

**Program Assessment: Career Development Services
as Informed by Black Female Undergraduates in Engineering**

By

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Many successful organizations prioritize institutional knowledge and therefore invest time, effort, talent, and funding toward succession planning, so that valuable resources can be potentially preserved and expanded instead of being wasted on reinventing the wheel. The concept of institutional knowledge is operationalized by unforgetting histories. As it relates to institutions of higher learning, I posit that career service centers on college campuses, are critically positioned for imagining futures that build upon “collective ways of knowing” (Collins, 2022) which can historically contextualize material outcomes concerning the employability of college students. This paper introduces an augmented career development framework that is conceptualized and brought forth to address an apparent post structural college-to-career transition process.

Research Purpose

The purpose of my research is to explore how centering the career development experiences of Black female undergraduates in engineering might help career service centers (CSCs) on college campuses preempt marginalized employment outcomes for all students in pursuit of first destination success. Career development is driven by participating in high-impact practices that improve “career-readiness competencies in critical thinking, communication, leadership, professionalism, teamwork, and technology” (National Association of Colleges and Employers (NACE), 2021), as well as furthering self-development by way of individual counseling sessions with career coaches, co-curricular career education, and access to co-op and internship programs. First Destination Success (FDS) generally refers to the quality and immediacy of post-graduation outcomes of bachelor’s degree recipients, typically within six months of graduation.

My research places a spotlight on African American women pursuing engineering careers for two critical reasons. Firstly, a primary motivation to focus on engineering is that the salary potential for this field is significantly above the starting average for new graduates entering the workforce, as well as for accumulated lifetime earnings (Wells Fargo & Company, 2023), compared to the salary potential of other

college disciplines. A higher-paying career is an important motivation, considering the widely known income disparities across gender and race. Secondly, Black women are underrepresented in high-paying professions that require a college degree (LePage, 2023), such as engineering, despite their over-index (US Bureau of Labor Statistics (BLS), 2011) in attaining advanced degrees overall, which raises a flag suggesting “Intersectionality” (Crenshaw, 1989) impacting occupational assignments (Nag, Arena Jr., & Jones, 2022).

Researcher Questions

Extant literature compels my inquiry to be supplementarily angled toward institutional program assessments because scholarly research has comprehensively documented the career development of African American female undergraduates in engineering with an emphasis on student-centered efficacy. From the standpoint of Black Feminist Theory (Collins, 2022), my line of questioning is committed to an anti-deficit approach concerning Black women in the United States, thereby assessing the efficacy of institutional support towards career readiness and employment outcomes. My research focuses on institutional intervention policies, praxis and possibilities versus assessing “cultural capital” (Yosso, 2005 Vol. 8, No. 1), individual resilience, or lack thereof, when socioeconomic factors overwhelm career development opportunities for STEM majors, as scholars have observed (Charleston, George, Jackson, Berhanu, & Amechi, 2014). Therefore, the research questions shaping my inquiry are as follows: (1) How does foundational theory inform career development intervention policies and praxis, and (2) What possibilities can career service centers on college campuses explore to address marginalized career outcomes for all students?

Theoretical Framework

A constructivist aligned perspective, such as Collin’s (2022) Black Feminist Theory (BFT), helps frame an understanding of how Intersectionality (Crenshaw, 1989) counteracts the benefits that career service centers (CSCs) at colleges are purported to deliver. BFT “reflects a complexity of theoretical

traditions such as Afrocentric philosophy, feminist theory, sociology of knowledge, critical social theory, and postmodernism” (Collins, 2022). According to the mission statements and strategic objectives typically promoted on university websites, it can be assumed that supporting college-to-career transition is a critical objective for career service centers (CSCs) with the ultimate goal of improving first destination success (FDS), which is considered as having desirable and suitable (based on degree type and major) employment outcomes within six months of college graduation. However, the phenomenon under observation is that CSCs are prone to falling short in structuring career development systems that neutralize intersectionality and in delivering on the promise of ROI for Black women transitioning from classrooms as engineering students and into corporations as professional engineers.

Methodology & Methods of Inquiry

As a graduate student, working in an assistant capacity for a college career services center, my principal method of inquiry is via field observation. I am present in the research field on the “continuum of enmeshment by observation as a complete witness, focused witness, and play participant” (Bhattacharya, 2017). *Fundamentals of Qualitative Research* affirms that “the researcher is a complete witness participant in the environment that s/he is observing by simply being present in the environment” (Bhattacharya, 2017). Although I am not a career advisor, my workspace is situated such that I am aware, as a “focused witness,” of the varied student populations that frequent the office for career development counseling and coaching services. My presence as a “play participant” is generally required at most meetings involving programmatic operations, strategic planning, employer relations, faculty fellows, and special events such as hosting career fairs.

A qualitative methodology is in alignment with data collection methods involving field observations, e.g., the office environment, as described. In addition, conducting surveys, interviews, conversations, and document analysis, as well as performing reiterative coding, were data collection and

interpretation methods used to reveal a meta-narrative about concerted efforts relevant to first destination outcomes for students.

Data Sources

A meta-narrative is compiled from data sources encompassing approximately over 400 engineering students, 30 faculty members, 15 administrators, and a pool of 100 employer recruiters. Collectively, these data sources offer a 360 assessment of the career development programs and corporate relations for an accredited college of engineering at one R1 university located in the southern region of the United States. Mock behavioral interviews, observations and document analysis of career development artifacts, such as resumes, cover letters, and written reflections on career readiness competencies, help with charting varied aspects that Black women undergraduates majoring in engineering uniquely experience while actively seeking paid internships or full-time employment directly relevant to their disciplines. The data help generate “grounded theory” to inform innovative possibilities for career intervention praxis. Grounded theory, is technically a data sourcing and analysis method “intended to create theory and includes the summation of a programme of research and/or result of any research study, on the micro level, as researchers seek to explain their data”, according to *Foundations of Educational Research* (Elliott, 2022). Interpretation of data collection, analysis and findings conceptualize a poststructural framework for career development resulting from (a) the examination of programs and counseling services provided by a career service center for an engineering college, and (b) the assessment of institutional efficacy concerning its role within the college-to-career transition process as strategically aligned to its proclaimed mission - “to prepare our students to practice engineering professionally.”

Career Development Models and Discussion

Assessment findings include results from faculty narratives, extracted from their written reflections and in-person conversations, expressing a deep sense of obligation to help all students secure

jobs, but confess a limitation of know-how to influence the materialization of employment offers. Additionally, student surveys indicate that career development services, particularly mock interviews and resume evaluations, help reduce the barriers hindering their preparedness and ability to launch professional careers. However, career services and college administrators virtually unanimously admit that “inadequate social networks and stalled self-authorship” are the greatest of all barriers to career development towards employment success upon college graduation. This is especially impactful to engineering students who are African American women with experiences of auxiliary more so than ancillary social and informal networks within their shared discipline.

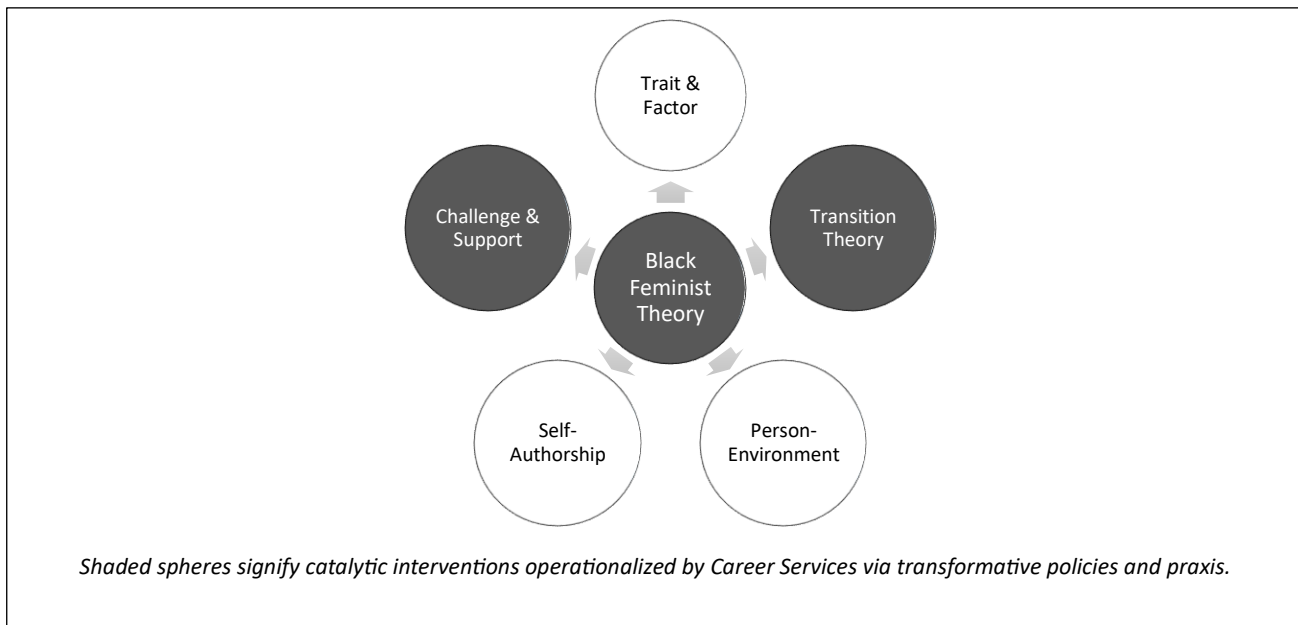
Career development, defined as the “process of making decisions about work as one develops from adolescence through adulthood” (Fouad et. al., 2023), is uniquely challenging for Black women pursuing high-salary occupations, such as engineering, historically overrepresented by White men. So-called inadequate social networks, may inherently reinforce the historical context of “Whiteness as Property” (Harris, 1993), in the southern states as well as other parts of the world (Hailu & Parra Gaete, 2024). Therefore, rethinking approaches and policies normalized by White men, which have existed since the early 1900s, for career development toward a philosophy of self-authorship is critical for marginalized college students transitioning to industry professionals. My research considers Parsons’ Trait and Factor Theory (1909) regarding (1) self-knowledge, (2) work environment, and (3) the power dynamics between those two factors. Furthermore, Holland’s Person-Environment Theory (1996) is critically taken into account (Garibay, 2020) because it explores career achievement and degree of “fit” knowing that “people seek out environments made up of individuals similar to themselves” (Holland, 1996, as cited in Patton et. al., 2016).

Informed by Challenge and Support Theory (Sanford, 1967, as cited in Patton et. al., 2016) and drawing from Krystal L. Williams’s critical research on intervention settings in higher education (Williams, 2014), my qualitative study which centers the experience of Black women undergraduates in engineering

disciplines, conceptualizes (**refer to figure 1**) an augmentation of enduring career development models (Parsons, 1909; Holland, 1996), into multiple, fragmented but contiguous interactions with self-authorship theories (Baxter Magolda, 2001; Creamer & Laughlin, 2005) and mobilized by “Black feminist thought” (Collins, 2022).

Additionally, emergent research (Fouad et. al., 2023) finds that “in adolescence, race and class differences in career decisions begin with perceptions of traditional career choices. Feminist epistemologies, levels of acculturation, and/or experiences of systemic racism may play a role in career development”. Therefore, in alignment with this literature, incorporating Black Feminist Theory into the analytical framework is appropriate.

Foundational theory authored by Baxter-Magolda (Baxter Magolda, 2004) supports the connection between career development and self-authorship due to “young adults' necessary reliance on external support”, such as career coaching intervention, “to begin their journey to self-authorship.” Research by Creamer and Laughlin (2005) explains that self-authorship, a foundational student development theory, “plays a role in career decision making because it influences how students make meaning” of the counseling they receive and “the extent to which the reasoning they employ reflects an internally grounded sense” of self-awareness. Self-authorship is distinguished from agency and self-efficacy because it is not displayed by behaviors such as attending career fairs or having self-confidence due to one’s respectable GPA, for example. “Self-authorship is defined as the cognitive process students would use to make meaning of their experiences and situations” (Creamer, E. G., & Laughlin, A., 2005), which can apply to having a sense of belongingness within a professional environment and occupying a role where one’s social identity is underrepresented.

Figure 1 A conceptualized career development framework toward Postmodern First Destination Success (PFDS)

Scholarly Significance to Praxis

As it relates to career services provided at universities, Sanford's foundational Challenge and Support Theory introduced the "complex concept of student development as a function of person-environment interaction" and affirmed that challenge-buffers or "beneficial environmental factors" impact career readiness. Environmental factors produced, nurtured, facilitated and intervened by career counselors at colleges could potentially aid in "managing social influence, and helping participants revise their relational identities" (Sanford, 1697) that are especially salient for Black women who are aspiring engineers - a profession traditionally occupied by White men.

Therefore, it is reasonable that an evolved career development theory "offering guidelines for developing an intervention style that is particularly well adapted" (Blume, 2010) for counselors to use with students who experience intersectional impacts on major life transitions, such as graduating from college and launching their professional career. Also, balancing transitional challenges with support from the university may increase the likelihood of Black women securing paid internships and full-time employment as professional engineers. Blume warns that "if the university environment fails to provide

the kind of support needed as a result of intersectionality, or if students do not experience the supports available, then the challenges posed may be too great,” regardless of agency, action, and confidence toward self-authorship alone.

Conclusion

A new career development framework conceptualized to achieve “Postmodern First Destination Success (PFDS)” that forefronts Black Feminist Theory synergistically with Challenge and Support Theory and Transition Theory, has the potential to affect self-authorship and institutional efficacy toward addressing marginalized career outcomes for students experiencing intersectionality. By countering historically race-gendered occupational assignments with career choice, internal motivations, and college degree attainment as determinants for fit, versus the over-reliance on leveraging social networks, institutional support can modify environments through intervention that is beneficial for all students. Furthermore, from a global relevancy perspective, full professional participation from all demographics of engineers is paramount to tackling the “14 Grand Challenges in Engineering to address critical global issues related to sustainability, health, security, and the joy of living” (National Academy of Engineering, 2025) for all.

In conclusion, “if students cannot find meaningful employment upon graduating from rigorous college programs, then it puts the quality of education at a particular university into question” (Swales and Roodhouse as cited in Hailu & Parra Gaete, 2024). Therefore, findings from this study impel universities, and career service centers on college campuses, to prioritize institutional efficacy towards the ROI for marginalized stakeholders, specifically concerning employability outcomes that critically elevate the joy of living.

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