Chapter 5
Creating Support Systems for Black Women in Nontraditional STEM Career Paths

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ABSTRACT

Although careers in science, technology, engineering, and mathematics (STEM) fields are widely acknowledged as central to the future, women remain largely underrepresented in these spheres. This is particularly true for Black women, highlighting the necessity of support systems and resources designed to promote their success in STEM. Ideally, these supports should begin during the K-12 years and continue throughout the course of their educational journeys. Current research indicates that Black women in STEM achieve greater, lasting success when they have access to structured support systems. As the career paths of Black women in STEM continue to evolve, there remains a need for adaptable structures and resources that are applicable to their unique needs. Yet, these supports often do not exist for those pursuing nontraditional STEM career paths. Therefore, this chapter underscores the need for Black women in STEM to establish their own support systems, aligned with their specific career paths.

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INTRODUCTION

A mere 2% of all current, practicing scientists and engineers are Black women (National Science Foundation, 2015). Despite the fact that careers in science, technology, engineering, and mathematics (STEM) fields are widely acknowledged as essential to the future, Black women remain underrepresented in most of these spaces. This severe underrepresentation can be linked to the numerous issues that Black women face early in and well throughout the STEM career pipeline. The low number of Black women in STEM college courses can be attributed in part to the limited STEM course offerings typical of the institutions in which low-income schools and students of color disproportionately attend (Carlone & Johnson, 2007; Ong, Wright, Espinosa, & Orfield, 2011). In addition, the presence of pervasive racial and gender stereotypes likely discourages some Black women from pursuing STEM pathways (Perry, Link, Boelter, & Leukefeld, 2012; Riegle-Crumb & Grodsky, 2010). Similar stereotypes of this nature also underlie instructor bias, which undermines both the educational experience and the outcomes of many Black women who do pursue STEM fields and pathways (Hill, Corbett, & St Rose, 2010). Numerous studies show the tendency of educational professionals to steer Black girls towards classes in social work and sociology, instead of encouraging them to excel in the sciences. In general, black women who are steered away from the rigor of mathematics and science courses in high school (e.g., Advanced Placement and Honors courses) later face limited collegiate and professional prospects related to these same courses of study (Willingham & Cole, 2013).

Notwithstanding all of these imbedded structural and societal obstacles, many black girls and women do persist in K–20+ STEM courses, majors, and careers (Espinosa, 2011; Johnson, 2011; Collins et al., 2009). Existing research sheds light on the ways in which some students are able to cope with racial and gender stereotypes and other forms of bias while still maintaining high progress and achievement in the STEM fields (Cole & Espinoza, 2008; Museus, Palmer, Davis, & Maramba, 2011; McGee, 2014, 2015; Perna et al., 2009). There are two primary reasons for the existence and persistence of bias against black women in the STEM. First, documented studies of tokenism show that bias tends to occur more often in fields where women make up less than 15–20% of students (i.e., burgeoning professionals). Biology aside (Kanter, 1977), this is common in the majority of STEM-based disciplines.
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