Black Women in STEM: The Need for Intersectional Supports in Professional Conference Spaces

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National discourse about STEM careers has dominated conversations about the need to meet the demands of the labor market. The ever increasing population diversity requires the participation of underrepresented groups, including women and individuals from racially minoritized backgrounds. However, for those at the intersections of historical and persistent marginality, such as Black female students, access to STEM majors, programs, and careers are particularly limited. This article uses observations, four student focus groups, document analysis, and survey data from a Black science conference to understand the experiences of Black women student attendees. Through an intersectional lens, we find that professional conferences can better serve Black female student participants by considering their nuanced experiences, barriers, and contributions to the field.

Keywords: Black women, STEM, professional organizations, higher education

National discourse about Science, Technology, Engineering, and Mathematics (STEM) careers has dominated conversations about the need to meet the demands of the labor market. A social justice imperative against the backdrop of an increasingly diverse population requires the participation of underrepresented groups, including women and individuals from racially minoritized backgrounds. Given the systematic underrepresentation of Black science students and the compounding and well-documented unwelcoming educational environments experienced by women in the sciences, retaining talented Black women in STEM pathways is an educational necessity. Although consideration of the various pathways students navigate is important, professional organizations, in particular, are well positioned to take on this charge at the transitional boundary of higher education and the workforce. In this article, we utilize observations, focus groups, document analysis, and survey data gathered at a science conference focused on Black undergraduate and graduate students, faculty, and industry professionals to better understand the experiences of Black women college student attendees. Using an intersectional (Crenshaw, 1991) and Black feminist (Hill Collins, 2000) lens, we find that professional conference spaces will better serve their Black women student participants by considering their nuanced experiences, assets, and contributions to the field. The following research questions guide our work:

RQ 1: How do Black women students experience a racial identity based professional conference?

RQ 2: How can an intersectional and Black feminist lens help racial identity based professional conferences better address the nuanced needs of their Black women student attendees?

Collectively, these questions shape our analysis focusing on how both racialized and gendered experiences of Black women students who participate in professional organization conference spaces can be ameliorated.

This article begins by exploring the historical context that has led to the current influx of STEM interests across educational institutions, the particular challenges that Black women face

along the educational STEM pathway, as well as the opportunities for support that racial identity based professional organizations can offer. The next segment presents intersectionality and Black feminist theories as a means for understanding the unique experiences of Black women, especially in predominantly male and White dominated STEM environments. The section that follows offers the study's methodological approach to addressing the posed research questions. Using multiple sources of data, the authors then provide the main findings by unearthing how Black women student participants reflected on their experiences in their respective programs, the conference activities, and more informal sources of connection. The discussion section offers an analysis of the findings through a connection to the core theoretical elements of intersectionality and Black Feminist Thought (BFT). The article ends with implications for professional organizations to strengthen how they support their Black women members and concluding thoughts.

BACKGROUND LITERATURE

Over the last five decades, the U.S. economy has transitioned from factory and manual labor to a knowledge economy defined by its, "greater reliance on intellectual capabilities than on physical inputs or natural resources" (Powell & Snellman, 2004, p. 199). In alignment with these national shifts, STEM professions have been important in meeting the increasing needs of a knowledge economy. Jobs related to computers and engineering, for example, have experienced some of the greatest job gains within the STEM fields (Fayer, Lacey, & Watson, 2017). To fulfill these labor market gaps, the P-20 educational pipeline has also faced pressures to prepare students with related aspirations and skills (Kitchen, Sadler, & Sonnert, 2018; Perry et al., 2012). From STEM-themed schools and extracurricular programming, to emphasizing STEM majors that lead to related careers, educational institutions are working to heighten and strengthen their STEM emphasis (Bonous-Hammarth, 2000; Franco & Patel, 2017). Despite these efforts, current structures do not adequately support young people who pursue STEM. For example, 65% of the students who matriculate to college with STEM majors do not complete their degree within six years (Museus et al., 2011; National Center for Education Statistics, 2009). A more distinct challenge within this endeavor is addressing disparities based on gender and race. When compared to their white peers, racially minoritized college freshmen are more likely to enroll in science and engineering majors, but as they move through these institutions, they become more likely to switch to non-science majors and less likely to complete STEM degrees (Tsui, 2007). For those who experience the intersection of gendered and racialized marginalization, access to STEM pipelines and opportunity are particularly limited (Brown, 1995; Griffith, 2010).

Black Women in STEM

The rich history and contributions of Black women in STEM fields have been systematically diminished and hidden. Today, educational institutions continue to limit access and maintain barriers for Black women in STEM. Racialized and gendered disparities persist, leading to daunting statistics. For example, of all doctoral recipients in science and engineering, only 5% were Black (National Science Foundation, 2018). Additionally, among practicing scientists and engineers, only 2% are Black women (National Science Foundation, 2015). At each key point along the STEM educational pathway, Black women face structural forces and interpersonal gatekeepers that can limit their likelihood to develop interests in STEM and persist academically in STEM programs. Referred to in the literature as the "double bind," Black women experience the effects of sexism and racism simultaneously throughout the STEM pathway (Malcolm, Hall, Brown, 1975; Ong, Wright, Espinosa, & Orfield, 2011).

At the K–12 level, the systematic conflation of race, economic status, and school quality have led to fewer, under-resourced, and less rigorous STEM courses available to low-income, students of color (Chambers, Walpole, & Outlaw, 2016; McGee & Bentley, 2017; National Student Clearinghouse, 2015; Ong et al., 2011; Perry, Link, Boelter, & Leukefeld, 2012). Under the context of gendered stereotypes, studies have also found that young women, and particularly Black women, are often advised differently. During early education experiences, extant literature shows that Black

girls are viewed as less attentive and more disruptive when compared to girls of other racial and ethnic backgrounds (Francis, 2012). As students transition from high school to college, these populations are encouraged to pursue courses and future careers related to professions intended to help others, such as education and social work, while being deterred from STEM fields (Chambers, Walpole, & Outlaw, 2016; McGee & Bentley, 2017; Perry, Link, Boelter, & Leukefeld, 2012).

Such patterns persist throughout college where Black women who are interested in pursuing STEM majors experience racial microaggressions (Dortch & Patel, 2017), are forced to contend with "survival-of-the-fittest" cultures that blame students for academic challenges (Gasman et al., 2009; McGee & Bentley, 2017), and must manage environments where a critical mass of Black students and faculty are rare (Malone & Barabino, 2009). Additionally, Black women have to balance the development of a STEM identity while maintaining a cultural identity within contexts that are predominantly white and male (Jackson, 2013). Some Black women even feel the need to choose between fighting for gender equity or racial equity, even in spaces with people of color (Bonner, 2001). Many of these challenges are exacerbated at the graduate level where Black women continue to face feelings of isolation (Joseph, 2007), concerns about financial stability (Sosnowski, 2002), as well as racialized and gendered barriers to obtaining competitive fellowships and developing supportive faculty relationships (Brown, 1995; Posselt, 2018).

Identity-based professional organizations are one of many structures aimed at addressing disparities in STEM. Recent studies have started to explore how race-and-ethnicity-based organizations at the college level support student's sense of belonging to campus and academic success related to persistence and completion in STEM fields. As explored in one study about Latinx college students in the engineering field, students' participation in an ethnicity-focused professional organization supported their engineering identity development (Revelo Alonso, 2015). For Black engineering students, another study determined that active members in the National Society of Black Engineers (NSBE) graduated at higher rates than those who were not (Ross & McGrade, 2016).

Organizations like the one that serves as the focus of this study offer a professional community of Black students, faculty, and industry professionals. These groups bring together individuals across the higher education pipeline and beyond who share experiences not just as scientists, but as Black scientists. Yet, given the male dominance across STEM fields, these conference spaces are susceptible to reifying gendered inequities. Therefore, an analytical framework that simultaneously addresses the raced and gendered experiences of Black women students persisting through male and white-dominated STEM environments is needed and can be found through intersectional, Black feminist theories.

Intersectionality and Black Feminism

The concept of intersectionality comes from the 1980s and can be described as "a heuristic term to focus attention on the vexed dynamics of difference and the solidarities of sameness in the context of antidiscrimination and social movement politics" (Cho, Crenshaw, & McCall, 2013, p. 787). Intersectionality posits that we cannot view oppression as functioning in clear and distinct ways, where one can separate racial, gendered, and class aspects, to name just a few social identities (Crenshaw, 1991). Instead, an intersectional lens suggests that individuals at the intersections of oppressed social identities simultaneously experience unique forms of marginalization, often ignored by the legal system and broader institutions (Crenshaw, 1989). Intersectionality bridges the macro structures and the micro-interactions, informing how everyday experiences are influenced by systems of domination (Harris & Patton, 2016).

Black feminism theorizes how intersectionality relates to the experiences of Black women in particular. In *Black Feminist Thought*, Patricia Hill Collins (1989, 1998, 2000) builds upon rich histories of activism and scholarship to consider how oppressive systems work in tandem and are experienced through real material consequences that inhibit access to resources and opportunity. More specifically, Black Feminist Thought (BFT) offers how Black women experience double

oppression given their gendered and racialized markers of identity (Harris, 2007; Hill Collins, 1989, 1998, 2000).

BFT asserts six factors as central to understanding the position of Black women (Hill Collins, 2000; Patton, 2009). The first core element presents a commitment to social justice that unites Black women not only with each other but also across other systems of oppression. The second feature pushes back against monolithic assumptions of one "Black woman experience." While there are commonalities, variation in the context of an individual's life remains important. The third aspect of BFT centers Black women's ability to develop and change a Black feminist consciousness through their own processes of thought, dialogue, and action. Uplifting the voices and contributions of Black women across time and space as well as beyond the traditional walls of academia is the fourth factor. The fifth element that is core to BFT recognizes the inevitability of change and requires that Black women's theorizing and strategizing respond to societal shifts. The sixth and final feature of BFT asserts the need to build coalitions that collaborate with and extend upon Black feminist movements.

While the Black feminist experience is unique and must be considered in social justice efforts, other forms of oppression must be recognized in an effort to build bridges across humanity. Together, an intersectional and Black feminist lens requires intentional analyses of how systems of inequality manifest, even in racially-grounded professional organizations. For this reason, we find BFT to be a useful framework for understanding the nuanced experiences of Black women participants in a professional Black STEM organization. Like many other STEM organizations, these spaces have been historically, and at times persistently, dominated by men. BFT and intersectionality are employed in this study as a means for making sense of how this organization has made strides to be more gender-inclusive, while also analyzing how women students' experiences inform areas for continued growth and improvement for this professional STEM organization.

METHODS

This study uses a subset of data from a broader project that was designed as a mixed methods evaluation of an annual conference for Black scientists. The study was approved by the Institutional Review Board (IRB) and the research team took precautions to ensure confidentiality of all participants. The annual conference attracts students, faculty members, post-docs, industry professionals, and recruiters in STEM from across the country. Roughly over 300 participants registered and attended the annual conference where there were multiple science talks, poster sessions, keynote speakers, and recruiters. Conference organizers often try to financially support students to facilitate their attendance to the yearly conference. This particular study explores how a Black professional conference engages and potentially supports women students in a STEM field (Creswell & Plano Clark, 2011). We find it important to share that our research team is composed of two Black men, one Black woman, and one Latinx woman, as our identities may impact our approach to this study.

Data Collection

The study design included gathering qualitative data during the conference through participant observations, focus groups, and document analysis. Undergraduate and graduate students, faculty, and industry professionals at the conference were invited to sign up for a focus group to discuss their experiences at their institutions, within their department, and at the conference. Each focus group participant signed a consent form prior to the start of the focus group. Each focus group included both male and female participants and lasted roughly an hour. Pairs of one male and one female researchers led each of the focus groups. At the conclusion of the conference participants were surveyed on their overall experience at the conference as well as at their respective campuses to triangulate the data (Miles & Huberman, 1994). Conference participants had the option to opt-out of the survey. In total, 227 participants completed the post-conference survey, 131 of which were students. We collected and analyzed descriptive statistics from the survey data to further

understand the experiences of Black women student scientists that were not captured through the focus groups or observations. Data was collected on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

There were four student focus groups which gathered data from a total of 32 students and two other focus groups which included 11 faculty, industry professionals, and exhibitors. For this study, we focus solely on the four student focus groups. Students ranged anywhere from freshman undergraduates up to doctoral students in their last year. Focus groups lasted roughly one hour and were audio-recorded for transcription. Each student was assigned a pseudonym to protect their identity. Additionally, the conference program was also included in the data sources to explore the number of sessions that focused on identity, especially Black women's identities.

Data Analysis

The qualitative data was analyzed for themes and patterns that pertain to the experiences of Black women scientists. We relied on the constant comparative method (CCM) of analyzing data, which is both purposeful and systematic in an approach to data analysis (Glaser, 1965). Our coding process involved three phases: (1) open coding, (2) axial coding, and (3) selective coding (Strauss & Corbin, 2008). The open coding phase allowed us to identify general codes as they appeared across our initial read of the focus group and fieldnote data. Next, the axial coding process allowed us to consider how the initial open codes related to one another. Through the parent, child, and sibling node (another term for code) process, we were able to establish more complex, hierarchical relationships amongst the total set of codes. Finally, we employed selective coding to establish connections to our guiding theories, intersectionality and Black Feminist Thought (BFT), as a means of refining our analysis (Kolb, 2012).

FINDINGS

In this section, we focus on the experiences of Black women student attendees at the science conference. There were 131 students who completed the survey, of which 44% of the respondents identified as female, 55% as male, and 0.7% as gender-nonconforming. The following section highlights the findings on challenges faced in Black women students' science departments, critiques of the conference as devoid of race and gender, as well as opportunities the conference created to facilitate connections.

Challenges within Science Departments

Black women in STEM face challenges due to both their race and their gender because there is not enough representation or support for them. In the survey, female students reported that they were more likely to be judged by their gender in their science classes than their male peers (see Table 1). When we presented the statement "My intelligence has been judged based on my gender in a science-related course," 21.82% of female students strongly agreed, while 0% of male students strongly agreed. In fact, 31.88% of male students strongly disagreed with the statement. Female students also reported that they were more likely to be judged by their race in their science classes than their male peers (see Table 2). Female students were more likely to feel "awkward and out of place" in their departments than their male peers, and less likely to feel like they belonged in their department (see Table 3). The perceptions of feeling judged by their race and gender may contribute to Black women having different experiences in STEM departments than their Black male peers.

Table 1

Intelligence Judged in Science Courses by Identity

	Gender	Min	Max	*Mean*	*SD*	Variance	Count
By my gender	Male	1.00	4.00	1.88	0.75	0.57	69
	Female	1.00	5.00	3.44	1.28	1.63	55
	Gender Non-Conforming	5.00	5.00	5.00	0.00	0.00	1
By my race	Male	1.00	5.00	2.68	1.23	1.52	54
	Female	1.00	5.00	3.56	1.23	1.51	54
	Gender Non-Conforming	5.00	5.00	5.00	0.00	0.00	1

Note. Minimum data point (min), maximum data point (max), data mean (*Mean*), standard deviation (*SD*).

Table 2

Students Judged by Gender Cross Tabulation

My intelligence has been judged based on my gender in a science-related course.						
Gender	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**Total**
Male	22	35	10	2	0	69
	31.88%	50.72%	14.49%	2.9%	0.00%	100.00%
Female	6	8	9	20	12	55
	10.91%	14.55%	16.36%	36.36%	21.82%	100.00%
*Gender Non-Conformin*g	0	0	0	0	1	1
	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Total	**28**	**43**	**19**	**22**	**13**	**125**
	22.4%	**34.4%**	**15.2%**	**17.6%**	**10.4%**	**100%**

Table 3

Experience in Academic Department by Gender

	Gender	Min	Max	*Mean*	*SD*	Variance	Count
I feel awkward and out of place.	Male	1.00	5.00	2.51	1.07	1.15	69
	Female	1.00	5.00	3.04	1.26	1.60	55
	Gender Non-Conforming	5.00	5.00	5.00	0.00	0.00	1
I feel like I belong.	Male	1.00	5.00	3.50	0.96	0.93	68
	Female	1.00	5.00	3.13	1.19	1.42	55
	Gender Non-Conforming	4.00	4.00	4.00	0.00	0.00	1

Note. Minimum data point (min), maximum data point (max), data mean (*Mean*), standard deviation (*SD*).

The women in the focus groups identified some of the challenges of being a Black scientist that their male peers did not necessarily face. Women often shared that they were the only Black student or one of the few Black students within their department. The lack of representation of Black women in STEM placed a burden on students to function as the representatives for whole communities. Allison, a graduate student, shared that she is often the only person that studies her topic of interest and that she feels pressure as a Black woman because she feels the need to represent Black people and women overall. She shares,

> All of the meetings I'm the only person of color, and the only—or the only female—I'm the only Black female in my field right now that's in research, so when I go to meetings anywhere I'm generally the only one. I feel more pressure to do everything more perfectly, and to be, you know, like a representation of everybody who has ever existed as a Black person.

Shemeka offers similar sentiments while speaking to how this issue deterred her from the sciences, "I was like, let me do science because I happen to like it. I took intro class. My teacher was phenomenal. I was super into it, but did not pursue it because there was no real representation. I didn't want to be the only one doing it." Both students discuss the importance of having community and representation to ease the responsibility of having to represent whole communities within the STEM field. Without representation, there is an added pressure that their peers may not experience.

Conference Activities Devoid of Race and Gender

The conference was three days long and offered a space for professional development amongst the Black scientific community through various sessions and speakers. However, presentations were often race-less and centered almost exclusively on science. Even though the conference program included 106 sessions and 71 poster presentations, only four sessions and two poster presentations included the words "Black" or "African." Two of those presentations only mentioned "African" because the research was based in Africa, but neither was focused directly on identity. The lack of race-focused conference elements was even mentioned by one of the keynote speakers who

expressed that over time, "there hasn't been a lot of Blackness" in the organization or at the annual conferences and that when he was a younger scholar, there was a greater celebration of identity. Being a Black scientist is very different than simply identifying as a scientist. One of the students in the focus groups shared,

> I wish that there was more acknowledgment of the diversity within diversity as someone said this morning. So instead of just saying like Black [particular STEM professional], it's like Black [particular STEM professional] who is also an international student, who is also a woman, who is also—enter other experience here.

Students often spoke of their experiences as Black scientists informally through coffee breaks and meals but did not have a dedicated space based on the schedule created by the conference organizers.

During the conference, there was one female keynote speaker who shared the research she conducts in her field as well as her experiences as a Black, disabled, woman. Immediately after she finished her speech multiple women raised their hands to ask questions regarding both her research, but mostly focused on her experiences in navigating STEM fields. There were so many women with questions that the time ran out. Several Black women students swarmed the speaker as soon as she came down the stage to ask her more questions. Some of these women ended up missing the next session because they waited until they had a chance to speak with the keynote speaker.

Within the conference program, there were only two sessions that explicitly centered the experiences of women and other gender minorities in the STEM field. Many of the women were looking forward to the panel discussion that on the experiences of Black women and gender minorities in STEM. The panelists shared their experiences in navigating STEM departments as Black gender minorities and the challenges they faced with professors and their peers. Throughout the evening, various female students continued holding conversations in the hallways. We overheard comments such as, "That session was so good! I definitely needed that, it was so emotional, but it was good for us to talk about this." The session seemed to have provided the space that women needed to process and support one another regarding the challenges they faced, despite being at different institutions, including HBCUs.

Conference Connections

Mentorship is crucial for the success of Black students in STEM departments and the conference offered a unique space to find and reconnect with mentors. As conference participant Allison shared,

> I went to graduate school and flunked out once, and you know, I still call on those same mentors from this conference. So I know that I wouldn't be even in science anymore had it not been for this conference, so I'm a big believer in it.

Several students in the focus groups expressed that there were one or no Black professors in their department that they could turn to for support. Women reported that having a mentor who was the same gender mattered to them at much higher rates than their male peers (see Table 4). Yet, they were less likely to have mentors who were the same gender as them compared to their male counterparts. Per the survey results, 67.27% of women had mentors of their same gender while 92.86% of their male peers had mentors of their same gender. The data shows the desire for female mentorship and the potential unavailability of mentors for Black women in STEM.

Table 4

Student Importance of Identity-Matched Mentorship

	Gender	Min	Max	*Mean*	*SD*	Variance	Count
Mentor of the Same Gender	Male	1.00	5.00	1.91	1.24	1.54	70
	Female	1.00	5.00	3.31	1.19	1.41	55
	Gender Non-Conforming	5.00	5.00	5.00	0.00	0.00	1
Mentor of the Same Race/ Ethnicity	Male	1.00	5.00	2.83	1.35	1.82	69
	Female	1.00	5.00	3.51	1.22	1.49	55
	Gender Non-Conforming	5.00	5.00	5.00	0.00	0.00	1

The conference also provided a space to connect with others who were not present at other larger conferences. One student said that she kept coming back to this conference because "It's nice to be in a gathering of people that are very intelligent and also look like me, so it helps a lot." She and other students contrasted this environment to other STEM conferences where other intelligent people attend, but there are not as many Black participants or other participants of color. Rachel shared that during her first year of graduate school she was struggling because she was in a "really white place" and when another Black student at her institution encouraged her to come to the conference, she thought, "Absolutely!" I will go anywhere where I can see Black people at this point. I was like any other place than here, so I was really excited to go!" Other students echoed similar experiences related to attending majority white STEM programs.

Participants often described the conference as a "family reunion" where they made friends or reconnected with colleagues. Women at the conference seemed to connect informally during meals and coffee breaks. There were often women gathered at the main salon and in general seating areas throughout the day working on school assignments, presentations, and chatting. Most of the women did not attend the same institution or were even in the same state. One student commented that the conference was a great opportunity to make friends and differentiated friendship building from networking. As Rachel shared, "Even though I didn't know who my roommate was, I had friends here. And that was like hands down to this day the best conference I've ever been at in my life." They shared that they enjoyed the space and connecting with other Black scientists and Black women scientists. Dominique commented

> I love this conference. It's my favorite conference. It's just very supportive, and very Black, and I'm here for it. This is a space that taught me that I—you know, like I don't have to separate my identity or my culture from my science or my career, so it's just a very affirming space.

These connections usually occurred through informal chats that happened throughout the halls, during coffee breaks, and after the sessions.

DISCUSSION

This study highlights the importance of examining the experiences of Black women students in STEM through intersectional and BFT lenses while paying particular attention to the environment and support that professional organizations provide, as well as areas for improvement. Previous literature has shown that Black women students experience multiplicative effects of racism and sexism across the STEM pathway (Malcolm, Hall, Brown, 1975; Ong et al, 2011, Griffith, 2010). Black girls and women are not supported and often deterred at all educational levels from pursuing STEM degrees and careers (Chambers, Walpole, & Outlaw, 2016; McGee & Bentley, 2017; Perry et al., 2012; Francis, 2012). However, previous studies have not yet examined the role of Black STEM organizations in supporting participants' intersectional identities throughout their STEM education and careers.

Participants in this study provided great insight into their experiences in their STEM education programs, the importance of having Black professional organizations, and the value of creating informal connections at Black STEM conferences. Throughout the students' statements and survey responses, they pointed to the challenges and lack of support that Black women in STEM face due to their race and gender, reifying valuable insights from the extant literature. Black women students demonstrated a pressure to excel as representatives of the Black community and for women overall, where not doing so would reflect negatively on the whole community, a consequence that students from more privileged backgrounds do not encounter. However, as previous research has shown, participants also commented that the conference and the mentors they made at the conference helped them persist in their STEM programs (Revelo Alonso, 2015). As alluded to by intersectional and BFT frames, establishing mentorship relationships can help Black women students push back against monolithic assumptions by contributing to what they understand about Black women's varied and common experiences across the STEM pipeline. Additionally, seeing the accomplishments of Black women mentors and scholars helps elevate the contributions that Black women are making to the STEM fields and serve as important examples for Black women students.

Despite the conference's great intentions in fostering a space where participants could connect with the Black science community, it was still evident that more could be done to support students racial and gender identities as well as their intersections. Overall, the conference provided a space for a "family reunion" where attendees connected with each other and shared their experiences on being one of the few Black scientists in their department (Malone & Barabino, 2009). Seeing Black scientists together was very affirming for their science identity and racial identity (Carlone & Johnson, 2007). Although the annual conference provided a space for Black scientists to reunite and connect with one another, there was little conversation regarding racial and gender identity in the overall program. The keynote speaker and participants in our focus groups echoed that race and gender were often central to the difficulties and challenges they experienced in their STEM educational path, yet were largely missing from the formal conference offerings (Crenshaw, 1991; Malcolm, Hall, & Brown, 1975; Ong et al., 2011).

While less research focuses on the capacity of professional organizations to address the intersectional experiences of Black women scientists, there are untapped opportunities for disciplinary-focused organizations centered on race/ethnicity to integrate dimensions of other social identities, such as gender, to serve the diversity within its professional membership better. To strengthen their support of women in science fields, professional organizations should build in spaces to discuss unique, racialized experiences, the rich history of Black scientists, and the gender differences in experiences across STEM fields. Having the opportunity to be socialized in STEM spaces with other Black women allows Black women to develop a more holistic STEM identity and build positive self-efficacy (Jackson, 2013).

CONCLUSION

There are several specific areas where this, and perhaps, other similar organizations can offer salient interventions and a critical reframing of how to achieve their core goals and objectives. First, be intentional about debunking gender-based conceptions of science-related intelligence and

intuition by ensuring a gender-conscious recognition and inclusion among the organizational leadership, keynotes, presenters, faculty, and corporate and professional sponsors. Second, establish meaningful opportunities to create mentoring relationships across each academic and professional level that ask mentors and mentees to consider race, gender, and other power dynamics —everyone can benefit from having access to mentors who understand the intersection of race and gender within science fields. Third, structure free time during meals, coffee breaks, and between-session breaks to provide moments of informal engagement, mainly when those open areas can be designed around the flow-throw spaces of important conference activities. It was the case in the current study that Black women scientists took advantage of these informal opportunities. Fourth, incentives for conference returners and "bringing a friend" could further extend the reach of this professional organization to be that "family reunion" convening of Black women scientists. And finally, facilitate collaboration between students who attend conferences and conference organizers to improve future events. The conference organizers surveyed all attendees, including students, to learn more about their experience with both the organization and at the annual conference. In sum, racial identity based professional organizations continue to play a significant role across the racial divide among scientists, but that divide must be extended to include other salient social identities, like gender.

In conclusion, this study uses an intersectional lens to examine the extent to which professional organizations are particularly well-positioned to retain talented Black women students in STEM pathways within the higher education and corporate professional landscape. This research study is grounded on intersectionality and Black feminist theory and relies on two research questions to guide this investigation: How do Black women students experience a racial identity based professional conference? How can an intersectional lens help racial/ethnic identity-based professional conferences better address the nuanced needs of their Black women student attendees? In other words, how do Black women students at the intersections of oppressed social identities, being both Black and women, experience unique forms of marginalization, which in some instances can be reified within the racial identity based professional organization? Moreover, what are the experiences by which real material consequences limit, or overlook, access to resources and opportunity as a scientist?

This study highlights the value of having a space for Black scientists while also problematizing the idea that individuals function on the basis of a singular identity. Black women in science expressed feeling additional pressures due to their race and their gender in the classroom, in conferences, and in the industry. Identity specific conference programs can offer a unique space in which individuals feel a sense of community and feel like they are at a "family reunion" because these are one of the few spaces where they find individuals who have similar experiences in STEM regardless of their institutional affiliation. Conferences should incorporate more conversations and programming regarding how race and gender impact experience in STEM fields to better support attendees in their educational and professional trajectories.

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