

# Persistence in the Academy: Intersectional Experiences of Black Women Faculty in Computing

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**Abstract**—This research paper presents the outcomes of an in-depth phenomenological analysis conducted on interviews with six tenured Black women faculty in computing (BWFC). Statistical data reveal glaring disparities in representation, with Black women constituting only a small fraction of computing faculty positions compared to their counterparts. Gender-focused interventions ignore the racial inequalities that exist in the field and have proven to be ineffective in increasing the retention of BWFC. Despite concerted efforts to address gender imbalances, Black women remain significantly underrepresented in computing faculty roles, facing distinct challenges within academic environments. This research employs intersectionality and an anti-deficit achievement framework to delve into the lived experiences of BWFC, with a particular emphasis on their ability to navigate systematic barriers prevalent within academic settings, thus highlighting their resilience and perseverance.

The study reveals three key themes supporting BWFC. Firstly, internal support from colleagues within the institution is a crucial factor contributing to their resilience. Mentorship, collaboration, and advocacy within the academic community foster a sense of belonging and support. Secondly, external support from colleagues beyond the institution plays a significant role in bolstering the persistence of BWFC. Professional networks and collaborative efforts provide validation and motivation that extend beyond the boundaries of institutional settings. Lastly, intersecting social identities, including gender and ethnicity/race, profoundly impact the experiences of BWFC. These factors influence their sense of belonging, access to leadership opportunities, and resource allocation within academia.

This research underscores the importance of recognizing and addressing the unique challenges faced by BWFC in computing disciplines. By shedding light on their experiences and resilience, the study advocates for targeted interventions and support systems to promote the recruitment, retention, and advancement of BWFC within computing disciplines. By focusing on the experiences and perspectives of BWFC, academia can cultivate an environment that fosters the collective success and flourishing of all individuals, irrespective of their race, gender, or background.

**Index Terms**—Black women faculty, Computing Education, retention, intersectionality

## I. INTRODUCTION

The underrepresentation of Black women faculty in computing (BWFC), particularly at the full professor level, remains a significant issue [1-4]. Quantifying accurate representation of Black women in computing (i.e., Computer Science, Information Technology, Computer Engineering, Data Science, etc.) is challenging because their statistics are often aggregated

with those of underrepresented women, including women of color, Black, Latina, and Native descent. According to the Computing Research Association's annual Taulbee survey, which includes Predominantly White Institutions (PWIs) and Historically Black Colleges and Universities (HBCUs), there are only 41 tenured or tenure-track Black women faculty members in computing across all degree-granting institutions in the United States. These include 7 (1.9% of female faculty), 16 (5.7% of female faculty), and 18 (4.6% of female faculty) full, associate, and assistant professors, respectively [4]. These statistics highlight the profound underrepresentation of BWFC and underscore the need to increase the number of Black women earning doctorates in computing-related fields. Establishing, expanding, and advocating for equitable organizational frameworks is essential to enhancing opportunities for BWFC to achieve tenure and leadership roles.

The insufficient representation of any group often leads to the suppression of voices crucial for driving change, supporting progress, and fostering a diverse culture [5, 6]. Despite the diversity goals of many higher education institutions, achieving meaningful diversity among faculty has proven challenging [7, 8]. While numerous diversity initiatives have targeted the retention and recruitment of underrepresented groups in computing, there is a lack of specificity regarding Black women faculty [1, 5, 9]. Previous research has explored the unwelcoming culture in computing environments for Black women faculty [2, 10, 11]. Still, there is relatively less focus on the factors that drive Black women to pursue and remain in faculty positions in computing. Understanding the persistence of BWFC with tenured positions necessitates investigating the factors contributing to their sustained commitment and the challenges impacting their retention.

The primary objective of this research is to capture first-hand narratives detailing the persistence of BWFC across diverse institutional settings encompassing both PWIs and HBCUs. An extensive literature review has identified key themes influencing this dynamic, including personal beliefs, internal and external barriers, bias, recruitment, and retention, ultimately leading to either persistence or underrepresentation. Guided by Harper's [12] Anti-deficit Achievement Framework (A-DAF) and employing an intersectional lens, this study investigates the lived experiences of six Black women faculty

who have persevered in the field of computing. Specifically, the research aims to answer the following research question: What intersectional experiences have facilitated the ability of Black women faculty in computing to overcome internal and external obstacles and persist in academia?

This research provides insight into the unique intersectional challenges Black women faculty face in computing and aims to dismantle barriers by proposing strategies that foster enduring institutional transformation. The recommendations are grounded in the collective experiences and insights of these Black women faculty members, offering a roadmap for enhancing diversity, equity, and inclusion that benefits the entire faculty community.

## II. THEORETICAL PERSPECTIVES

This qualitative study explores the experiences of BWFC as they recount significant interactions with broader systems, structures, practices, and ideologies that shed light on their career achievements in computing. The study utilizes an overarching Anti-deficit Achievement Framework (A-DAF) in conjunction with the interpretive lens of Intersectionality Theory to examine the unique experiences of BWFC.

### A. Anti-deficit Achievement Framework

Harper's [12, 13] A-DAF provides a framework for investigating the lived experiences of these nontraditional, successful BWFCs. It shapes the language and direction of all interviews and data analyses. Through Harper's paradigm, postsecondary researchers have employed A-DAF to highlight marginalized groups' accomplishments and persistence in overcoming barriers rather than focusing solely on their deficiencies or deficit-oriented narratives.

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### B. Intersectionality Theory

Black women occupy a unique position at the intersection of minority identities based on ethnicity and gender. This intersectionality of race and gender [14] poses particular challenges for BWFC [15, 16]. American author and playwright Ntozake Shange aptly describes this phenomenon: "to be Black, a woman, and an academic is a metaphysical dilemma" [17].

Often viewed as "outsiders-within" the academy, Black women face exclusionary structures in academia and must navigate its inherent pressures—research, publishing, teaching, and service—while also managing their status as underrepresented "token" members [18].

Black women in computing face unique challenges due to the "double bind" of race and gender discrimination, differentiating their experiences from other women [15, 19]. To promote

true inclusivity, discussions on broadening participation must consider the intersectionality of race and gender rather than focusing solely on women [20].

## III. METHODOLOGY

### A. Selection of Participants

This study explores the lived experiences of six BWFC who met the following criteria: (1) identify as African American or Black and female, (2) hold a Ph.D. in a computing field (e.g., computer science, information systems, information technology, computer engineering), (3) occupy a faculty position in a computing department at a U.S. college or university, (4) have achieved promotion and tenure (e.g., associate professor or professor) at a four-year institution, and (5) agree to engage in an in-depth interview. All participants are associate or full professors with at least 15 years of academic experience at either a PWI or an HBCU, and four of them also possess industry experience in computing.

### B. Data Collection

Researchers collected and examined data for this study through phenomenological, three-phase, semi-structured interviews lasting between 60 and 90 minutes, conducted using Zoom video conferencing. Phenomenological research aims to understand and describe an event from the participant's perspective, as [21] notes, making it a suitable framework for exploring how events are experienced and interpreted. The research utilized purposeful and snowball sampling to select participants rich in information. Each participant was compensated with a \$50 Amazon gift card and given a pseudonym post-interview.

The research team adapted Mark Bevan's [22] three-phase phenomenological interview protocol and Morganson et al. [23] to structure the interview schedule and protocol. In the first phase, the familiarization phase (timeline), interviewees constructed their narratives, incorporating characters, scenes, and settings that provided a dramatic backdrop, often with an incident adding tension. This phase linked their stories to the broader social, political, and environmental context of computing in academia, with descriptive questions helping them to detail and recount their experiences vividly. The second phase, the apprehend phase, allowed researchers to gather data about life episodes and historical events in which the interviewee participated. Participants explained their experiences in computing education, from childhood to the present, as if recounting life chapters in a book or story, using the timeline to highlight significant situations. Finally, the clarifying phase revealed each participant's future life story and perspectives on the value of BWFC.

### C. Data Analysis

The study utilized a modified version of Hycner's [24] methodology with an explication approach to analyze the comprehensive three-phased interview data. The researcher transcribed the recorded Zoom interviews verbatim using Rev.com, a paid transcription service, and then thoroughly

reviewed the transcripts for accuracy. Following this review, the researcher conducted member checks with participants to confirm the accuracy of the transcriptions and initial interpretations, allowing participants to point out any inaccuracies or misrepresentations.

According to Hycner [24], data analysis in phenomenological research risks losing the context of the entire phenomenon, but explication preserves it. After the member check process, the researcher employed Hycner's five-phase interpretation method: (1) bracketing and phenomenological reduction, (2) delineating units of meaning, (3) clustering units of meaning to form themes, (4) summarizing and validating each interview, making modifications if necessary, and (5) extracting both general and unique themes from all interviews to compile a composite summary.

In the initial phase of phenomenological research, bracketing is a critical step introduced by Husserl [26]. It involves the researcher suspending their preconceptions and interpretations to engage deeply with the interviewees' perspectives. The researcher immersed themselves in this process by repeatedly reviewing the audio recordings and corresponding transcripts over several months. This method, known as phenomenological reduction [24], helps the researcher remain open to the phenomenon as it is rather than as an instance of a preconceived theory.

In the delineation of units of meaning phase of the explication process, the researcher extracted "significant statements, sentences, or quotes" from each interview to illuminate the researched phenomenon [27, p. 61]. Moustakas [25] described this phase as horizontalization, treating each statement or horizon equally important.

The primary researcher enlisted an additional analyst to cross-check and verify the data interpretation, enhancing the study's reliability. Researchers manually coded the transcripts during this phase by listing and grouping expressions relevant to the participant's experiences. After coding, they used NVivo 12, a qualitative data analysis software, to organize, analyze, and visualize the data, facilitating subsequent coding phases (2 to 4). They also focused on eliminating redundant statements (Moustakas, 1994) and continued bracketing as per Hycner [24], carrying keywords or phrases forward into the next phase.

In the third phase, clustering units of meaning to form themes [24], researchers organized the units of meaning into clusters to identify significant topics or units of significance—an impartial peer-reviewed the emergent themes to provide critical feedback and validate their applicability.

In an iterative process, the researcher compared and refined the themes to align with the original interviews, ensuring they accurately reflected the participants' intent. In the final phase, a composite summary was derived from the general and unique themes to describe the phenomenon studied comprehensively. To enhance credibility, the researcher asked participants to verify the accuracy of the description. Four of the six participants responded, reviewed the description, and confirmed the findings were accurate.

## IV. RESULTS & DISCUSSION

In this paper, the researcher presents a subset of the findings from a comprehensive study. To address the research question, "What intersectional experiences have enabled Black women faculty in computing to overcome internal and external obstacles and persist in academia?" interviews with six participants provided insights into their attitudes, perspectives, emotions, motivations, and experiences. These tenured academics in computing shared their sociopolitical roles, uniting their discussions. After analyzing their experiences, the researcher extracted key statements and formulated meanings, organizing these into three themes: (a) navigating intersectionality, (b) managing career advancement, and (c) professional structural and social supports. Most participants encountered all four themes. This paper includes only a selection of quotes representing the most prevalent themes due to page limitations, with all identifying information anonymized through pseudonyms.

### A. Navigating Intersectionality

The participants' counterstories illuminate the many roadblocks they encountered along their academic and professional journeys. An intersectional lens helps clarify Black women's experiences by situating them within specific locations (e.g., colleges, departments) and positions (e.g., undergraduate, graduate, faculty member) while examining their interactions with academic structures and work modes. All participants shared stories of resilience in the face of adversity due to overlapping social identities.

"I see you for who you are," Barbara's response reflects her overall sentiment and desire to be recognized for her entire identity. Barbara, an associate dean, a wife, and a mother, acknowledged:

I had so many sponsors along the way. All of those programs, like, [names of ally organizations/groups omitted] I participated in...such programs said to me that – I see you for who you are.

Participants acknowledged both implicit and explicit bias and the emotional distress stemming from a lack of representation and a sense of isolation, whether they were the only Black graduate student or the only tenured Black woman in their department. Despite these challenges, they frequently discussed navigating their intersecting identities to persevere through adversity.

The theme of navigating intersectionality underscores the resilience of Black women in academia despite the pervasive challenges of bias, isolation, and underrepresentation they face. This study reinforces prior research that views intersectionality not simply as multiple identities crossing paths but as a dynamic process of actively negotiating and managing these identities in environments often dominated by and catered to predominantly white male perspectives [14]. The personal accounts of participants like Barbara, who emphasized the importance of being seen for "who you are," underscore the critical need to recognize and validate their entire identities, not just their professional roles. This recognition is essential

for personal validation and fostering an inclusive academic culture that actively supports diverse faculty members.

### *B. Managing Career Advancement*

All the Black women faculty in the study shared their challenges with career advancement while seeking tenure and promotion. Half of them expressed frustration and dissatisfaction due to not securing tenure on their first attempt and identified multiple obstacles that impeded their progress.

Marilyn, a full professor at a Predominantly White Institution (PWI), reflected on her initial tenure denial and the valuable lessons she gained while preparing her tenure appeal. She highlighted the necessity of understanding the intricacies of the tenure process, encapsulated in her advice on "knowing how to count the beans." Her insights demonstrate her persistence and the strategies that led to her eventual promotion to full professorship.

I have one research team now, and we have done probably seven or eight publications in the last three years. We've written grants. We've applied for a patent. We have software that we will use nationwide, probably about next year. That's not something that one person can do. There are three faculty, and we have about six or seven students working with us. So you got to figure out how you synergize...for tenure [and promotion], you must have all of your beans lined up in a pile and remember them... You gotta know how to count the beans, and you need to make sure you count what counts.

These women emphasized the crucial factors for tenure and promotion, noting that their extensive out-of-class instructional responsibilities often impeded their career advancement. Moreover, the often overlooked labor involved in service and outreach activities—such as committee work, mentoring, supervising students, and community service—regularly hindered their professional progress and success.

The challenges in career advancement articulated by participants point to systemic barriers in the academic tenure and promotion processes that disproportionately impact Black women. The concept of "knowing how to count the beans" as mentioned by Marilyn reflects a broader issue of navigating an opaque system that often does not value the holistic contributions of minority faculty. This observation aligns with findings from Misra et al. [28], who noted that women and minority faculty frequently undertake extensive service work that is undervalued in tenure evaluations. Addressing these systemic problems requires structural reforms in the recognition and reward systems within academia to ensure that all forms of scholarship and service are valued as critical to the institution's success.

### *C. Professional Structural & Social Supports*

The participants consistently emphasized the importance of professional development in advancing their careers. All six engaged in various activities and interactions that improved their teaching and research skills while fostering personal,

social, and emotional growth. These activities included both structured training programs and self-directed efforts.

All respondents cited professional groups and peer networks within and outside their universities as critical to their persistence and career advancement. They were actively involved in various organizations and communities serving minorities.

Martha shared her experience co-founding an organization focused on addressing educational challenges in computing at minority-serving higher education institutions. She highlighted such organizations as valuable sources for "guidance and tips" and "advice" on various topics, including work-life balance, grant writing, and instructional practices. Many participants found that external minority-serving organizations provided perspectives and resources unavailable at their institutions. Martha recalled the following:

I met many other educators who were doing [computing-related] things at their institutions, and we were able to give each other advice, guidance, and tips on what workshops to attend or worthwhile programs to participate in.

For many participants, forming supportive networks within their institutions and developing a balanced and well-rounded support network was often challenging. As a result, these women frequently turned to external professional organizations and networks for assistance in maintaining their positions. Depending on their specific roles, each member underscored the importance of professional development.

The participants' focus on professional development and the importance of supportive networks indicate that systemic, structured support is crucial for the success of BWFC. Their reliance on both internal and external networks points to a deficiency in institutional support systems that do not adequately address the unique needs of Black women faculty. This finding is consistent with research by Thomas et al. [2] which emphasized the importance of mentorship and networks for underrepresented groups in navigating the often-unwelcoming environment of academia. Initiatives started by participants, such as Martha's organization focusing on minority issues in academia, are vital as they provide essential resources and community support to fill these gaps.

## V. IMPLICATIONS

The findings of this study underscore several key implications for academic institutions, particularly those within computing. First, it is essential to restructure tenure and promotion criteria to better reflect the diverse forms of scholarship that Black women faculty in computing (BWFC) contribute. These contributions include service, mentorship, and outreach activities, all of which are vital for promoting diversity and inclusion within the discipline. Rather than focusing solely on traditional metrics like publications and grants, institutions should broaden their criteria to equally value mentorship, community engagement, and other efforts that help build an inclusive academic culture.

Second, to support BWFC in navigating the complexities of intersectionality, institutions should develop targeted

programs that address their unique challenges. This could include training on managing the "double bind" of race and gender, as well as providing resources that support the holistic development of their professional identities. Establishing formal mentorship programs, affinity groups, and professional development opportunities tailored specifically to the needs of Black women in computing is crucial. Such initiatives would not only offer essential support networks but also reduce the isolation that many BWFC experience. By fostering these connections, institutions can cultivate a stronger community that promotes both the professional and personal growth of BWFC.

Finally, academic institutions must actively dismantle the cultural and structural barriers that hinder the advancement of BWFC. This requires a thorough examination of departmental practices, policies, and cultures that perpetuate exclusion and inequity. By implementing inclusive practices that genuinely value diversity in all its forms, the computing field can more effectively leverage the talents and perspectives of Black women faculty, leading to richer and more innovative research and educational outcomes.

The persistence of BWFC serves as both a testament to their individual resilience and a call to action for the computing field. Addressing the specific challenges faced by BWFC is essential for creating more equitable and inclusive academic environments. By doing so, the field can make meaningful progress toward achieving true diversity and inclusion, ultimately benefiting the entire academic community.

## VI. CONCLUSION

The experiences of BWFC, as examined in this study, underscore the critical impact of intersectionality on their academic journeys. The challenges these women face are multifaceted, rooted in both the racial and gendered biases that pervade the academic environment, particularly within the computing field. Despite these challenges, BWFC demonstrate remarkable resilience and persistence, often relying on both internal and external support networks to navigate their careers. However, the underrepresentation and isolation they experience demand that academic institutions and the computing field take more proactive steps to foster environments where these women can thrive.

Academic institutions must expand their understanding of success to fully recognize the broad contributions of BWFC, including their mentorship, community engagement, and efforts to foster inclusive spaces. These contributions are vital to the advancement of the discipline but are frequently undervalued in traditional metrics of success. Redefining what constitutes success in computing is essential to ensuring that all faculty members, especially those from underrepresented groups, are properly acknowledged and supported in their professional growth.

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