

Understanding the Early Career Experiences of Women of Color

To shed light on the early career challenges, strategies, and supports for women of color, SWE and NSBE conducted a joint study.

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For decades, organizations such as the Society of Women Engineers and the National Society of Black Engineers have brought together students and professionals from underrepresented groups, welcoming them into a supportive engineering community that facilitates relationship development and networking among engineers who share a common characteristic. But even within these professional engineering associations, engineers are not all alike. Individuals have intersecting identities; for example, the race and gender with which we most identify can be at the root of very different college and workplace experiences. In some cases, the outcome of women's intersecting identities can result in what is termed a "double bind" in the workplace, referring to the unique challenges women of color face when they experience both sexism and racism in their careers.¹

Today, less than 6 percent of engineering bachelor's degrees are awarded to African-American, Hispanic, Native American, and Asian women combined.² Women of color represent less than 5 percent of the engineering workforce.^{3,4} Though professional engineering associations such as SWE and NSBE provide services and support to women of color, it is unclear the degree to which women find these resources helpful.

SWE and NSBE conducted a joint study to gain a better understanding of the experiences of women of color in the early stages of their engineering careers. Given the high rate of attrition among women in engineering, coupled with the low representation of women of color in engineering,

addressing the retention of women of color in the engineering workforce will help increase the diversity in the profession. Understanding the specific challenges these women face, the strategies they applied to overcome challenges, and the types of supports they find most impactful can inform the development of supportive programs and services from diversity-serving organizations.

METHODOLOGY

The findings from this study are based on interviews conducted with 31 women of color who graduated after May 2011 and had been employed in the engineering workforce for at least one year following graduation. Table 1 lists selected participant demographics, and Table 2 provides a breakdown of the engineering disciplines represented in the study sample. Researchers analyzed interview transcripts, categorizing the challenges, strategies, and supports shared by the women interviewed, and identified emerging themes.

RESULTS

The findings from this study were categorized as challenges, success strategies, and external supports. The following is a summary of the challenges and supports identified by study participants.

CHALLENGES

We wanted to understand the specific challenges women of color face when they begin their engineering careers. Prior research suggests that

"I KNOW I'M 1 PERCENT OF PEOPLE THAT ... LOOK LIKE ME. I'VE KNOWN THAT THROUGH MOST OF COLLEGE. I'VE ALWAYS COUNTED. SO SOMETIMES WHEN I DO FEEL INSECURE, IT DOES BRING UP THAT YOU'RE ALSO THE ONLY PERSON OF COLOR OR FEMALE IN THERE."

– African-American engineer

"I THINK THAT THERE'S A LOT OF MENTALITY — THERE HASN'T BEEN A LOT OF WOMEN IN MY PARTICULAR JOB FOR A COUPLE YEARS. THERE ARE JOKING COMMENTS. I THINK PEOPLE USUALLY APOLOGIZE ... I GUESS I DIDN'T EXPECT SOME OF THOSE MENTALITY JOKES TO STILL BE THERE."

– Latina engineer

women of color experience a variety of negative factors in the workplace, including stereotype threat, lack of role models, and feelings of isolation. Our findings indicate that female engineers of color in the early stages of their careers are experiencing such issues and, in some cases, are seeing the impacts on their career advancement.

The challenges expressed by women in this study included:

- Lack of role models for minority female engineers
- Disillusionment regarding level of impact they would have as engineers
- Gender and racial biases and stereotypes experienced in the workplace
- Dissatisfaction with salary and benefits (only 35 percent had negotiated salary when they were first hired)

TABLE 1

RACE	COUNT
Asian/Pacific Islander	2
Black or African-American	18
Hispanic or Latina	8
Native American/Alaska Native	2
Mixed Race	1
AGE (YEARS)	COUNT
< 25	4
25-29	22
30+	4
No Response	1
MARITAL STATUS	COUNT
Married	7
Single	24

Participant Demographics

TABLE 2

	COUNT
Aerospace Engineering	3
Chemical Engineering	4
Civil Engineering	5
Computer Science	1
Electrical Engineering	3
Industrial Engineering	3
Manufacturing Engineering	1
Mechanical Engineering	9
Software Engineering	1
Systems Engineering	1

Participants' Areas of Specialization



“I’VE ACTUALLY BEEN PRETTY LUCKY TO HAVE GOOD MENTORS THROUGHOUT ALMOST MY WHOLE CAREER.”

– Native American engineer

- Unfair performance evaluations and lack of honest feedback (only 58 percent indicated feeling that they received a fair performance evaluation)
- Difficulty obtaining professional development through employers

EXTERNAL SUPPORTS

Women were asked about the external supports they relied upon to assist them during their job searches and into their first years of their engineering careers. While a few women had family members who were engineers or worked in technical fields who could offer job search advice, most had to turn elsewhere to find support in addressing the challenges mentioned earlier, including mentors, colleagues, and professional engineering associations.

Among those interviewed, 94 percent had been members of professional engineering associations during college. Some stated that they felt a connection to these organizations primarily because they could identify with other members of similar race or gender in engineering. All but two women were current members of at least one professional engineering association. Though some expressed a desire to better utilize the programs and services offered by these organizations, others stated that their professional associations helped them feel less isolated as they moved into the workforce.

RECOMMENDATIONS

The purpose of this study was to determine ways in which professional engineering associations such as SWE and NSBE can better support women of color in the early stages of their careers. Based on the findings, researchers offered the following recommendations:

- Increase diversity in age and background

within the organization, particularly among leadership

- Determine ways to maintain relevance and better support women following a job relocation
- Better accommodate women’s busy schedules and dispersed locations to make it easier for women to remain active members
- Diversify events and workshop topics so women see the benefit of continuing their membership
- Help women of color find the mentors they seek as they change employers, positions, and locations

To view the full report, please visit <https://research.swe.org/>.

Endnotes:

1. The challenges women of color in STEM face were first introduced in the American Association for the Advancement of Science (AAAS) publication *The Double Bind: The Problem of Being a Minority Woman in Science* (Malcom, Hall, and Brown, 1976).
2. *Women, Minorities, and Persons with Disabilities in Science and Engineering*, National Science Foundation, 2017.
3. For the purposes of the research study discussed in this article, women of color include women who identify as primarily nonwhite.
4. National Center for Science and Engineering Statistics, Scientists and Engineers Statistical Data System (SESTAT), 2015, Table 9-7.



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