? Start there. Incorporate some of the items on that list monthly until you get to where you are doing something that brings you joy daily. The work will ALWAYS be there, and there will ALWAYS be something you could be doing.

Resting should not be an exception, but it should be your priority. Release that feeling where you think you are not productive if you are not busy doing something. Sis, that is a lie if I

have ever heard a lie. Resting comes in many forms, and not just sleeping. When you rest, you can recover a missing part of yourself. You can rest from people who take all your energy. You can rest from the people who monopolize your time where you are so drained you do not have time for yourself. Rest from social media and the people who make you feel like if you do not have a job lined up before you graduate, you did not do what you were supposed to do in school. Resting can simply mean doing nothing. Yes, I mean absolutely nothing. So, figure out what you need and how you will rest.

You have a lot to offer, your ideas, your spirit, your skillset, your laughter. Find a community of folks who will support you through good and bad times. The journey will be rocky, so having genuine people you can lean on will make your journey less daunting. Your community will be the people you rock with, work with, and share those memorable experiences you will be talking about after completing the degree. If you were like me and you are attending or attended an HBCU and majored in a STEM discipline, that community was helpful on my good days and my not-so-good days. Give it a try because your health and well-being will benefit tremendously.

The extant literature highlighted in Chapter Two demonstrated how the well-being of Black women graduate students in STEM disciplines is not being studied and that graduate students are overwhelmed with different stressors (Cabay et al., 2018; Evans et al., 2018; Haynes et al., 2012; Schmidt & Hansson, 2018; Sverdlik & Hall, 2020; University of California, Berkeley, 2014). Plus, pursuing a STEM discipline also comes with the compounded issues that Black women must endure or try to overcome. Black women graduate students need to focus on positive factors that can reduce depressive symptoms (Charles et al., 2021). At the institutional level, STEM departments can begin by focusing on the social support and the graduate school

social climate to see how that contributes to Black women's success and well-being. Next, STEM programs should check in with the Black women at different points in their programs to ensure they are progressing and offer additional resources as needed.

As the women highlighted throughout the study, being able to take a break and rest helped them refocus and increase their productivity. Faculty and advisors should address the workload that is assigned and how their expectations contribute to Black women graduate students' inability to realistically have a good work-life balance. This may look like evaluating the curriculum mid-way through the semester and incorporating rest breaks in their schedules or having flexible deadlines for projects and assignments.

Implications for Future Research

Researchers should focus more on reporting the strengths of BWGS in STEM and use culturally relevant frameworks to demonstrate Black women graduate students strengths. My research indicated that BWGS in STEM have experiences that are not being discussed or researched. Those experiences can be helpful for other Black women because of the knowledge transfer that can happen. Researching the holistic well-being of BWGS in STEM provided data that can be transferrable to other graduate students in different programs.

The literature covered in Chapter Two emphasized the various reasons why these BWGS in STEM need to pursue radical healing. Plus, because of BWGS' in STEM lived experiences, reporting their stories warranted a new perspective that was not deficit laden. Based on the narrative of the participants, radical healing was experienced in different ways that brought them fulfillment. The tenets of French et al.'s (2020) psychological framework of radical healing (PFRH): critical consciousness; radical hope; collectivism; strength and resistance; and cultural authenticity and self-knowledge, helped the Black women in my study achieve holistic well-

being through radical healing. The radical hope and the strength and resistance tenet was a unique lens to study these BWGS' in STEM lived experiences because joy is not often a central focus for Black women in their STEM journey, and the framework helped to demonstrate the ways in which the participants were joyful as BWGS in STEM. Being joyful helped with their healing and their well-being. How the participants defined holistic well-being came from a place of joy and envisioning a future where they are liberated from their oppression, which is radical hope.

The radical healing framework helped to transform the lives of the Black women in my study which was instrumental to their holistic well-being. Black women tend to be all things for all people in the different spaces they occupy, yet the Black women in my study decided to take a pause to be all things for themselves. Given that the PFRH is relatively new, I was unable to reference specific instances where this framework was used to study the experiences of BWGS in STEM or their well-being. My study addressed this gap in the framework by providing concrete examples where the tenets in the framework helped with BWGS' in STEM radical healing and liberation. Furthermore, based on my study findings, the radical healing framework can be extended to analyze how rest, seeing a therapist, and creating boundaries was essential in BWGS in STEM healing.

More studies should be conducted using this framework where researchers are focusing on specific STEM disciplines for additional understanding about how the PFRH positions Black women to care for themselves. Specifically, future studies should examine how the different tenets of the PFRH manifests in the lives of BWGS in STEM and other minoritized populations to report if radical healing manifested in similar ways. To my knowledge, my dissertation is one of the first to use the radical healing framework to study Black women graduate students in

STEM experiences. This framework could also be useful to study the lived experiences of Black women graduate students who are external to the STEM learning environment and the lived experiences of Black women who are not in academia.

One area of research that should be expanded upon is how BWGS in STEM use therapy to combat emotional suppression to prevent using the strong Black woman and superwoman stereotypes. Since therapy can be transformational, researching this topic, specifically with BWGS in STEM, can add to the research about their experiences. There is a stigma attached to seeking therapy in the Black community because of the misconceptions about therapy and its use. My study illustrates how therapy was helpful to these BWGS in STEM and how therapy functioned in their lives. Changing the narrative around seeing a therapist can become a springboard for other conversations and actions that promote healing and liberation.

Another area that researchers should consider is how BWGS' in STEM faith influences their well-being and progression through their programs. In addition, what is the role of the praying advisor or professor, and how do their actions promote Black women's well-being? Discussing faith and religious practices within STEM is not prevalent, yet most Black students allude to how their faith gets them through difficult times in their programs. More research that reports how BWGS in STEM utilize their faith can lead to other conversations around faith and students' identities. A practical way to incorporate Black women graduate student faith in their surroundings is to address the stigma that is attached when the topic of faith or other religious practices are discuss in STEM spaces. For example, programs can encourage students to form interfaith groups or give them a listing of different faith-based groups on their campuses when they first enter their programs. To further the conversation regarding how Black women's faith is a part of their STEM identity, STEM departments can consider creating a special topics course in

their department or join forces with other departments on campus to offer a course where Black women's faith is integrated within the curriculum. This course can be offered as an elective and co-taught with other faculty members who are either internal or external to their STEM department.

The pandemic forced us to reprioritize the things that matter in our lives, and resting was at the top of that list for these women. With the rigor of trying to complete a STEM-related degree, graduate students often choose productivity over resting. Research that promotes BWGS in STEM resting can provide insight into the type of rest they need and how resting influences their well-being and productivity. In my study, a few participants highlighted how resting allowed them to be more productive and made them feel recharged. Resting can benefit Black women in STEM and other minoritized student population. Department chairs, faculty, and advisors in STEM programs can create mechanisms where Black women graduate students feel supported if they decide to take a break away from school and not be chastised after they return. Next, graduate programs can organize group activities that focus on non-academic topics that integrate Black women graduate students' other needs.

Jones et al.'s (2013) study suggested that advisors use a Black feminist approach to advising doctoral students. In line with the researchers thinking, more research should report how faculty and advisors use an ethic of caring in their daily interactions with their Black women graduate students and advisees and how those practices increase students' sense of belonging and well-being. At multiple levels, the findings successfully demonstrated how Black faculty and advisors at HBCUs used an ethic of caring in their interactions with Black women, and how that approach allowed the Black women in their classes and programs to be their authentic selves. Using an ethic of caring also provides insight into the realities of BWGS in STEM at HBCUs

and how their faculty and advisors intentions can make them feel seen and cared for in their programs. Creating initiatives or training programs where other faculty and stakeholders in STEM programs are trained on how to use an ethic of caring approach with their Black students should be of the utmost importance. Academic leaders such as department chairs, deans, and program coordinators should research other programs that have successfully implemented and integrated an ethic of caring approach in their advising and teaching of BWGS in STEM. I do not recommend that Black women or other minoritized faculty be tasked with this work. Rather, it should be a shared responsibility of the department and those who serve Black women in their programs.

Change is possible if academic programs are willing to be proactive and be a apart of the solution. Throughout the study, some of the women, Kas D, Freddie, Marie Anna, and B. Grits, articulated that they felt comfortable in their programs because they were not the only one. More research should examine how cultural, racial, and gender representation in STEM environments combat imposter syndrome amongst Black women graduate students and the implications for their well-being. It is the responsibility of STEM recruiters, deans, and department chairs to ensure that there are a variety of identities represented in their STEM programs and not just recruit students to satisfy the race and gender binary. There is literature available that highlights the need for diversity in STEM (Blackburn, 2017; Cheryan et al., 2017). Although some STEM disciplines have a diverse student body, other subdisciplines like engineering, computer science, and physics need better recruitment strategies to increase the number of Black women with varying identities. As such, future research is needed that identifies how BWGS in STEM thrive when their STEM disciplines are diverse, and their social identities are equally represented and affirmed.

Implications for the Academy

The literature produced on graduate students' socialization underscored how the process can be problematic and is not linear (Gardner, 2007; Gildersleeve et al., 2011; Gopaul, 2011; Orphan, 2015; Taylor & Antony, 2000). Specifically, the culture of doctoral education can be dehumanizing and marginalizing for Black students and other minoritized populations (Gildersleeve et al., 2011). Although commonalities may exist amongst Black women in graduate programs, they experience life differently base on their social identities and context within in their programs because Black women identities and experiences are inextricably linked (Porter et al., 2020).

BWGS in STEM spend too much time and money pursuing their degrees not to have a return on their investment or have stories that are laden with trauma. Graduate school is usually where students can determine their next steps after the degree. The socialization process in graduate school needs to be dismantled and reimagined because pursuing a graduate degree is not a linear process (Gopaul, 2011; Weidman et al., 2001). Attending graduate school should do more for BWGS in STEM than providing them with inadequate training and advising. Most students come from different backgrounds and come to graduate school at different points in their lives, and as such, programs should try to streamline their graduate school process. BWGS in STEM and other minoritized students should not be guessing what is next after spending most of their time pursuing their degrees.

Jones et al. (2013) recommended that advisors use an ethic of caring when they advise their Black students. Barnes et al.'s (2010) study on doctoral students' perceptions on the positive and negative attributes of advisors reported that a caring advisor demonstrated interest in their

academic progress and personal well-being. As such, advisors of Black women in STEM should also take this approach. A prime example of this is Freddie's asking for empathy from her program because she was having difficulty figuring out what is next after completing her degree. BWGS should not have to figure out their next steps alone. Their advisors should do more to guide them through the graduate school process. Barnes and Austin's (2009) study highlighted that some of the advisor's critical duties are to help advisees become successful and develop as researchers and professionals. For instance, completing the dissertation is a part of the graduate process, and these BWGS in STEM do not get the proper guidance they need to complete their projects.

There are three phases to doctoral completion: coursework; comprehensive or preliminary examination; and the dissertation (Gardner, 2007; Weidman et al., 2001) that can be used as check points between graduate students and their advisors. Faculty advisors should work with their graduate students during coursework to make sure they are taking the correct courses they need to write their dissertation. Taking this stance could help to alleviate graduate students' stress and increase their motivation self-efficacy (Sverdlik & Hall, 2020).

The dissertation is the culminating project in doctoral students career, and as such, more care should be taken by advisors and research mentors to get students to completion. BWGS in STEM should receive specific directions from their advisors about the dissertation and what to expect throughout the process. In addition, programs should better prepare their graduate students while taking coursework for the dissertation. Although learning continues after coursework ends, academic programs should ensure that graduate students are taught the concepts and methodologies that are essential for completing the dissertation. The curriculum should also be structured better so graduate students are taking the courses they need to conduct

qualitative or quantitative research. Not having these courses or taking them out of order can prevent graduate students from getting the foundational knowledge they need to make progress in their programs.

Life after graduation should be an exciting time because that is when graduate students begin to practice what they have learned in the classroom. However, when students are funneled into one type of profession, that excitement can vanish. Graduate programs must shift from the traditional career development model (i.e., researcher or professor) and promote career advancement (e.g., using a holistic approach) among Black women in graduate STEM programs that explicitly centers on social justice and advocacy. Improving BWGS' in STEM career development can begin by inviting speakers who are not only in academia but also from other STEM-related workforces. A shift in this model will expose Black women to different career options that could be fulfilling to them.

Similarly, programs should incorporate more substantive programming like internships into their curriculum. Internships are not prevalent despite having an impact of graduate students' career readiness (Jones, 2017; Martínez-Orengo et al., 2021; Pender et al., 2010; Veenstra, 2014). There is literature available on the benefit of internships and how internships enhance learning in STEM fields, provide diverse career training, help students gain access to equipment and networks they would not have access to if they attend smaller colleges (Jones, 2017; Martínez-Orengo et al., 2021; Pender et al., 2010; Veenstra, 2014). Students who major in a STEM field emphasize the technical knowledge and skills they acquired from internships (Veenstra, 2014).

The experience of an internship benefits the students, employer, and the university. The skills graduate students acquire while on internships is a part of their career development and

mirrors the skills needed to land their preferred jobs. Internships gives BWGS in STEM the practical and technical experiences they do not receive in their programs while exposing them to non-academic professions. Kally and Marie Anna said their program's paradigm is towards academic positions, and Kally shared that internships are frowned upon in her program because of the need for the program to be completed in five years. Quickly moving BWGS in STEM through their programs without the proper support just to increase graduation rates is doing a disservice to Black women. Exposing Black women graduate students in STEM to other career options should be part of their socialization. Although the professoriate is often the desired profession for doctoral candidates, only a few of those candidate will become academic appointees (Martínez-Orengo et al., 2021), so it is imperative the Black women in STEM programs are encouraged to pursue experiential activities like internships that will equip them with additional skills should they decide to pursue non-academic employment.

Academia and STEM should begin thinking about changing the culture of the learning environment and the system that make Black women leave worse than when they entered their programs. Programs can create spaces where BWGS in STEM can prioritize their well-being by polling the Black women in their programs to understand their needs and how they can achieve them. Asking students what they need can help mitigate their stress levels as they matriculate through their programs. Programs that promote living a healthier lifestyle will benefit the students in the long run. In addition to having academic organizations, programs can encourage BWGS in STEM to form organizations that centers their different social identities. These organizations can focus on the more creative and fun things BWGS in STEM do, which can help build their social and communication skills while relieving stress. Incorporating these

suggestions is how programs can take a holistic approach to help their Black women graduate students.

Student affairs professionals are front facing with students in their respective programs, and they can be deliberate in their approaches to further BWGS in STEM well-being. In partnership with STEM programs, culture centers, and student organizations, student affairs professionals can support their student's well-being by establishing affinity groups. These affinity groups could provide a space for BWGS in STEM and Black women faculty to convene and share their lived experiences and how they nurture their well-being. Collins (2002) highlights how Black womanhood hinges on collaboration and building a sisterhood where information is passed down. Thus, these affinity groups can serve as the conduit for passing down relevant information about how Black women in the academy prioritized their needs consistently.

Concerning programming, student affairs professionals can partner with campus culture centers (Black culture centers) and industry leaders for a summit celebrating Black women's wellness. Including industry and campus partners in the planning of this summit will not only bridge the gap between the two organizations but also could serve to engage in a critical conversation about bringing wellness into the workspace and providing tangible ways Black women can incorporate these wellness strategies both as a student and as a professional. Organizing monthly wellness circles for Black women graduate students in STEM is another way student affairs professionals can check in with their Black women graduate students. These different options for their students can increase student affairs professionals' awareness of how BWGS in STEM well-being are nurtured in the various spaces they encounter.

Faculty should create space in their curriculum for graduate students to have a wellness day or rest breaks. Since a typical semester is usually 16 weeks, at the halfway mark, faculty can build in time in their curriculum where graduate students can take off and use that time to do whatever they need to prioritize their health and well-being. In addition, providing BWGS in STEM with information about how to access mental health services and therapists on and off campus can help with their well-being practices by normalizing the conversation around seeking mental health services.

Conclusion

My intention for doing this research was to ensure that my study contributed to the literature on BWGS' in STEM holistic well-being and to HBCUs. HBCUs and Black women's well-being have not been the focus of many research studies. They should be to underscore their importance in society. After reading many articles, I noticed there was limited research available about BWGS in STEM, Black women's success in STEM, and their well-being. With that in mind, I wanted my dissertation to report how BWGS in STEM were thriving and taking care of themselves. We are influential beings, so I hope when other Black women read my dissertation, they will be inspired to implement some of the strategies my research participants shared and carry that with them throughout their tenure as BWGS in STEM and beyond.

In reflecting on the process and the experiences that led me to write on this topic about well-being, I cannot help but be grateful to the seven women who chose to share their stories with me and be a part of my journey. The idea to focus on the well-being of Black women graduate students in STEM became more important after living in a pandemic and experiencing how the pandemic forced us to prioritize many things in our lives, including our well-being.

Being a graduate student requires that we juggle so much academically and non-academically. I am encouraged to see how Black women graduate students are forging ahead and creating a narrative where they are centering their needs. Because of my interaction with the seven women who participated in my study, I can say that I am hopeful that other Black women in STEM will implement some of the strategies they shared while they are pursuing their STEM degrees and beyond. I learned that resting and seeking therapy is essential and is not a sign of weakness when Black women graduate students decide to do either. Self-preservation, having a good work-life balance, and how Black women graduate students in STEM care for themselves is just as important as completing their degree and helping others.

References

Abrams, J. A., Hill, A., & Maxwell, M. (2019). Underneath the mask of the strong Black woman schema: Disentangling influences of strength and self-silencing on depressive symptoms among U.S. Black women. *Sex Roles*, *80*(9–10), 517–526. https://doi.org/10.1007/s11199-018-0956-y

Agteren, J., & Iasiello, M. (2020). Advancing our understanding of mental wellbeing and mental health: The call to embrace complexity over simplification. *Australian Psychologist*, *55*(4), 307–316. https://doi.org/10.1111/ap.12440

Alexander, Q. R., & Bodenhorn, N. (2015). My rock: Black women attending graduate school at a southern predominantly White university. *Journal of College Counseling*, *18*(3), 259–274. https://doi.org/10.1002/jocc.12019

Alexander, Q. R., & Hermann, M. A. (2016). African-American women's experiences in graduate science, technology, engineering, and mathematics education at a predominantly white university: A Qualitative Investigation. *Journal of Diversity in Higher Education*, *9*(4), 307–322. https://doi.org/10.1037/a0039705

Barnes, B. J., & Austin, A. E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective. *Innovative Higher Education*, *33*(5), 297–315. https://doi.org/10.1007/s10755-008-9084-x

Barnes, B. J., Williams, E. A., & Archer, S. A. (2010). Characteristics that matter most: Doctoral students' perceptions of positive and negative advisor attributes. *NACADA Journal*, *30*(1), 34–46. https://doi.org/10.12930/0271-9517-30.1.34

Bell, J. (2002). Narrative Inquiry: More than just telling stories. *TESOL Quarterly*, 36(2), 207–213.

Bingham, A. J., & Witkowsky, P. (2021). Deductive and inductive approaches to qualitative data analysis. In C. Vanover, P. Mihas, & J. Saldaña (Eds.), *Analyzing and interpreting qualitative data: After the interview* (pp. 133-146).

Blackburn, H. (2017). The status of women in STEM in higher education: A Review of the literature 2007–2017. *Science and Technology Libraries*, *36*(3), 235–273. https://doi.org/10.1080/0194262X.2017.1371658

Borden, V.M.H., & Brown, P.C. (2004). The top 100: Interpreting the data. *Diverse Issues in Higher Education* 21(8), 37–39.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brown, M. C., Donahoo, S., & Bertrand, R. D. (2001). The Black college and the quest for educational opportunity. *Urban Education*, *36*(5), 553–571. https://doi.org/10.1177/0042085901365002

Cabay, M., Bernstein, B. L., Rivers, M., & Fabert, N. (2018). Chilly climates, balancing acts, and shifting pathways: What happens to women in STEM doctoral programs. *Social Sciences*, *7*(2). https://doi.org/10.3390/socsci7020023

Carlo, D. Del, & Wagner, T. (2019). Women in science: A snapshot across generations in academia. *Journal of Women and Minorities in Science and Engineering*, *25*(3), 231–259. https://doi.org/10.1615/JWomenMinorScienEng.2019026815

Carter-Sowell, A. R., & Zimmerman, C. A. (2015). Hidden in plain sight: Locating, validating, and advocating the stigma experiences of women of color. *Sex Roles*, *73*(9–10), 399–407. https://doi.org/10.1007/s11199-015-0529-2

Carter, L., & Rossi, A. (2019). Embodying Strength: The origin, representations, and

socialization of the strong Black woman ideal and its effect on Black women's mental health. *Women and Therapy*, *42*(3–4), 289–300. https://doi.org/10.1080/02703149.2019.1622911

Charles, S. T., Karnaze, M. M., & Leslie, F. M. (2021). Positive factors related to graduate student mental health. *Journal of American College Health*, 0(0), 1–9. https://doi.org/10.1080/07448481.2020.1841207

Cheryan, S., Ziegler, S. A., Montoya, A. K., & Jiang, L. (2017). Why are some STEM fields more gender balanced than others? *Psychological Bulletin*, *143*(1), 1–35. https://doi.org/10.1037/bul0000052

Clance, P. R., & Imes, S. A. (1978). The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention. *Psychotherapy: Theory, Research & Practice, 15*(3), 241–247. https://doi.org/10.1037/h0086006

Clandinin, D. J. (2013). Engaging in narrative inquiry. *Engaging in Narrative Inquiry*, 21–31.

Collins, P. H. (1986). Learning from the outsider within: The sociological significance of Black feminist thought. *Social Problems*, *33*(6), s14–s32. https://doi.org/10.2307/800672

Collins, P. H. (1989). *The social construction of Black feminist thought*. *14*(4), 745–773.

Collins, P. H. (1993). Black feminist matrix of domination. In *Social theory: The multicultural and classic readings* (pp. 615–625).

Collins, P. H. (2000). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment* (2nd ed.). Routledge.

Collins, P. H. (2019). *Intersectionality as critical social theory*. Duke University Press.

Comley, P., & Beaumont, J. (2011). Online research: Methods, benefits and issues - Part 2. *Journal of Direct, Data and Digital Marketing Practice*, *13*(1), 25–39.

https://doi.org/10.1057/dddmp.2011.23

Cotten, S. R. (2008). Students' technology use and the impacts on well-being. *New Directions for Student Services*, *2008*(124), 55–70. https://doi.org/10.1002/ss.295

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *Working in America: Continuity, Conflict, and Change in a New Economic Era*, 1989(1), 271–282. https://doi.org/10.4324/9781315631011-38

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice*, *39*(3), 124-130. DOI: 10.1207/s15430421tip3903_2

Dessio, W., Wade, C., Chao, M., Kronenberg, F., Cushman, L. F., & Kalmuss, D. (2004). Religion, spirituality, and healthcare choices of African-American women: Results of a national survey. *Ethnicity and Disease*, *14*(2), 189–197.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, *95*(3), 542–575. file:///Users/jun/Documents/public/review/review_kakei-keizai.html

Donovan, R. A., & West, L. M. (2015). Stress and mental health: Moderating role of the strong Black woman stereotype. *Journal of Black Psychology*, *41*(4), 384–396. https://doi.org/10.1177/0095798414543014

Dortch, D. (2016). The strength from within: A phenomenological study examining the academic self-efficacy of African American women in doctoral studies. *Journal of Negro Education*, *85*(3), 350–364. https://doi.org/10.7709/jnegroeducation.85.3.0350

Dortch, D. (2020). Revolutionary acts: African American doctoral students exercising racial agency at a predominantly white institution of higher education in the United States. *International Journal for Cross-Disciplinary Subjects in Education*, *11*(1), 4236–4244.

https://doi.org/10.20533/ijcdse.2042.6364.2020.0518

Dyrbye, L. N., Schwartz, A., Downing, S. M., Szydlo, D. W., Sloan, J. A., & Shanafelt, T. D. (2011). Efficacy of a brief screening tool to identify medical students in distress. *Academic Medicine*, *86*(7), 907–914. https://doi.org/10.1097/ACM.0b013e31821da615

Dyrbye, L. N., Szydlo, D. W., Downing, S. M., Sloan, J. A., & Shanafelt, T. D. (2010). Development and preliminary psychometric properties of a well-being index for medical students. *BMC Medical Education*, 10(1), 1-9. https://doi.org/10.1186/1472-6920-10-8

Dyrbye, L. N., Thomas, M. R., Eacker, A., Harper, W., Massie, F. S., Power, D. V., Huschka, M., Novotny, P. J., Sloan, J. A., & Shanafelt, T. D. (2007). Race, ethnicity, and medical student well-being in the United States. *Archives of Internal Medicine*, 167(19), 2103–2109. https://doi.org/10.1001/archinte.167.19.2103

Egon, G., Clark, D., Havlicek, L., Mclaughlin, J., Miskel, C., Guba, E., & Lincoln, Y. (1982). ERIC / ECTJ Annual review paper: Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology*, *29*(4), 75–91.

Essed, P. (1991). *Understanding everyday racism: An interdisciplinary theory*. SAGE Publications, Inc., https://www.doi.org/10.4135/9781483345239

Evans, S. Y., Bell, K., & Burton, N. K. (2017). *Black women's mental health: balancing strength and vulnerability*. SUNY Press.

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282–284. https://doi.org/10.1038/nbt.4089

Felder, P. (2010). On doctoral student development: Exploring faculty mentoring in the shaping of african american doctoral student success. *Qualitative Report*, *15*(2), 455–474.

French, B. H., Lewis, J. A., Mosley, D. V., Adames, H. Y., Chavez-Dueñas, N. Y., Chen, G. A., & Neville, H. A. (2020). Toward a psychological framework of radical healing in communities of color. *Counseling Psychologist*, *48*(1), 14–46. https://doi.org/10.1177/0011000019843506

Fries-Britt, S. L., Younger, T. K., & Hall, W. D. (2010). Lessons from high-achieving students of color in physics. *New Directions for Institutional Research*, *2010*(148), 75–83. https://doi.org/10.1002/ir.363

Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization in chemistry and history. *Higher education*, *54*(5), 723-740.

Gildersleeve, R. E., Croom, N. N., & Vasquez, P. L. (2011). "Am i going crazy?!": A critical race analysis of doctoral education. *Equity and Excellence in Education*, *44*(1), 93–114. https://doi.org/10.1080/10665684.2011.539472

Ginwright, S. A. (2010). *Black youth rising: Activism and radical healing in urban America*. New York, NY: Teachers College Press.

Goodman, F. R., Disabato, D. J., Kashdan, T. B., & Kauffman, S. B. (2018). Measuring well-being: A comparison of subjective well-being and PERMA. *Journal of Positive Psychology*, *13*(4), 321–332. https://doi.org/10.1080/17439760.2017.1388434

Gopaul, B. (2011). Distinction in doctoral education: Using Bourdieu's tools to assess the socialization of doctoral students. *Equity and Excellence in Education*, *44*(1), 10–21. https://doi.org/10.1080/10665684.2011.539468

Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication & Technology*, *30*(4), 233–252. https://doi.org/10.1007/BF02765185

Hall, J. N. (2020). *Focus groups: Culturally responsive approaches for qualitative inquiry and program evaluation*. Myers Education Press.

Harper, S. R. (2009). An anti-deficit achievement framework for research on students of color in STEM. *New Directions for Institutional Research*, *14*(7), 1–11. https://doi.org/10.1002/ir

Hattie, J. A., Myers, J. E., & Sweeney, T. J. (2004). A factor structure of wellness: Theory, assessment, analysis, and practice. *Journal of Counseling and Development*, *82*(3), 354–364. https://doi.org/10.1002/j.1556-6678.2004.tb00321.x

Haynes, C., & Patton, L. D. (2019). From racial resistance to racial consciousness: Engaging White STEM faculty in pedagogical transformation. *Journal of Cases in Educational Leadership*, 22(2), 85–98. https://doi.org/10.1177/1555458919829845

Haynes, C., Bulosan, M., Citty, J., Grant-Harris, M., Hudson, J., & Koro-Ljungberg, M. (2012). My world is not my doctoral program… or is it?: Female students' perceptions of well-being. *International Journal of Doctoral Studies*, *7*, 1-18.

Holfester, C. (2019). Historically Black colleges and universities (HBCU). *Salem Press Encyclopedia*. Great Neck Publishing.

Hunter, K. H., & Devine, K. (2016). Doctoral students' emotional exhaustion and intentions to leave academia. *International Journal of Doctoral Studies*, *11*, 35–61.

Ireland, D. T., Freeman, K. E., Winston-Proctor, C. E., DeLaine, K. D., McDonald Lowe, S., & Woodson, K. M. (2018). (Un)Hidden figures: A synthesis of research examining the intersectional experiences of Black women and girls in STEM education. *Review of Research in Education*, *42*(1), 226–254. https://doi.org/10.3102/0091732X18759072

Jackson, C. L., & Nunn, E. F. (2003). *Historically black colleges and universities: A reference handbook*. ABC-CLIO.

Johnson, D. (2009). Women of color in science, technology, engineering, and mathematics (STEM). *New Directions for Institutional Research*, *14*(7), 1–11. https://doi.org/10.1002/ir

Johnson, D. R. (2012). Campus racial climate perceptions and overall sense of belonging among racially diverse women in STEM majors. *Journal of College Student Development*, *53*(2), 336–346. https://doi.org/10.1353/csd.2012.0028

Jones, E. C. (2017). Diversity and the enhanced scientific graduate student internship model. *Diverse Issues in Higher Education*, *34*(13), 25.

Jones, T. B., Wilder, J. A., & Osborne-Lampkin, L. (2013). Employing a Black feminist approach to doctoral advising: Preparing Black women for the professoriate. *Journal of Negro Education*, *82*(3), 326–338. https://doi.org/10.7709/jnegroeducation.82.3.0326

Joseph, J. (2012). From one culture to another: Years one and two of graduate school for African American women in the STEM fields. *International Journal of Doctoral Studies*, *7*, 125–142. https://doi.org/10.28945/1571

Kachchaf, R., Ko, L., Hodari, A., & Ong, M. (2015). Career–life balance for women of color: Experiences in science and engineering academia. *Journal of Diversity in Higher Education*, *8*(3), 175–191. https://doi.org/10.1037/a0039068

Keyes, C. L. M. (1998). Social well-being. *American Sociological Association*, *61*(2), 121–140. https://www.jstor.org/stable/2787065

Kim, D., & Jang, S. E. (2014). Dialogic practices in using podcasting and blogging as teaching tools for teachers seeking ESOL certificate. *Journal of Educational puting Research*, *51*(2), 205–232. https://doi.org/10.2190/EC.51.2.d

Kuh, G. D., & Whitt, E. J. (1988). *The invisible tapestry. Culture in American colleges and universities. ASHE-ERIC Higher Education*. Association for the Study of Higher Education.

Leath, S., & Chavous, T. (2018). Black women's experiences of campus racial climate and stigma at predominantly white institutions: Insights from a comparative and within-group approach for STEM and non-STEM majors. *Journal of Negro Education*, *87*(2), 125–139. https://doi.org/10.7709/jnegroeducation.87.2.0125

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, 46(4), 868–879. https://doi.org/10.1016/j.respol.2017.02.008

Lewis, J. A., Mendenhall, R., Harwood, S. A., & Browne Huntt, M. (2013). Coping with gendered racial microaggressions among Black women college students. *Journal of African American Studies*, 17(1), 51–73. https://doi.org/10.1007/s12111-012-9219-0

Lewis, J. A., & Neville, H. A. (2015). Construction and initial validation of the Gendered Racial Microaggressions Scale for Black women. *Journal of Counseling Psychology*, 62(2), 289–302. https://doi.org/10.1037/cou0000062

Liao, K. Y. H., Wei, M., & Yin, M. (2020). The misunderstood schema of the strong Black woman: Exploring its mental health consequences and coping responses among African American women. *Psychology of Women Quarterly*, *44*(1), 84–104. https://doi.org/10.1177/0361684319883198

Lockett, A. W., Gasman, M., & Nguyen, T. H. (2018). Senior level administrators and HBCUs: The role of support for black women's success in STEM. *Education Sciences*, *8*(2). https://doi.org/10.3390/educsci8020048

Lovitts, B. E. (2008). The transition to independent research: Who makes it, who doesn't, and why. *Journal of Higher Education*, 79(3), 296–325. https://doi.org/10.1353/jhe.0.0006

Loyd, A. B., Kürüm, E., Crooks, N., Maya, A., Emerson, E., & Donenberg, G. R. (2022). Investigating longitudinal associations between racial microaggressions, coping, racial/ethnic identity, and mental health in Black girls and women. *Journal of Research on Adolescence*, *32*(1), 69–88. https://doi.org/10.1111/jora.12710

Lundberg, C. A., & Schreiner, L. A. (2004). Quality and frequency of faculty-student interaction as predictors of learning: An analysis by student race/ethnicity. *Journal of College Student Development*, *45*(5), 549–565. https://doi.org/10.1353/csd.2004.0061

MacLaren, J., Georgiadou, L., Bradford, J., & Taylor, L. (2017). Discombobulations and transitions: Using blogs to make meaning of and from within liminal experiences. *Qualitative Inquiry*, *23*(10), 808–817. https://doi.org/10.1177/1077800417731088

Martínez-Orengo, N., Smith, M., Whitaker, D. T., & Castro-Faix, M. (2021). Incorporating graduate-level internships to strengthen the STEM workforce and trainee career prospects. *Journal of Science Policy & Governance*, *19*(1). https://doi.org/10.38126/jspg190108

Martinez, E., Ordu, C., Sala, M. R. D., & McFarlane, A. (2013). Striving to obtain a school-work-life balance: The full-time doctoral student. *International Journal of Doctoral Studies*, *8*, 39–59. https://doi.org/10.28945/1765

McGee, E. O., & Bentley, L. (2017). The troubled success of Black women in STEM. *Cognition and Instruction*, *35*(4), 265–289. https://doi.org/10.1080/07370008.2017.1355211

McGee, E. O., Griffith, D. M., & Houston, S. L. (2019). "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. *Teachers College Record*, *121*(4).

McGee, E. O., Botchway, P. K., Naphan-Kingery, D. E., Brockman, Amanda, J., Houston, S. I., & White, D. T. (2021). Racism camouflaged as impostorism and the impact on Black STEM doctoral students. *Race Ethnicity and Education*, *00*(00), 1–21. https://doi.org/10.1080/13613324.2021.1924137

McGregor, H. E., & Marker, M. (2018). Reciprocity in Indigenous educational research: Beyond compensation, towards decolonizing. *Anthropology and Education Quarterly*, *49*(3), 318–328. https://doi.org/10.1111/aeq.12249

Merton, R. K., Rader G. G., & Kendall, P. L. (1957). *The student physician: Introduction studies in the sociology of medical education*. Cambridge, MA: Harvard University Press.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2020). *Qualitative data analysis: A methods sourcebook*. Sage publications.

Milner IV, H. R. (2007). Race, culture, and researcher positionality: Working through dangers seen, unseen, and unforeseen. *Educational Researcher*, *36*(7), 388–400. https://doi.org/10.3102/0013189x07309471

Moen, T. (2006). Reflections on the narrative research approach. *International Journal of Qualitative Methods*, *5*(4), 56–69. https://doi.org/10.1177/160940690600500405

Moody, A. T., & Lewis, J. A. (2019). Gendered racial microaggressions and traumatic stress symptoms among Black women. *Psychology of Women Quarterly*, 43(2), 201–214. https://doi.org/10.1177/0361684319828288

Morton, T. R., & Parsons, E. C. (2018). #BlackGirlMagic: The identity conceptualization of Black women in undergraduate STEM education. *Science Education*, *102*(6), 1363–1393. https://doi.org/10.1002/sce.21477

Museus, S. D., Palmer, R. T., Davis, R. J., & Maramba, D. C. (2011). Racial and ethnic minority students' success in STEM education. *ASHE Higher Education Report*, *36*(6), I–140. https://doi.org/10.1002/aehe.3606

Nguyen, T. H., Boland, W. C., & Gasman, M. (2019). Historically Black colleges and universities, STEM education, and the pursuit for legitimacy? *British Journal of Sociology of Education*, *40*(8), 1055–1071. https://doi.org/10.1080/01425692.2019.1646114

National Academies of Sciences, Engineering, and Medicine. (2018). Graduate STEM education for the 21st century. Washington, DC: The National Academies Press. https://doi.org/10.17226/25038.

National Center for Education Statistics. (2020). *Table 318.45*: *Number and percentage distribution of science, technology, engineering, and mathematics (STEM) degrees/certificates conferred by postsecondary institutions, by race/ethnicity, level of degree/certificate, and sex of student: 2009-10 through 2018-19.* https://nces.ed.gov/programs/digest/d20/tables/dt20_318.45.asp

National Science Foundation. (2014). *Women, minorities, and persons with disabilities in science and engineering*. https://www.nsf.gov/statistics/2017/nsf17310/static/downloads/nsf17310-digest.pdf

National Science Foundation, National Center for Science and Engineering Statistics. (2019). *Women, minorities, and persons with disabilities in science and engineering: Fiscal year 2019*. http://www.nsf.gov/statistics/wmpd/

Ong, M. (2005). Body projects of young women of color in physics: Intersections of gender, race, and science. *Social Problems*, *52*(4), 593–617.

https://doi.org/10.1525/sp.2005.52.4.593

Ong, M., Smith, J. M., & Ko, L. T. (2018). Counterspaces for women of color in STEM higher education: Marginal and central spaces for persistence and success. *Journal of Research in Science Teaching*, *55*(2), 206–245. https://doi.org/10.1002/tea.21417

Ong, M., Wright, C., Espinosa, L., & Orfield, G. (2011). Inside the double bind: A synthesis of empirical research on undergraduate and graduate women of color in science, technology, engineering, and mathematics. *Harvard Educational Review*, *81*(2), 172–209. https://doi.org/10.17763/haer.81.2.t022245n7x4752v2

Orphan, C. M. (2015). What's doctoral education got to do with it?: Graduate school socialization and the essential democratic work of the academy. In *Democracy's Education: Public Work, Citizenship, and the Future of Higher Education* (pp. 147–153).

Palmer, R. T., Maramba, D. C., & Dancy, T. E. (2011). A qualitative investigation of factors promoting the retention and persistence of students of color in STEM. *Journal of Negro Education*, *80*(4), 491–504.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Sage Publications.

Pender, M., Marcotte, D. E., Domingo, M. R. S., & Maton, K. I. (2010). The STEM pipeline: The role of summer research experience in minority students' Ph. D. aspirations. *Education policy analysis archives*, *18*(30), 1. https://doi.org/10.14507/epaa.v18n30.2010

Perna, L., Lundy-Wagner, V., Drezner, N. D., Gasman, M., Yoon, S., Bose, E., & Gary, S. (2009). The contribution of HBCUS to the preparation of African American women for STEM careers: A case study. *Research in Higher Education*, *50*(1), 1–23. https://doi.org/10.1007/s11162-008-9110-y

Perna, L. W., Gasman, M., Gary, S., Lundy-Wagner, V., & Drezner, N. D. (2010). Identifying strategies for increasing degree attainment in STEM: Lessons from minority-serving institutions. *New Directions for Institutional Research*, *2010*(148), 41–51. https://doi.org/10.1002/ir.360

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology*, *52*(2), 137–145. https://doi.org/10.1037/0022-0167.52.2.137

Porter, C. J., Green, Q., Daniels, M., & Smola, M. (2020). Black women's socialization and identity development in college: Advancing Black feminist thought. *Journal of Student Affairs Research and Practice*, *57*(3), 253–265. https://doi.org/10.1080/19496591.2019.1683021

Quaye, S., Karikari, S. N., Allen, C. R., Okello, W., & Carter, K. D. (2019). Strategies for practicing self-care from racial battle fatigue. *Jcscore*, *5*(2), 94–131. https://doi.org/10.15763/issn.2642-2387.2019.5.2.94-131

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069

Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Sage.

Saldaña, J. (2016). *The coding manual for qualitative researchers*. Sage.

Saldaña, J., & Omasta, M. (2016). *Qualitative research: Analyzing life*. Sage Publications.

Schwandt, T. J. (2000). Three epistemological stances for qualitative inquiry: Interpretation, hermeneutics, and social construction. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 189-213). Thousand Oaks, CA: Sage.

Schmidt, M., & Hansson, E. (2018). Doctoral students' well-being: A literature review. *International Journal of Qualitative Studies on Health and Well-Being*, *13*(1). https://doi.org/10.1080/17482631.2018.1508171

Seedhouse, D. (1995). Well-being: Health promotion's red herring. *Health Promotion International*, *10*(1), 61–67.

Seligman, M. (2018). PERMA and the building blocks of well-being. *Journal of Positive Psychology*, *13*(4), 333–335. https://doi.org/10.1080/17439760.2018.1437466

Shavers, M. C., & Moore III, J. L. (2014). The double-edged sword: Coping and resiliency strategies of African American women enrolled in doctoral programs at predominately White institutions. *Frontiers: A Journal of Women Studies*, *35*(3), 15–38. https://doi.org/https://doi-org.proxyiub.uits.iu.edu/10.5250/fronjwomestud.35.3.0015

Shavers, M. C., & Moore III, J. L. (2014). Black female voices: Self-presentation strategies in doctoral programs at predominately White institutions. *Journal of College Student Development*, *55*(4), 391–407. https://doi.org/10.1353/csd.2014.0040

Sherman, G. L. (2021). Well-being at the crossroads of the unconscious, preconscious, and reason in higher education. *International Journal of Applied Psychoanalytic Studies*, *18*(1), 58–74. https://doi.org/10.1002/aps.1674

#ShutDownAcademia #ShutDownSTEM. (2020, June10). Retrived August 20, 2021, from https://www.shutdownstem.com

Skrupky, L. P., West, C. P., Shanafelt, T., Satele, D. V., & Dyrbye, L. N. (2020). Ability of the Well-Being Index to identify pharmacists in distress. *Journal of the American Pharmacists Association*, *60*(6), 906-914.e2. https://doi.org/10.1016/j.japh.2020.06.015

Solorzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions, and campus racial climate: The experiences of African American college students. *Journal of Negro education*, 60-73 https://doi.org/10.1080/095183998236926

Steele, C. M. (1997). A Threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, *52*(6), 613–629. https://doi.org/10.1037/0003-066X.52.6.613

Sue, D. W., Capodilupo, C. M., & Holder, A. M. B. (2008). Racial microaggressions in the life experience of Black Americans. *Professional Psychology: Research and Practice*, *39*(3), 329–336. https://doi.org/10.1037/0735-7028.39.3.329

Sue, D. W., Capodilupo, C. M., Torino, G. C., Bucceri, J. M., Holder, A. M. B., Nadal, K. L., & Esquilin, M. (2007). Racial microaggressions in everyday life: Implications for clinical practice. *American Psychologist*, *62*(4), 271–286. https://doi.org/10.1037/0003-066X.62.4.271

Sverdlik, A., & Hall, N. C. (2020). Not just a phase: Exploring the role of program stage on well-being and motivation in doctoral students. *Journal of Adult and Continuing Education*, 26(1), 97–124. https://doi.org/10.1177/1477971419842887

Taylor, B. (2013). Narrative inquiry. *Qualitative Research in the Health Sciences: Methodologies, Methods and Processes*, 99–115. https://doi.org/10.4324/9780203777176

Taylor, E., & Antony, J. S. (2000). Stereotype threat reduction and wise schooling: Towards the successful socialization of African American doctoral students in education. *Journal of Negro Education*, *69*(3), 184–198. https://doi.org/10.2307/2696231

Tierney, W. G. (1999). Models of minority college-going and retention: Cultural integrity versus cultural suicide. *The Journal of Negro Education*, *68*(1), 80–91.

Tinto, V. (1987). Leaving college: *Rethinking the causes and cures of student attrition*. Chicago: University of Chicago Press.

Tinto, V. (1993). Leaving college: *Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.

U.S. Department of Education.(n.d.). *White House Initiative on historically Black colleges and universities. https://sites.ed.gov/whhbcu/about-us/*

University of California, Berkeley. (2014). The graduate assembly: Graduate student happiness & well-being report. Retrieved from http://ga.berkeley.edu/wp-content/uploads/2015/04/wellbeingreport_2014.pdf

Tuck, E. (2009). Suspending damage: A letter to communities. *Harvard educational review*, *79*(3), 409–428.

Veenstra, C. (2014). The collaborative role of industry in supporting STEM education. *The Journal for Quality and Participation*, *37*(3), 27-29.

Watson, N. N., & Hunter, C. D. (2015). Anxiety and depression among African American women: The costs of strength and negative attitudes toward psychological help-seeking. *Cultural Diversity and Ethnic Minority Psychology*, *21*(4), 604–612. https://doi.org/10.1037/cdp0000015

Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education*, 44, 641–656. doi:10.1023/A:1026123508335

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). Socialization of graduate and professional students in higher education: A perilous passage? ASHE-ERIC Higher Education Report, 28(3), 2–137. Retrieved from https://files.eric.ed.gov/fulltext/ED457710.pd

Wilkins-Yel, K. G., Hyman, J., & Zounlome, N. O. O. (2019). Linking intersectional invisibility and hypervisibility to experiences of microaggressions among graduate women of color in STEM. *Journal of Vocational Behavior*, *113*(September 2017), 51–61. https://doi.org/10.1016/j.jvb.2018.10.018

Williams, M. R., Brewley, D. N., Reed, R. J., White, D. Y., & Davis-Haley, R. T. (2005). Learning to read each other: Black female graduate students share their experiences at a White Research I institution. *Urban Review*, *37*(3), 181–199. https://doi.org/10.1007/s11256-005-0008-0

Winkle-Wagner, R. (2009). The perpetual homelessness of college experiences: Tensions between home and campus for African American women. *The Review of Higher Education*, *33*(1), 1-36.

Winkle-Wagner, R. (2015). Having their lives narrowed down? The state of Black women's college success. *Review of Educational Research*, *85*(2), 171–204. https://doi.org/10.3102/0034654314551065

Witmer, J. M., & Sweeney, T. J. (1992). A holistic model for wellness and prevention over the life span. *Journal of Counseling & Development*, *71*(2), 140–148. https://doi.org/10.1002/j.1556-6676.1992.tb02189.x

Woods-Giscombe, C., Robinson, M. N., Carthon, D., Devane-Johnson, S., & Cobie-Smith, G. (2016). Superwoman schema, stigma, spirituality, and culturally sensitive providers: Factors influencing African American women's use of mental health services. *Journal of Best Practices in Health Professions Diversity: Education, Research & Policy*, *9*(1), 1124–1144.

Table 1

Participant Information

Participant Pseudonym	Undergraduate University (Pseudonym)	Graduate University (Pseudonym)	Degree Program Level	Degree Program Status	Graduate Discipline	Undergraduate Discipline	Age
B. Grits (Black Girl Raised in the South)	Etta Zuber Falconer State University	Aprille Ericsson University	Masters	Second Year	Public Health	Chemistry	35
DrPH23	Aprille Ericsson University	Aprille Ericsson University	Doctoral	Third Year	Public Health	Molecular Cell Biology	34
DrTNS2022$	Gwendolyn Boyd University *	Valerie Thomas School of Medicine	Doctoral	Sixth Year	Neuroscience	Biology	38
Freddie	Francisca Nneka Okeke University Evelyn Carmon Nicol College #	Francisca Nneka Okeke University	Masters	Second Year	Biology	Biology	25
Kally	Aprille Ericsson University	Aprille Ericsson University	Doctoral	Second Year	Biomedical Engineering	Chemical Engineering	24
Kas D	Jedidah Isler University	Gladys West Medical College	Masters	First Year	Health Sciences	Biology	23
Marie Anna	Alice Ball State University *	Aprille Ericsson University	Doctoral	Fourth Year	Robotics	Mechanical Engineering	24

* indicates a Predominantly White Institution (PWI)

# indicates a community college

All other institutions listed are classified as Historically Black Colleges and Universities (HBCU)

Table 2

Tabulated Blog Comments

Participant Pseudonym	Week One Tabulated Blog Comments	Week Two Tabulated Blog Comments	Week Three Tabulated Blog Comments	Week Four Tabulated Blog Comments	Total Tabulated Blog Comments
B. Grits	10	1*	5	1*	17
DrPH23	4	1*	1*	1*	7
DrTNS2022$	1*	1*	4	2	8
Freddie	7	1*	2	2	12
Kally	4	1	2	1*	8
Kas D	3	2	1*	1*	7
Marie Anna	1*	2	1*	1*	5

* indicates only the researcher commented on the blog

Appendices

Appendix A: Recruitment Email

(Example: Recruitment Email)

[Information sent when contacting organization and/or entity]:

Hello,

My name is Shanalee Gallimore. I am a Ph.D. Candidate in Higher Education at Indiana University Bloomington in the Department of Educational Leadership and Policy Studies (ELPS).
Currently, I am in the process of writing my dissertation tentatively titled *"I'm Not Your Superwoman: A Narrative Inquiry of Black Women in Graduate STEM Programs and Their Holistic Well-Being."* My dissertation is a qualitative study, and I am looking to conduct focus groups and blogs with Black women who are pursuing a graduate degree in a STEM-related area. This study is approved by the Indiana University Human Subjects Committee (IRB#12032).

The participants of this study will be asked about how they make meaning of their holistic well-being and how the STEM learning environment influences their well-being. If you know of anyone who self-identify as a Black woman and is currently enrolled in a graduate STEM program who would be willing to participate in this study, please ask them to fill out the intake questionnaire by visiting http://tiny.cc/BWSTEM or they can contact me at bwgsinstem@gmail.com. Thank you for your assistance in this process.

Warm Regards,

Shanalee Gallimore, Ph.D. Candidate |
Department of Educational Leadership and Policy Studies
Indiana University Bloomington
bwgsinstem@gmail.com

Dr. Lucy LePeau, Associate Professor, Dissertation Chair
Department of Educational Leadership and Policy Studies
Indiana University, Bloomington
llepeau@iu.edu

Appendix B: Recruitment Flyer

CALLING BLACK WOMEN IN STEM
SEEKING RESEARCH PARTICIPANTS

The purpose of this research study is to understand how Black women in their graduate STEM programs make meaning of their holistic well-being.

PARTICIPATION INCLUDES

- Complete an intake questionnaire
- Participate in two focus groups (60-90 minutes via Zoom)
- Blogging/Vlogging throughout the data collection process for 4 weeks via WordPress
- Review and edit transcripts for accuracy

PARTICIPANT CRITERIA

Currently enrolled in a STEM graduate program

Self-Identify as a Black Woman

INTERESTED IN PARTICIPATING IN THIS STUDY?

Contact Shanalee Gallimore at bwgsinstem@gmail.com, or to indicate interest, please visit: http://tiny.cc/BWSTEM.

Participants who meet the criteria, and complete the study will receive a $100 virtual visa gift card.

Indiana University Institutional Review Board approved this study (IRB) # 12032.

Please share on your social networks

Appendix C: Intake Form Questionnaire

Thank you for agreeing to participate in this study about Black women who are pursuing a graduate degree in a STEM field and how they make meaning of their holistic well-being. Before beginning the data collection process, I would like to collect some demographic information from you. Please respond to the questions below to the best of your ability.

1. List your full name
    a. First name
    b. Last name
2. List your email address
3. How old are you?
4. Please provide two options of pseudonyms. The selected pseudonym will be used to anonymize your identity when reporting the findings in this research study
    a. ..
    b. …
5. Do you self-identify as a Black/African American woman?
    a. Yes
    b. No [If no, they will be routed to the end of the survey]
6. What is your racial/ethnic background?
7. What is your gender identity?
8. What compels you as a Black woman in STEM [or in general] to take care of yourself? Please keep your response to 150 to 200 words
9. Do you currently attend an HBCU?
    a. Yes
    b. No
10. List the name of the institution you currently attend
    a.
11. Select the graduate level that aligns with your current degree pursuit
    a. Masters
    b. Doctoral
12. List the department/school in which your academic program resides
13. What is your STEM discipline? (e.g., Biology, Engineering)
14. How many years have you been in your program?
15. What was your undergraduate major?
16. List the name of your undergraduate institution
17. Do you identify as a first-generation student?
    a. Yes
    b. No
18. Do you identify as an international student?
    a. Yes (Please state home country)
    b. No

Appendix D: Welcome and Introductory Email

Dear (Name):

Thank you for your interest in my dissertation research study. You are being invited to participate in a study that is about Black women who are pursuing a graduate degree in a STEM-related field, and how they make meaning of their holistic well-being. I have attached a copy of the study information sheet to this email for your reference in case you have additional questions about the research study.

For the next couple of weeks, you will participate in two virtual focus groups using the Zoom platform, and blog for four weeks using the WordPress platform. You should have already received an invitation to the blog site. *Thus, please create a free WordPress account before Sunday, January 23rd*. If you decided to use a different email than the one you submitted on the questionnaire, please send me that email address as soon as possible. ***Note: I am requesting your email address because this will be the email you will use to access our private, and password-protected blog site.***

After forwarding your username, you will receive a follow-up email with additional details informing you when to begin your first blog. The questions for the blogs will be released on Mondays by 9 am EST. The blogs are organized around specific themes for clarity and flow, and you will have a week to complete your blog entry. Additionally, please ***comment on at least 2-3 of your peers'*** blog posts.

Once your first blog entry is completed, we will conduct our first focus group meeting the following week. Please use this doodle poll http://tiny.cc/BWDOODLE to ***fill in your availability for the week of January 31st***. When I receive your doodle poll response and have a group consensus, a confirmation email with the day and time for our first focus group will be sent.

Following the first focus group, you will blog for the next three weeks. At the end of the blogging cycle, you will be contacted again to set up our ***last focus group***. The meeting will be scheduled ***at least 2 weeks after the blogging cycle ends***. More information will be forthcoming in the confirmation email.

Lastly, before our first focus group, please submit 1-2 statements/sentences you would like the group to consider for our community guidelines. Use this link to insert your statements [http://tiny.cc/communityGuidelines]. These guidelines are to ensure we are being respectful to each other's experiences while creating an environment that is free from harm, and criticism of each other.

The information that is acquired will be used to inform future research and support Black women in STEM. At the completion of the data collection process, you will receive a ***$100 virtual visa card*** for your full participation in the study.

If you have any questions, please email me at bwgsinstem@gmail.com. Thank you again for agreeing to participate in this dissertation study and looking forward to our engagement.

Warm Regards,

Shanalee Gallimore, Ph.D. Candidate |
Department of Educational Leadership and Policy Studies
Indiana University Bloomington
bwgsinstem@gmail.com

Appendix E: Study Information Sheet

INDIANA UNIVERSITY
STUDY INFORMATION SHEET

I'm Not Your Superwoman: A Narrative Inquiry of Black Women in Graduate STEM Programs and Their Holistic Well-Being

You are invited to participate in a research study regarding Black women in a graduate STEM and how they make meaning of their holistic well-being. You are being asked to participate because you are a member from the population that is of interest for this study. I ask that you read this form very carefully.

The study is being conducted by Shanalee Gallimore, a PhD candidate in the School of Education under the supervision of Dr. Lucy LePeau, a member of the Educational Leadership and Policy Studies department, and my dissertation chair at Indiana University Bloomington.

STUDY PURPOSE

The purpose of this study is to explore how Black women in graduate STEM programs take care of themselves. Although some Black women face negative experiences that are threats to their holistic well-being, there are Black women in graduate STEM programs who are thriving despite these threats. This is important to note because the voices of Black women are being left out of the literature when discussing well-being. To address this gap, this study will highlight the stories of Black women who are pursuing a graduate degree in a STEM related area and the success strategies they are using to intentionally work on their holistic well-being.

NUMBER OF PEOPLE TAKING PART IN THE STUDY:

If you agree to take part in this study, you will be one of ten participants throughout the entirety of the study.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will be asked to participate in the following during the 2021-2022 academic year

- Complete an intake questionnaire
- Participate in two semi-structured video recorded virtual focus groups lasting between 60-90 minutes via zoom
- Blogging/vlogging throughout the data collection process for 4 weeks via WordPress
- Review and edit transcripts for accuracy after data collection

Blogging

WordPress will be the blog platform used for this study. At the beginning of each week, 2-3 prompts and potentially some sub questions will be provided for the participants to answer. The

questions will be grouped around themes for a better understanding and flow of the blogs. Each participant will be asked to comment on 2-3 of their peers' posts during the blogging period. To allow for flexibility, the participants will be able to go back to previous weeks' questions to share and comment until the blog is closed for analysis. Each participant can upload audio file, or video files and other artifacts (e.g., photos, playlists) that can help them tell their story. They will have the opportunity to be creative in how they decide to share their information in the blogs.

Focus Groups

There will be two focus groups conducted virtually and video recorded via Zoom. The first focus group will aim to include all the participants of the study for a virtual introduction which will lay the foundation for community building, and for the participants to ask any clarifying questions about the study. The second focus group will ask questions based on themes that are generated during blogging. The goal of the focus groups will be three-fold, (1) to build rapport amongst the participants, (2) to engage in conversation in real-time, and (3) to create a space that can be rejuvenating and validating. The focus groups will last between 60-90 minutes, video recorded, downloaded, and transcribed verbatim using a third-party transcription service.

RISKS OF TAKING PART IN THE STUDY:

Participating in this conversation should not be harmful. However, although the information brought up in the session may be emotional and sensitive in nature, this information should not be more harmful to you than your everyday experiences. The blogging and focus groups will be group activities. To protect and promote the participants confidentiality, we are requesting that the participants do not discuss anything that is written or said in this shared space to anyone who is not a part of the study. There is always a risk of loss of confidentiality, especially if the technology and storage protocol used is broken into or breached. To minimize this risk, information will only be discussed and shared with those who are participating in the research study and data analysis.

BENEFITS OF TAKING PART IN THE STUDY:

There is no direct benefit to participating in this research. However, we hope that through the participation of this study, the participants will potentially be able to gain information about their shared experiences as Black women in STEM who are pursuing a graduate degree. Additionally, this research may give us insight about Black women graduate students in STEM experiences and the strategies they use to nurture their holistic well-being. This will further help to inform interventions that are needed that focus on Black women's well-being in STEM.

WILL MY INFORMATION BE USED FOR RESEARCH IN THE FUTURE?

Following the completion of this dissertation, there may be an opportunity for additional research base on the collected data. Information collected from you for this study may be used for future research studies or shared with other researchers for future research. If this happens, all identifying information will be removed before any information or specimens are shared, and we will not ask for your additional consent.

WILL I BE PAID FOR PARTICIPATION?

For full participation in the study, you will receive a $100 virtual Visa Gift Card.

WILL IT COST ME ANYTHING TO PARTICIPATE?
There is no cost to you for taking part in this study.

CONFIDENTIALITY

The sessions will be recorded and will only be viewed by the researcher and potentially two graduate students who may join to assist with the data analysis. Once the recordings are completed, they will be stored in a secure location and each participant will be anonymized. The recorded data will be kept for 3-5 years after the initial recordings and will be disposed thereafter.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and any state or federal agencies who may need to access your research records (as allowed by law).

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study or a research-related injury, you may contact the researcher, Shanalee Gallimore at bwgsinstem@gmail.com or 812-610-8994 or Dr. Lucy LePeau at llepeau@iu.edu.

In the event of an emergency, you may contact Shanalee Gallimore, at 812-610-8994.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (812) 856-4242 or by email at irb@iu.edu

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with the investigator(s).

Appendix F: Confirmation Email

Thank you for responding and completing the doodle poll. The date and time for our first focus group is Sunday, January 30th from 4 pm – 6 pm. Although I don't anticipate it being longer than 90 minutes, I am requesting that you block off ***2-hours*** for our group meetings in case we go over the time. We will use this zoom link https://iu.zoom.us/j/89027561924?pwd=ZlRFRENienQ3V2tudUZXVUpPankrQT09.
The sessions will be video, and audio recorded using a function in Zoom. A waiting room and a password will be used to ensure that only the participants will be given access to our zoom room. Attach to this email is the study information sheet so you have more information about this study. Below I will let you know what to expect in our focus group meetings.

This will be the first of two virtual focus groups. Before we begin, you will be asked to verbally consent to fully participating in the study, in addition, you will be asked to confirm your pseudonym. Our first focus group can be considered our "orientation" for the research study. The first focus group will bring together all the participants for a virtual meet-up. We will focus on building our community and allow you to ask any questions about the process.
Lastly, the rest of the time will be spent discussing your experiences as a Black woman graduate student in STEM, and the ways in which those experiences influence your well-being.

The second focus group will be held at least two weeks after you have completed the next set of blogs. The meeting will be scheduled ***at least 2 weeks after the blogging cycle ends***. It must be at least two weeks so I can do some preliminary data analysis before our meeting. The second focus group will be based on common themes that arise during the blogging cycle. Before our meeting, you will be emailed a summary of your narrative for your input. If you have your calendar available, we can aim to block off a tentative date and time. However, if this changes, I will send out another doodle poll.

Looking forward to hearing from you and engaging in some fruitful discussion about your well-being.

Warm Regards,

Shanalee Gallimore, Ph.D. Candidate |
Department of Educational Leadership and Policy Studies
Indiana University Bloomington
bwgsinstem@gmail.com

Appendix G: Focus Groups Protocol

[Orienting participants to the study]

Introductions

Good morning/afternoon, thank you again for agreeing to participate in this study about Black women in graduate STEM programs and their holistic well-being. My name is Shanalee Gallimore, and I am a 5th year doctoral student in the Higher Education program at Indiana University Bloomington. Your time and contribution to this dissertation study is one that I hope will be enlightening for each of you as a participant. I know that your time is valuable, so lets begin. Feel free to ask any clarifying questions about the project itself. I hope for the duration of the study, this space we are building together will give you some strategies that you can implement now and in the future.

When you filled out the Qualtrics form you selected _____ as your pseudonym for this study. Is this the pseudonym you'd like to keep? [This question will be asked of each participant]

Description of project

For my dissertation study, I am interested in understanding how you make meaning of your holistic well-being, specifically as Black women who are pursuing a graduate degree in a STEM area. We will touch upon your experiences within your respective programs for context. Also, I am taking a strength-based approach, by which I mean to hear from each of you about some success strategies and how these strategies help to inform your understanding about your holistic well-being. Given that we know about some of the negative aspects of STEM (e.g., gender and racial microaggressions) and how it affects Black women (e.g., lack of sense of belonging), however, we have not really interrogated what Black women have done or are currently doing to prioritize their holistic well-being.

There will be two focus groups which will last for about 60-90 minutes. During the *first focus group*, I will ask you some general questions so we can get to know each other. You will also have time to ask any clarifying questions about the study moving forward. The *second focus group* will build upon some of the themes that will be generated from your blogs over the 4-week period. For the blogs, you will be given 2-3 questions each week to answer at your leisure within a given week before the next set of questions are release. You should also comment on at least 2-3 of your peers posts each week. You will also have the creative freedom when posting such as uploading artifacts (e.g., photographs, playlist) if it helps you answer the question better.

Consent

As a reminder, each session will be video, and audio recorded in Zoom. During the data analysis, there will be 1-2 graduate students who will also have access to your recordings. The focus groups will be transcribed, and a copy will be sent to each of you to ensure that the accuracy of

the transcriptions. Are you all fine with what was just said? Can we move forward with the recording?

Focus Group One Questions

Note: These first couple of questions will be more of an icebreaker and will facilitate us getting to know each other.

1. In a couple of sentences, can you briefly tell me about yourself? [This is an introduction for the group]
    - What is your name, current institution, STEM discipline, hometown, favorite color, and any other relevant information you would like to share?
    - What is your favorite hobby and why?
    - What is something you have done for yourself this week that does not involve schoolwork?
2. What is something you are grateful for today or this week? [This will act as an icebreaker before the general questions]
    - What word or phrase sums up how you are currently feeling, [e.g., mentally, physically, emotionally etc.]? Why?

Note: Now we are going to switch to questions that are specific to my dissertation.

3. What comes to mind when you hear the term holistic well-being?
    - What are examples of moments when you've experienced 'holistic well-being'?
    - Please describe in detail what factors contributed to you feeling this way.
4. Tell me what made you choose to attend an HBCU to pursue your STEM graduate degree
    - In what ways has this environment fostered hope and/or community as a ***Black woman*** graduate student (BWGS) in STEM?
    - How do you see your culture, race, and/or ethnicity, and other relevant identities represented in your program and/or HBCU?
    - What do you like or dislike about the HBCU STEM experience?
    - In what ways is your well-being affected by the STEM experience?
5. Walk me through what comes to mind when you hear the strong Black woman (SBW) and the superwoman (SW) stereotypes as a BWGS in STEM?
6. Please describe a specific experience where you felt your well-being was impacted by SBW and SW stereotypes in STEM specifically and the actions, if any, you took to protect your well-being.
    - In what ways did you challenge these stereotypes?
    - Have you experienced any other stereotypes as BWGS in STEM in your respective programs?

Closing questions

7. What do you hope to gain from participating in this study?

Focus Group Two Prompts/Questions

Hello ladies,

It is great to see your faces today. Can you believe, we've been together for almost six weeks and time has flown by so quickly. Thanks again for your time and dedication to my research study. I loved reading your weekly posts and I loved how you all validated each other during the process.

I hope that each of you received something out of this process because I know I surely did. Let me reiterate, this is a semi-structured focus group. I have some probing questions to start us off, however, I will also hold space for some of the themes that were generated while you were blogging.

Unfortunately, this will be our last gathering for now. This session is driven by you, so feel free to chime in if something someone says resonates with you and build upon that thought. Let's begin!!

1. What questions, if any, came up for you during this process?
2. Thinking back to the first focus group, and our discussion around well-being
    - Did your understanding or actions around your well-being changed or deepen since our first meeting?
    - Did you implement any new strategies based on what your peers shared or wrote in their blogs?
3. Can you think of any aspect of this experience that was most valuable to you?
    - What made it valuable?
2. How do you see yourself resisting or unlearning some of the maladaptive coping mechanisms you have used so you can prioritize your well-being?
    - What were some of those coping mechanisms you've used?
3. Can you elaborate on why it is important to be in an environment with people who share your different identities?
4. Being a BWGS in STEM can be both empowering and challenging
    - Walk me through in what ways do you feel empowered as a BWGS in STEM at your HBCU?
5. How would being recognized for your strengths and capabilities help change the narrative for Black women in STEM?
    - In what ways would this newfound outlook influence your well-being?
6. As a BWGS in STEM, what are your thoughts on setting boundaries?
    - How might setting boundaries help your well-being?
7. Do you find yourself focusing more on a particular aspect of your well-being over another?
    - Which one(s) and why?
8. In what ways do you keep showing up for yourself despite feelings of imposter syndrome
    - Are these strategies specific because you attend an HBCU?

Closing Question

9. Imagine that a Black woman in her first year of her STEM doctoral program reached out to you for advice about the PhD journey.
    - What advice would you give her about well-being specifically? Include in your response suggestions on *how* she could protect her wellbeing, ways she could cultivate a community to support her well-being, and what to do to get back on track if well-being fell towards the bottom of her priorities.
    - How would this advice differ if she attended an HBCU?

Appendix H: Blog Protocol

Welcome to our blogging space. This site is password-protected, so please do not share your password with anyone.

This space will be ours for the duration of the study. Each week, you will receive 2-3 questions to answer at your leisure before the next set of questions is released the next week. I hope blogging will provide you with a space where you can share openly about your experiences as a Black woman in STEM. Additionally, please comment on at least 2-3 of your peers' posts each week. You can be as creative as you would like when blogging. For some, you may prefer to upload an audio file one week and other artifacts (e.g., photographs, playlists) to accompany your story. I welcome all your creativity during this process.

STEM Experience and Journey

Tell us about your STEM journey. In your story, please consider the following

1. How and when did you first become interested in becoming a scientist? [e.g., high school experience or earlier]
    - Who and/or what inspired you to become a scientist and what role did they play in your journey?
    - Describe any emotions, self-defining moments, vivid memories throughout your journey
    - Elaborate on the reasoning why you chose your STEM major?
2. Can you think of an instance in your undergraduate career where you've witnessed and/or experienced an inequity [e.g., discrimination, racial/gender bias etc.]? In what ways did that experience propel you towards action and wanting to change the system for the better?
    - How did your undergraduate experience, including your major shaped your understanding of yourself as a scientist and your pursuit of a graduate degree in a STEM area?
3. Have you encountered any negative racial/gendered experiences as a Black woman graduate student in STEM?
    - How did you resist those negative experiences?
    - In what ways did those experiences impact your well-being?

HBCU Experience

1. In what ways has attending an HBCU influenced your well-being negatively or positively?
2. Tell me about TWO or more memorable experiences you've had while attending your current HBCU that has allowed you to show up authentically.
    a. What stood out to you about this experience that was meaningful to you?
3. Walk me through what it's like being a BWGS in STEM at your HBCU

Well-Being

1. What would it take for you as a BWGS in STEM to show up authentically and make your well-being a priority?

- What role has your discipline or department played in your well-being?

2. In what ways has the COVID-19 pandemic and the racial pandemic affected or influenced the way you think about your well-being?
3. Can you provide TWO or more examples of what you do or have done to prioritize your well-being?
    - How do these activities support your well-being?
    - How do you feel after participating in that activity?

Community Building

1. When you think about your community as a Black woman graduate student in STEM,
    - Who is included?
    - What roles do they play in your well-being?
2. In what ways has your community influenced your well-being as a BWGS in STEM
3. Can you describe a barrier or any challenges you've encountered while attempting to build your community as a graduate student?
    - How did you resist those barriers/challenges?

Appendix I: Weekly Reminder Email

Happy Sunday Everyone,

Hope your week went well, and you did something awesome for yourself that wasn't school-related. You are receiving this email to remind you that the blog questions for the upcoming week will be available on Monday at 9 am EST. You will have a week to answer these questions, and I encourage you to read at least 2 to 3 of your peers' entries and comment on anything that resonates with you. This is to make the blogs more dialogic since we are not meeting face to face. We want to be sure that we are creating a space where all of us can show up authentically, and without judgment about each other lived experiences.

To view the questions for each week, log in with your credentials, then click on the ***weekly questions*** tab.

Here are a few reminders for this week's blogs

- You will need to have two windows open, one where you can see the questions for that weeks' blog, and another window for you to write your blog post. To write your post, click post on the left-hand side of the page and begin writing
- Label your post using this format, the week you're posting for, and the name of the theme (e.g., Week 1: Community Building).
- When you are finished with your post, assign the category for this week's blog post. To assign your post a category, select a category on the right-hand side of the screen, then select the proper category for that weeks' blog post. Select weekly blog and the category for the week (e.g., community building, STEM journey etc.)
- **Publish your blogs**
- Comment on at least 2-3 of your peers' blogs
- Lastly, once the blog questions have been released, you can go back to your previous weeks' blog entry to make edits, and comment on your peers' blogs until the blog cycle closes

As usual, if you have any questions, don't hesitate to email me at bwgsinstem@gmail.com.
Have a great week and remember, you are your ancestor's wildest dream!!!

Warm Regards,

Shanalee

Appendix J: Preliminary Analysis

For my preliminary analysis, I provided a list of the codes and their definitions that were condensed into a larger theme. In addition, I have included a summary of the participant's narratives, the participant's demographic table, a brief description of the Psychological framework for Radical Healing, and the tenets that align with the theme. Lastly, I included a write-up of theme #6 as evidence.

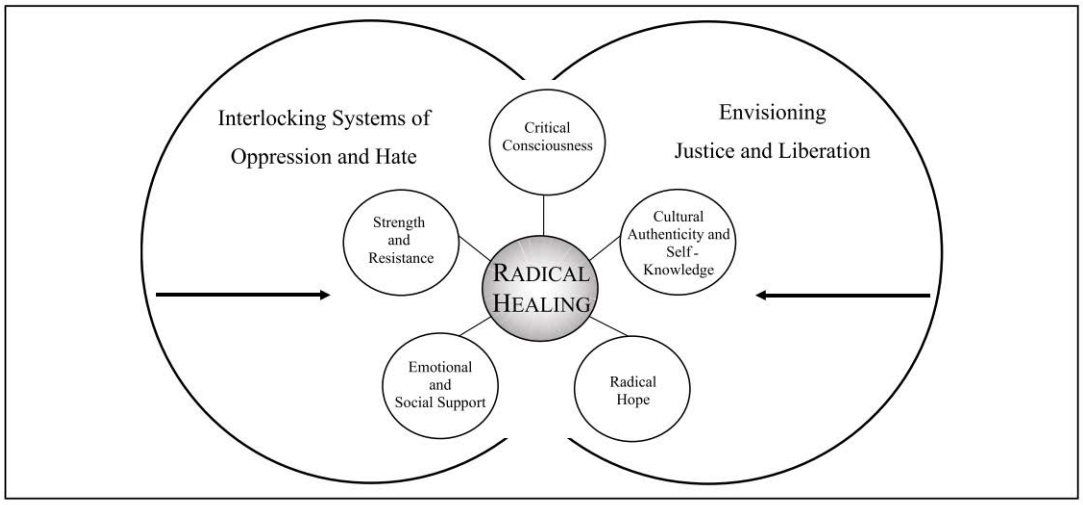

Figure 1. A psychological framework of radical healing.

French et al.'s (2020) Psychological Framework for Radical Healing (PFRH) includes components that are relevant to this study. The components of the framework are, *(1) critical consciousness, (2) radical hope, (3) strength and resistance, (4) cultural authenticity and self-knowledge, and (5) collectivism*.

- *Critical consciousness* is "an individual's capacity to critically reflect and act upon their sociopolitical environment" (French et al., 2020, p.25). This awareness allows POCI to recognize the oppressive systems that subjugate them due to their race, gender, class, and other intersecting identities.
- *Radical hope* allows people to change things for the greater good and the strength to resist oppression. Radical hope transcends one's vision of the future and its possibilities (French et al., 2020). Hope requires an act of courage when fighting the cumulating injustices in a system that prevents POCI from being liberated.
- *Strength and resistance* reflect "POCI's commitment to living joy-filled lives despite a critical awareness of racial trauma and oppression" (French et al., 2020, p. 27). Strength and resistance are materialized in different ways. Oppressed people show strength and

resistance by coming together to reduce the barriers that prevent them from fully healing from different traumatic experiences. Resistance is a strength oppressed people embody because they believe in the human capacity to change.

- *Cultural authenticity and self-knowledge* require POCI to return to their ancestral roots, and "radical healing requires a sense of self-definition and cultural authenticity" (French et al., 2020, p. 27).
- POCI values *collectivism* because it is an important part of their culture. They cultivate support within their communities to achieve radical healing and be liberated. Moreover, collectivism connects personal liberation with the broader POCI community (French et al., 2020). For example, collectivism supports radical healing through the comradery formed as communities of color take refuge in a space where they can flourish due to ongoing racism. Radical healing prioritizes POCI racial and ethnic cultural values which is evident in the connections and social support within their communities.

Questions to consider while reading through the documents

- Is there anything missing from your personal narrative that I should include?
- What is your overall perception of my analysis?
- What area of my analysis sticks out for you?
- What questions do you have after reviewing my analysis?

Theme#6: Pouring into me before pouring into others

In this theme, two subthemes were generated, s*ubtheme#1: Creating space to say no and subtheme#2: You bring me joy: My self-preservation.* This theme along with its subthemes gave some tangible ways in which BWGS in STEM are putting themselves first, and how those activities have influenced their well-being. The excerpts used were selected to represent the themes and subthemes as closely as possible.

PFRH Tenets: Strength and resistance, radical hope, and critical consciousness

Parent code: Personal Time
Definition: Instances where participants mention specific things, they do to focus on their well-being
Child code: Setting Boundaries
Definition: Instances, where participants mention how setting certain boundaries, allows them to prioritize themselves

Parent code: Personal time
Definition: Instances where participants mention specific things, they do to focus on their well-being
Child code: Rest
Definition: Instances where participants mention rest to combat their stress

Parent code: Introspection

Definition: Instances where participants are reflection about their lives
Child code: Faith
Definition: Instances where participants mention how their faith help with their stress levels

Parent code: Shift in mindset
Definition: Instances where participants mention explicitly or implicitly how they are actively choosing to push back on their bad habits.

Example Excerpts
S***ubtheme#1: Creating space to say no***

I feel like giving myself the opportunity to say no frees up my day to do literally anything else. Because I tried to set out time, every single day to have a couple of minutes or even an hour to do absolutely nothing. I don't have to answer to anyone. I don't have to be on my laptop or anything. So I feel like setting a boundary and specifically, the boundary of saying no frees me up to do anything and everything . . . [Freddie; Focus Group#2]

Subtheme#2: You bring me joy: My self-preservation.
Think that was [Kally], who mentioned about taking a one day so yeah, I've been taking my my Saturday I call it my Sabbath, which is like from sundown Friday to sundown Saturday, just doing something that I want to do no science No, no professionalism. No, no, it's just me. And yesterday I went on to a park and actually roller skate. I love the roller skate. But I haven't done it in such a long time. And I'm talking old school, quad skates, roller skates. And I just love it. [DrTNS2020$; Focus Group#2]

Shanalee Shenagay Gallimore

EDUCATION

INDIANA UNIVERSITY, Bloomington, Indiana, September 2022
Doctor of Philosophy
Higher Education
Minor: Counseling Psychology
Dissertation: *I'm Not Your Superwoman: Examining the Holistic Well-Being of Black Women Graduate Students in STEM*
Committee: Drs. Lucy LePeau (Chair), Megan Palmer, Barbara Dennis, Ellen Vaughan, Kerrie Wilkins-Yel

FLORIDA A&M UNIVERSITY, Tallahassee, Florida
Master of Science, Biology, Magna Cum Laude, August 2012

Thesis Title: *The Attenuation of Benzo(A) Pyrene (BAP) - Induced Damaged by Diallyl Disulfide (DADs) in Normal Breast Epithelial (MCF-10A) Cells*
Committee: Selina Darling-Reed, Ph.D. (Chair), James Adams, Ph.D. (Co-Chair), Gokhan Hascisalihoglu, Ph.D. and Emma Waters Dawson, Ph.D.

FLORIDA A&M UNIVERSITY, Tallahassee, Florida
Bachelor of Science, Biology, Magna Cum Laude, December 2009

WORK EXPERIENCE

INDIANA UNIVERSITY - SCHOOL OF EDUCATION, Bloomington, Indiana
I CAN PERSIST (ICP) STEM Initiative | *Research Associate* **|** *May 2020 - Present*

- Analyzed and collected research data
- Worked with the research team to write two manuscripts for publication
- Attend weekly research team meeting

INDIANA UNIVERSITY – UNIVERSITY GRADUATE SCHOOL, Bloomington, Indiana
Graduate Assistant for Center Programs, The Graduate Mentoring Center, August 2019 – 2020

- Developing an on-line mentoring module for faculty, students, and staff
- Assisting with the development of The Let's Talk about Mentoring Program
- Assisting with the expansion of current programs
- Co-creating innovative mentoring programs for faculty, students, and staff
- Facilitating or co-facilitating new and ongoing trainings, workshops, and activities, including the mentoring cohort
- Collaborating with other campus units/departments to development and implement events
- Overseeing public events
- Assessing the effectiveness of ongoing programs
- Responding to inquiries

- Representing the Center at selected public events

INDIANA UNIVERSITY - SCHOOL OF EDUCATION, Bloomington, Indiana
Associate Instructor, *Hudson and Holland Scholars Program, August 2017 – May 2019*

- Taught first semester diverse and academically talented students from various background
- Developed lesson plans for 4 discussion sections on various topics on navigating a research
- Facilitated student learning though creative activities, assigned readings, group research project, and a mix of lectures by distinguished lecturers
- Fostered collaboration through group activities and group projects on diverse topics
- Encouraged fruitful discussions weekly based on assigned readings as well as societal problems that are relevant to the course
- Presented a lecture on Diversifying your Education to a class of over 300 students

I CAN PERSIST (ICP) STEM Initiative
Mentoring and Professional Affiliates Co-Coordinator, *January 2018 - 2020*

- Recruited Women of Color in STEM to serve as professional affiliates to mentor our ICP scholars who are graduate and undergraduate students pursuing a STEM field
- Organized monthly empowerment dinners with both STEM professionals and our ICP scholars to discuss salient topics that around persistence as a Women of Color in a STEM field
- Handle all logistics relating to programming such as: room reservations, catering and other tasks
- Mentored undergraduate and high school women of color in STEM
- Organized various events that help to foster a sense of belonging amongst these underrepresented women of color
- Supervised STEM activities conducted by undergraduates
- Met weekly with the ICP leadership team to discuss program implementations

CENTER FOR P-16 RESEARCH AND COLLABORATION
Serve Indiana Kids Coordinator, January 2018 – July 2018

- Recruited and signed up eligible middle and high school students for mentoring and tutoring in Bloomington and the 17 surrounding counties
- Organized workshops around financial literacy and college readiness for high school students
- Supervised 6-10 college undergraduates as they mentored middle and high school students
- Planned a community hygiene drive which benefited the Boys and Girls club and the Banneker Center
- Organized a week-long activity for the Banneker Center teens to visit IU's campus

INDIANA UNIVERSITY – UNIVERSITY GRADUATE SCHOOL, Bloomington, Indiana
STEM Summer Scholars Institute Coordinator, May 2018- Present

- Coordinated reflection dinners for 24 graduates and undergraduates during the 8-week research intensive program which connected them to the various resources and exposed them to graduate students from different discipline. Write reflection reports after each dinner
- Organized a day long excursion to Indianapolis for the Bloomington and Indianapolis participants and documented trips via photos
- Worked with residential life to secure rooms and facilitated move-in and move-out day for the summer participants
- Collaborated with a liaison at the Naval Surface Warfare Center (NSWC) to organize a day trip to the military facility where the students presented on their summer research project
- Coordinated with the summer staff members to organize the final presentation which includes selecting the speakers award, final program development

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, Tallahassee, Florida
***Adjunct, August 2016* - December 2016**

- Taught and engaged first semester STEM students in our First Year Experience- College Transition course
- Adapted and applied appropriate academic strategies to their courses and learning experiences
- Demonstrated how to effectively evaluate information resources and utilized university and academic libraries and information systems for academic inquiry
- Use written and oral communication to discover, develop, and articulate ideas and viewpoints
- Identify and apply strategies to effectively manage time and priorities
- Identify relevant academic policies, processes, and procedures related to advising, course planning, career planning, and major exploration

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, OFFICE OF THE DEAN, Tallahassee, Florida
*Project Manager***,** *National Science Foundation (NSF) Student Centered Active Learning and Assessment Reform Undergraduate Program (SCALAR-UP)/NSF HBCU-UP, February 2014 – July 2017*

- Managed a $1.2 million dollar budget
- Organized the premier annual outreach activity known as STEM Day and fundraised up to $100,000 over the course of 4 years; a STEM outreach activity for middle and high school students in Leon county and the surrounding counties

- Collaborated with both students and faculty from various disciplines to coordinate all the activities and logistics for STEM Day which has served over 200 middle and high school students along with parents, renowned speakers and volunteers
- Facilitated and coordinated workshops for faculty development and student learning
- Arranged travel for external speakers for both faculty and student learning
- Arranged travel for Principal Investigators (PIs), Co-Principal Investigators (Co-PIs) and faculty to travel to external workshops and conferences
- Purchased equipment using the University eProcurement module for PIs, Co-PIs and faculty
- Managed the projects' daily budget
- Prepared and executed long term and short-term consulting contracts
- Managed the SCALE-UP/Active Learning classrooms room schedules
- Administered various assessments to students
- Collected and analyzed assessment data gathered in the targeted courses
- Organized scoring sessions with faculty for the Critical Thinking Assessment Test (CAT)
- Managed payroll for faculty and student workers through the university Human Resources (HR) module
- Hired and supervised up to 34 students' workers as Learning Assistants (LAs) to help to facilitate student learning in the Active Learning classrooms and to assist professors
- Assisted the marketing coordinator in creating, designing and developing information for dissemination of the projects' activities such as booklets, outreach activities, and flyers for workshops and seminars
- Administered surveys on active learning strategies and best pedagogical practices to all faculty in the departments of Biology, Chemistry, Physics, Mathematics and Computer and Information Sciences

Project Manager, CAT Dissemination Agreement between Tennessee Technological University (TTU) & Florida A&M University (FAMU), January 2015 – May 2015

- Administered the Critical Thinking Assessment Test (CAT) to a group of 70 undergraduates students from various departments
- Purchased equipment using the University eProcurement module for PIs and Co-PIs
- Facilitated the agreement between both institutions

TALLAHASSEE COMMUNITY COLLEGE, DIVISION OF MATH OF SCIENCE, Tallahassee, Florida

Adjunct, August 2012- May 2014

- Taught and engaged students about the functions and structures of Anatomy and Physiology such as the integumentary system, skeletal system and nervous system
- Supervised Health Science majors (nursing, respiratory therapy and dental hygiene) in the laboratory
- Assessed students' class material proficiency via four practical exams throughout the semester

FLORIDA STATE UNIVERSITY, COLLEGE OF MEDICINE, Science Students Together Reaching Instructional Diversity in Excellence (SSTRIDE)
Mentor, August 2012 – February 2014

- Tutored and mentored Leon County high school students who were interested in becoming future physicians
- Assisted a local 8th grade Anatomy and Physiology science teacher with lecture, field trips and classroom assignments
- Attended medical related seminars and field trips to further expose both high school and middle school students to the field of medicine

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, DEPARTMENT OF BIOLOGY, Tallahassee, Florida
Adjunct, August 2013 – December 2013

- Taught undergraduates in the lower division Biology laboratory course
- Created and administered quizzes, group assignments and exams
- Taught undergraduates basic laboratory concepts to ensure a smooth transition to their follow up course

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, DEPARTMENT OF BIOLOGY, Tallahassee, Florida
Graduate Research Student, *August 2010 – August 2012*

- Conducted Breast Cancer Research for thesis project using MCF 10As normal breast epithelial cells
- Treated cells with known carcinogen Benzo(a)Pyrene (BaP) to demonstrate DNA strand breaks in MCF-10As cells
- Used experimental techniques such as: MTS Assay, COMET Assay, Aqueous Assay
- Demonstrated the effects of Diallyl Disulfide (DADS) on DNA strand breaks in MCF- 10A normal breast epithelial cells

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, DEPARTMENT OF BIOLOGY, Tallahassee, Florida
Graduate Teaching Assistant, January 2011 – April 2011

- Graduate teaching assistant instructor for non-majors biology lab (BSC 1005)
- Conducted laboratory experiments with undergraduates from different majors
- Instructed students on the proper laboratory protocols and content in order for them to complete the course successfully

Pre-Health Advisor Assistant, January 2006 – December 2009

- Assisted with student class registration
- Assisted in the tutoring lab
- Assisted students with class work and helped with different workshops

SUMMER INTERNSHIPS/STUDY ABROAD/RESEARCH

AMERICAN ASSOCIATION OF COLLEGES AND UNIVERSITIES
Office of Undergraduate STEM Education (PKAL/STEM), Intern, May 2021-Present

- Provide project management services for the Center for the Advancement of STEM Leadership (CASL)
- Facilitate the CASL Keystroke Program for HBCU STEM faculty
- Provide support for drafting and editing publications, manuscripts, and other scholarly works
- Contribute to the coordination of other related professional development opportunities for HBCU STEM faculty
- Connect GPRA to a network of theorists who can serve as content advisors and/or presenters for the Luce Foundation's Podcast Series: "The Truth About and For BIPOC Women in STEM"
- Use expertise in critical theories to refine evaluation instrument design and analysis
- Design the Mighty Networks Platform
- Expand awareness of the podcast series to new target audiences
- Organized files for the MTT simulation, PKAL STEM institute, and Non-Tenure Track institute
- Updated institute website with participants information
- Attend bi-weekly team meetings

CENTER FOR ACADEMIC EXCELLENCE
Study Abroad, August 2011

- Research focused on the prevalence of HIV/AIDS in all three countries
- Traveled to South Africa, Lesotho and Swaziland for cultural immersion and governmental policy
- Visited local universities in each country along with historical sites such as the Apartheid Museum, Constitutional Hall, Museum of Africa
- Visited United States (U.S.) Embassy in each country and spoke with various Ambassadors' about U.S. relations in each country

CAMP ADVENTURE
Day Camp Counselor, *June 2010 – August 2010*

- Traveled to Naples, Italy and made a worthwhile contribution supporting military families through counseling school aged children
- Provided with professional training in child development and/or school-age care fields
- Networked with the Department of Defense
- Engaged in cultural experiences
- Provided needed support to families as military troops were moved in and out of Iraq and Afghanistan

VERITAS UNIVERSITY
*Study Abroad***,** *July 2009- August 2009*

- Studied Spanish in a five-week intensive program
- Took a course on Intercultural Communication
- Traveled the different parts of Costa Rica while being immersed culturally
- Built a relationship with Costa Rican host family through food, language and culture

Undergraduate Research Experience
Summer Pre-Medical Academic and Enrichment Program (SPAEP11), University of Pittsburgh, June 2007 – August 2007

- Conducted research at the Children's Hospital with my principle investigator Dr. Lakshmanan Krishnamurti
- Conducted research on Sickle Cell Disease using the Pain Management Module
- Interviewed first year residents and formulated research questions
- Attended Sickle Cell seminars and clinics
- Presented Sickle Cell Research at the Bayer School of Environmental and Natural Sciences at Duquesne University

HONORS AND AWARDS

2021 Center for Research on Race and Ethnicity in Society (CRRES) Graduate Student Research Award
2021-2022 President's Diversity Dissertation Fellowship
2021 Graduate and Professional Student Government Travel Award
2020-2021 John H. Edwards Fellowship recipient
2020 Indiana University Foundation Imagine Magazine Featured Story: "14 IU students poised to change the world"
2019 Martin Luther King Jr. Building Bridges Award Nominee
2019 Leadership Excellence Award, Black Graduate Student Association
2019 I CAN PERSIST STEM Initiative leadership award
Golden Key National Honor Society, Member, April 2012
Health and Educational Relief Organization (H.E.R.O) Humanitarian Award, December 2011
H.E.R.O. Director's Award, Spring 2011
FGLSAMP, Graduate Mentor, January 2010 – July 2017
H.E.R.O., President and Co-Founder, August 2009 – December 2010
H.E.R.O., (formerly known as Health & Educational Relief for Guyana) Co-Founder, August 2008

CONFERENCES AND WORKSHOPS

International Congress for Qualitative Inquiry Conference 2022, *Virtual*

Oxford Ethnography and Education Conference 2020, Oxford, UK
Center of Excellence for Women & Technology (CeWiT), Advocates & Allies workshop. (2020, February). Bloomington, IN.

AAC&U's Network for Academic Renewal, Transforming STEM in Higher Education Conference. (2019, November). Chicago, IL.

Indiana Student Affairs Association (ISAA) 2019 Annual Conference. (2019, October). Bloomington, IN.
Association for the Study of Higher Education (ASHE) Conference. (2018, November). Tampa, Florida
American Educational Research Association (AERA) Conference. (2018, April). New York, New York.
2017 Teaching Professor Conference. (2017, June). St. Louis, Mo
Tennessee Technological University training on Critical Thinking Assessment Test (CAT) (2015, March). Boston, MA
The 15th Annual Conference Case Study Teaching in Science. (2014, September). Buffalo, New York
Student National Medical Association (SNMA) conference. (2009, April). New Orleans, LA

PUBLICATIONS

Kerrie G. Wilkins-Yel, Francesca A. Williamson, Christen Priddie, Dionne Cross Francis, **Shanalee Gallimore**, & Jasmine L. Davis-Randolph *"There are others like me…I'm not alone":* Advancing STEM Persistence among Women of Color Through the I CAN PERSIST STEM Initiative (*revised and resubmit*)

Gallimore, S. (2020). "As Black Women in Graduate Programs, Focusing on Our Health is The Key to Success." *Blavity*

Gallimore, S. (2018). "Setting the Stage for Change: The Groups Scholars Program at Indiana University." Indiana University. *Student Personnel Association Journal.*

IN PREPARATION

Promoting Mental Health and Radical Healing as an Avenue to Broaden Participation among Women of Color in STEM

PRESENTATIONS

Williamson, F; Wilkins-Yel, K; Cross-Francis, D; Priddie, C; Housh, K; **Gallimore, S**; Davis-Randolph, J. (2022, May). "*Co-Learning Qualitative Inquiry through a Black Feminist of Ethic of Caring*." International Congress for Qualitative Inquiry, Virtual, May **2022**

Gallimore, S; Ames, C. (2020, February). *"Advocates and Allies for Equity: Gender and Race Graduate Workshop."* Indiana University Bloomington. Talk given at the Graduate Advocate and Allies for Equity workshop, Bloomington, IN February **2020**

Gallimore, S; Fonseca, L. (2019, November). *"A State of Emergency: Persisting as Women of Color in STEM."* Indiana University Bloomington. Talk given at 2019 AAC&U Transforming STEM in Higher Education conference, Chicago, IL, November **2019**

Gallimore, S; Doyle, E; Salzman, C. (2019, October). *"Graduate Women of Color in STEM."* Indiana University Bloomington. Talk given at 2019 ISAA conference, Bloomington, IN October **2019**

Gallimore, S; Nathan, A; Howell, G. (2018, November). "*Agents of Change: Historical Look at Black Student's Influence on Institutional Change at a Predominately white institution."* Indiana University Bloomington

"Applying to Graduate School." Center for Integrative Study of Animal Behavior's, NSF REU Graduate Panel. (2018 July). Indiana University Bloomington.

Gonzalez, G; Skinner C; **Gallimore, S;** Howell, G; Mokko, M. (2018, April). *"Lessons in Retention: Teaching First-Year, Diverse, High-Achieving Scholarship Students."* Hudson and Holland Scholars Program. Indiana University Bloomington

Getting You into IU (GU2IU) Graduate Panel. (2017 October). "Thriving at Indiana University." Indiana University Bloomington.

Edington, M.; Johnson, L; Stephens, D; Weatherford, C; and **Gallimore, S.** "HBCU-UP Implementation Project at Florida A&M University: Student Centered Active Learning and Assessment Reform (SCALAR)." Talk given at the 2015 HBCU-UP/CREST/PI/PD Meeting, Washington, DC February **2016**.

Edington, M.; Johnson, L; Stephens, D; Weatherford, C; and **Gallimore, S.** "HBCU-UP Implementation Project at Florida A&M University: Student Centered Active Learning and Assessment Reform (SCALAR)." Talk given at the 2015 HBCU-UP/CREST/PI/PD Meeting, Washington, DC February **2015**.

Gallimore, Shanalee[1] Filbert, Lauren M.S[2], James McGee, M. D[3]., Lakshmanan Krishnamurti, MD.[4] University of Pittsburgh, Medical School, Summer Pre-Medical Academic and Enrichment Program, University of Pittsburgh, Graduate School of Public Health, Department of Human Genetics, Pittsburgh, PA, University of Pittsburgh, Division of Gastroenterology, Hematology & Nutrition, Department of Human Genetics, Pittsburgh, PA [2]Children's Hospital of Pittsburgh, Department of Hematology/Oncology, Pittsburgh, PA. (2007, July**). "Educational Effectiveness and Impact on Knowledge and Attitude of Health Care Providers of a Web base Interactive Educational Module on the Management of Sickle Cell Disease Related Vasoocclusive Pain Crises."** Bayer School of Environmental and Natural Sciences at Duquesne University, Pittsburgh, PA.

Gallimore, Shanalee[1] Filbert, Lauren M.S[2], James McGee, M. D[3]., Lakshmanan Krishnamurti, MD.[4] University of Pittsburgh, Medical School, Summer Pre-Medical Academic and Enrichment Program, University of Pittsburgh, Graduate School of Public Health, Department of Human

Genetics, Pittsburgh, PA, University of Pittsburgh, Division of Gastroenterology, Hematology & Nutrition, Department of Human Genetics, Pittsburgh, PA [2]Children's Hospital of Pittsburgh, Department of Hematology/Oncology, Pittsburgh, PA. (2007, November). **"Educational Effectiveness and Impact on Knowledge and Attitude of Health Care Providers of a Web base Interactive Educational Module on the Management of Sickle Cell Disease Related Vasoocclusive Pain Crises."** Annual Biomedical Research Conference for Minority Students (ABRCMS), Austin, TX.

Gallimore, Shanalee[1] Filbert, Lauren M.S[2], James McGee, M. D[3]., Lakshmanan Krishnamurti, MD.[4] University of Pittsburgh, Medical School, Summer Pre-Medical Academic and Enrichment Program, University of Pittsburgh, Graduate School of Public Health, Department of Human Genetics, Pittsburgh, PA, University of Pittsburgh, Division of Gastroenterology, Hematology & Nutrition, Department of Human Genetics, Pittsburgh, PA [2]Children's Hospital of Pittsburgh, Department of Hematology/Oncology, Pittsburgh, PA. (2009, March). **"Educational Effectiveness and Impact on Knowledge and Attitude of Health Care Providers of a Web base Interactive Educational Module on the Management of Sickle Cell Disease Related Vasoocclusive Pain Crises."** Florida Georgia Louis Stokes Alliance for the Minority Participation (FGLSAMP) Career Expo, Miami, FL.

PROFESSIONAL AFFILIATIONS

- Indiana University Black Graduate Student Association, President, 2019 - 2020
- Association for the Study of Higher Education, member, October 2018 - present
- Indiana University Black Graduate Student Association, Programming Chair, 2018-2019
- National Association of Student Personnel Administrators, member, October 2017 – present

UNIVERSITY SERVICE

Office of the Vice President for Diversity, Equity, and Multicultural Affairs (OVPDEMA) Vision 2030 Task Force, Spring 2021

- Comprise of 27 individuals across the IU university campuses
- Focus on formulating a Vision 2030 document for diversity, equity, and inclusion at IU
- Serve as one of the three student representatives
- Attend weekly meetings and discuss various topics (e.g., supporting and advancing the IU antiracist agenda)
- Final report and recommendations will be submitted to the Vice President for Diversity, Equity, and Multicultural Affairs

Indiana University Bloomington School of Education International Student Ambassador, 2021- 2022

- Serve as a point of contact for prospective students interested in pursuing a graduate degree in the School of Education

- Provide timely feedback within 24 hours to questions asked by prospective students both domestic and international

Neal-Marshall Black Culture Center Self-Assessment Board, Indiana University Bloomington 2020

- Participated in self-assessments for the culture center
- Provided input on their strategic planning for the next ten years
- Attend planning meetings with the other board members for the culture center

Indiana University Black Graduate Student Association (BGSA) President, 2019 - 2020

- Presided at all non-committee based BGSA meetings
- Official representative of the student organization when dealing with students of other universities, in dealing with the faculty and administration
- Chairperson and member of the Executive Board
- Built partnership with university officials and Bloomington community members
- Fundraised and acquire sponsorships for various initiatives for the organization

Indiana University Black Graduate Student Association (BGSA) Evening of Black Excellence Gala Co-Chair, 2019, 2020

- Organized this annual awards gala for 160 Black faculty, staff and students.
- Fundraised over $30,000 for this awards gala through community and campus partnership

Indiana University Black Graduate Student Association (BGSA) Programming Chair, 2018- 2019

- Coordinated logistics for approved programs and events by the General Assembly
- Presided over, unless otherwise designated, all events including speakers, networking sessions, professional development sessions, study sessions, etc.
- Collaborated with event/Program Coordinator to ensure all events are properly executed.

Higher Education and Student Affairs (HESA) Doctoral Visitation Committee Member, Indiana University Bloomington 2018, 2019 & 2020

- Assisted with coordinating a virtual visitation day for potential students
- Coordinated activities for admitted doctoral students' visitation

IU Diversity Retention Program – Friendsgiving, November 2018 and 2019

- Requested and received $500 from the University Graduate school to organize a Thanksgiving dinner for minority students

Emissaries for Graduate Student Diversity, Indiana University Graduate School, May 2018 - present

- Assist with recruitment of more underserved minorities to IU
- Interacted with potential IU students during the recruitment activity Getting You Into IU

IU Diversity Retention Program – The Ultimate Tailgating Experience – July 2018-October 2018

- Organized a diversity tailgate for current students, faculty, staff and alumni
- Requested and received $1700 from various departments for this retention program
- Helped to foster community during this event

Association for the Study of Higher Education (ASHE), ASHE HBCU Day Ad Hoc Committee, Indiana University Bloomington, March 2018 - November 2018

- Planned and organized a college day for 150 juniors and seniors from 4 Tampa Bay high schools
- Worked with 3 colleagues remotely for 8 months to finalize details for the HBCU Day
- Solicited supplies from HBCUs for the participants

Black Women's Wellness Empowerment Summit Planning Committee Member, Indiana University Bloomington, September 2018 - October 2018

- Wrote a proposal to help solicit funding
- Coordinated with another team member refreshments for this summit

FLORIDA A&M UNIVERSITY, COLLEGE OF SCIENCE AND TECHNOLOGY, Tallahassee, Florida

Office Manager Search Committee Member, October 2016 – December 2016

- Select the top candidates from a pool of applicants to be interviewed by the committee the department chair and the Deans in the college
- Interviewed potential candidates for the Department of Biological Sciences Office Manager position
- Attended weekly meetings pertaining to the selection process
- Attended the final candidates' presentations during the selection process

Dean's Office Manager Search Committee Member, June 2016 – August 2016

- Select the top candidates from a pool of applicants to be interviewed by the committee and the Deans in the college
- Interviewed potential candidates for the Dean's Office Manager position in the College of Science and Technology
- Attended weekly meetings pertaining to the selection process
- Attended the final candidates' presentations during the selection process

College Recruiter Search Committee Member, July 2014 – August 2014 & May 2015 – July 2015

- Selected the top candidates from a pool of applicants to be interviewed by the committee and the Deans in the college
- Interviewed potential candidates for the College of Science and Technology Recruiter position
- Attended weekly meetings pertaining to the selection process
- Attended the final candidates' presentations during the selection process

Annual Biomedical Research Conference for Minority Students (ABRCMS), Volunteer, November 2011 – November 2017

- Supervised 10-15 undergraduate students who attend annual conference
- Networked and collaborated with various institutions present at this annual conference
- Collected pertinent information on summer internships for undergraduate students
- Coordinated student meetings before annual meeting to discuss and review poster presentations

COMMUNITY SERVICE

Banneker Community Center, July 2018 – Present

- Martin Luther King Jr. Day of Service
    - Collaborated with the Black Graduate Student Association and the I CAN PERSIST (ICP) STEM initiative to commemorate Dr. MLK Jr. during a day of service
    - Organized the day of service Civil Rights card sort activity for the elementary school age students at Banneker
    - Worked with ICP to finalize the STEM activity for the elementary school students
- Banneker Holiday Program
    - Coordinated a holiday program for the community center where families designed ornaments and decorated Christmas stockings and hats
- Diversity Toy and Book Drive
    - Spearheaded this annual event through the Black Graduate Student Association Chapter
    - Collected over 200 books and toys in support of the Banneker center families for the holiday season
- Childhood Hunger Program
    - Collaborated with the graduate chapter of Alpha Kappa Alpha Sorority Inc. to help combat hunger in the community by providing dinner for the family and children at the Banneker Center.
- Community Hygiene drive
    - Organized and distributed the personal hygiene products collected to the teens and their families
- Banneker Center Meets IU
    - Organized a week of activities for the teens summer camp to visit IU and engage in both educational and social activities

Bethel A.M.E. Homework Help, August 2017 - present

- Tutor and mentor students from the local schools in Bloomington, Indiana
- Work with the coordinators to plan different cultural and educational activities for the students

Family Worship and Praise Center (FWPC), *Food Ministry Volunteer, May 2012 – July 2017*

- Prepared and served food at our church sponsored events
- Helped with feeding the homeless
- Coordinated with our food ministry leaders about upcoming events

TECHNICAL SKILLS

Program and Project Management, eProcurement Module, Human Resource Module, Budget Management, Event Planning, Microsoft Office proficiency for Mac and PCs and PeopleSoft