



Isolation, Microaggressions, and Racism: Black Engineers in Technology Companies

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Abstract

Diversity in the technology industry continues to lag despite increasing scrutiny. In addition to lack of representation, the climate for underrepresented minorities in these companies is poor. One recent study found that 37% of those who left their companies did so because of unfairness or mistreatment, with many others identifying unfairness as a contributing factor. Our goal was to understand the racialized experiences of Black engineers and how they navigate the varied climates in their companies. The analysis was conducted through critical narrative analysis to understand the meaning behind the engineers' life experiences. The engineers discussed several issues in their narratives including lack of diversity and support for minorities in the workplace. Through this project we would like to help others gain a better understanding of the experiences of Black engineers in the technology industry. The results gained from this project will be used to make diversity issues in the workplace more apparent to senior officials in companies so that they can reconsider the way they approach diversity.

Introduction

In recent years there has been increasing scrutiny on diversity within the computer and information technology industry. Popular press articles about the toxic climate at some companies (Kolhatkar, 2017; Levin, 2017) and data on demographics (information is beautiful, 2016) portray an industry that is not welcoming of a diverse workforce. Of the companies that are included in information is beautiful's (2016) data, only one, Amazon, has a Black workforce that exceeds or meets the percentage of Blacks in the US population. Most of the companies are less than 10% Black, with several having only 2% Black employees. As a result, these companies are increasing efforts to diversify their workforce.

However, actions to increase the number of underrepresented employees is insufficient if the climate for them is poor. The Tech Leavers Study showed that 37% of employees left their company primarily because of unfairness or mistreatment, and an additional 43% said it was a contributing factor (Scott, Klein, & Onevokpuri, 2017). Among people of color 40% of the men and 36% of the women left due to unfairness. This attrition has a tremendous cost for these companies. By one estimate the annual cost to replace these employees is over \$16 billion annually (Scott, Klein, & Onevokpuri, 2017). Lack of diversity may also result in lost productivity and innovation. Research has shown that diverse teams are more productive and create better solutions (Valantine & Collins, 2015). As stated by Chubin, May, and Babco (2005), diversity is "an asset, an enabler that makes teams more creative, solutions more feasible, products more usable, and citizens more knowledgeable. Diversity arguably makes any profession, but especially science and engineering, more competent" (p. 73-74).

Beyond the economic cost, however, inclusion is a social justice issue. Riley, Slaton, and Pawley (2014) argue that social justice should permeate all aspects of engineering, from pedagogy to engineering content to institutional practices, as well as research approaches to understanding diversity and inclusion. They point out that a social justice orientation "could shift conversations about numeric representation to far more incisive discussions on power... With power relations made visible in this way, incidences of discrimination that have customarily gone unanalyzed may gain attention" (p. 336).

We have conducted an initial pilot study to understand the lived experiences of Black engineers in the tech industry. Due to the lack of literature on the topic, this pilot study seeks to provide a broad view of the participants' experiences in order to provide information for a future study. This pilot study will be used in preparation for a larger study that focuses on specific issues of salience identified through this pilot study. Our research question for this pilot study is: How do Black engineers describe their workplace experiences?

Literature Review

While a number of studies have examined the experiences of Blacks in the workplace (Feagin & Sikes, 1994; Jackson, Thoits, & Taylor, 1995; Johnson & Eby, 2011; Thomas & Gabarro, 1999; Bell, 1990; Feagin & Sikes, 1994; Jackson et al., 1995), surprisingly little research has been conducted on Black engineers. Ross (2016), Hofacker (2014), Gibbs (2008), and Rice (2011) all point to a lack of literature on this topic. In the few studies that have been conducted, significant barriers have been identified for Black engineers in the workplace. These include: nepotism, cultural mismatch, perceptions of under-qualification, lack of peers, and overall workplace diversity (Gibbs, 2008; Rice, 2011). Black engineers find that they need to outperform Whites by 3-5 times to be considered equally qualified (Gibbs, 2008). Overall, race and gender are the strongest predictors of inclusion (Blacks and women feel less included), and perception of inclusion is the most significant predictor of job satisfaction and well-being (Mor Barak & Levin, 2002).

One of the most significant issues facing Black engineers is a cultural mismatch between their own identity and the White male-dominated workplace culture (Dotson, 2008; Gibbs, 2008; Ross, 2016; Ross & Godwin, 2016; Hofacker, 2014). To combat that mismatch, some Black engineers turn to personal agency to maintain their personal identity in the workplace (Ross, 2016; Ross & Godwin, 2016).

While the various studies cited above provide some information to understand the experiences of Black engineers in the workplace, considerably more work is needed to fully understand workplace culture and how it impacts the career pathways of Black engineers. Most of the studies above have examined only a limited aspect of their experiences (e.g. focusing on personal agency) and/or focus on Black women. There is a need for a more comprehensive understanding, which we begin to provide through this pilot study.

Methodology

This paper seeks to illuminate and examine the racialized experiences of Black engineers in the technology industry. The participants were identified through convenience sampling based on personal contacts of the third author. There were no exclusion criteria for the convenience sample due to the fact that the authors were looking for diverse experiences in order to determine the broad landscape of engineers' experiences in the technology industry. "Engineer" was defined as anyone in an engineering position at their company (e.g. product development, quality testing, etc.). We allowed the participants to self-identify as Black, as their personal experiences related to race were tied to their own identities. For example, one participant had light skin and this person's coworkers did not recognize him as Black. However, this participant's experiences were related to their personal identity of being Black. Given the low numbers of Black engineers in these companies, the protocol approved by the University of Florida Institutional Review Board required that all identifying information of the participants be withheld. Therefore, we are

unable to provide demographic information for the participants. No compensation was provided for participation.

After contacting the participants and receiving informed consent, the third author conducted interviews with each of the participants. The interviews were conducted in places that would allow the participants to feel comfortable, such as their own homes. The interviews were based on an interview guide that contained thirteen general questions regarding the participants' work experiences. Many of the questions on the interview guide were phrased in a manner that allowed for the participants to provide personal narratives about their experiences in the workplace. The interview guide included questions such as, "Tell me about your experience when you entered your first job. What was the climate like for you?" and "Did those feelings change for you over the first year or two?" If the interviewer felt that supplemental questions were needed after the participant finished their narrative, follow-up questions were asked. Four interviews were conducted for this pilot.

Once the audio interview recordings were received, they were transcribed verbatim. As required by the protocol, all information regarding the participants, such as biographical information, was purposefully obscured from the transcripts. Once sensitive information was obscured, the authors began conducting a two-stage analysis process. Firstly, the narratives were analyzed in accordance with Labov's structural analysis (Riessman, 2008). We chose narrative because of our desire to understand the stories of our participants' experiences. "[N]arrative is the linguistic form uniquely suited for displaying human existence as situated action. Narrative descriptions exhibit human activity as purposeful engagement in the world" (Polkinghorne, 1995, p. 5). The result of narrative analysis is an understanding of how a particular situation unfolded and why it unfolded in that way, which is of particular salience to understanding the lived experiences of our participants. While structurally analyzing the narratives, the authors focused on studying the structure of the narratives instead of the content within each narrative. After this structural analysis the authors conducted thematic analysis in which they examined themes within each structured narrative.

The structural analysis stage consisted of identifying the six elements of the narrative. These elements consisted of the abstract (purpose of the narrative), orientation (who, what, when, where, why, and how), complicating action (turning point of the narrative), evaluation (narrator analyzes events of narrative), resolution (result of narrative), and coda (bringing the narrative back to the present). While all six elements were not always present in each narrative, the events were structurally categorized as best as possible. The first two authors made improvements in the identification and once an agreement was reached each interview was sorted and smoothed into a clear narrative.

Once the narratives were smoothed, the complicating actions were analyzed using thematic analysis following the coding approach of Charmaz (2006). The complicating actions were comprised of segments of the participants' narrative that contained a plot, event sequence, or turning point in their career. We focused on the complicating action in this pilot study because those were the moments in the narratives at which their identities as Black engineers impacted their experiences. Coding was conducted separately for complicating actions that occurred early and later in their careers. The coding process was separated into three phases. The first phase consisted of creating initial codes, short statements that described the meaning of a transcript segment. Similar initial codes were then combined into focused codes. The last analytical phase, thematic coding, consisted of grouping together similar focused codes. For these different

phases, constant comparison was used to continually refine the coding scheme. The themes were used to determine common experiences, feelings, and obstacles the participants faced throughout their jobs. For example, one participant stated "...when I want to see Black folks I just drive home, that's just how that separation of this is work, and this is the rest of your life basically." This complicating action was given an initial code of "Associating diversity with home and work with uniformity." This initial code was combined with similar codes to create the focused code "Separation between diversity at home and in the workplace", and this focused code was placed into the theme "Actions/lack of actions taken by participants". In order to monitor the quality of our research, we used peer-checking and constant comparison to ensure that codes at the various levels were consistent with each other and the original words of the participants.

Findings

Through the process of coding the participants' experiences, this pilot study illuminated several broad themes. The themes were separated into early and later stages of the participants' careers because several of the participants had different experiences after leaving their initial jobs. In this section of the paper we provide a broad overview of these themes. In later sections we focus on particularly salient themes that inform our future work.

Early Career

At the beginning of their careers participants had a variety of experiences. While one was satisfied with their experience, the others described multiple instances of isolation, lack of belonging, and, in some cases, overt racism.

Feelings in the workplace

Throughout the conflicting actions the participants would describe how they felt. Thus, the researchers identified feelings as any emotional state participants described. All of the participants described instances where they felt uncomfortable or isolated in the workplace. Oftentimes these feelings were caused by racial differences or lack of diversity in the workplace. In the case that diversity was lacking in the workplace, some of the participants joined Black networking groups to try and connect with people who shared the same experiences; however, even in these Black networking groups, "There were very few engineers, Black engineers...it was mostly people from HR". In a company that was diverse with different immigrant groups, one participant still felt isolated because there was no "Black camp" to relate to. The lack of ability to connect with coworkers like themselves not only led to feelings of isolation, but also led to the participants feeling unwelcomed in their respective workplaces. The participants mentioned numerous instances of insensitive comments being made in the workplace. During one situation, a participant sat in on a car ride where his coworker "... drop[ped] the 'N' word in front of the other people who [he] was in the car with whom [he'd] been working with for ten years at that time." The racially insensitive comment not only made that participant feel uncomfortable in the car, but in order to avoid dealing with more racial comments the participant isolated himself from that coworker for two years.

Actions taken

The actions taken by the participants were defined as the steps taken to combat instances of microaggressions and lack of diversity. These actions helped them deal with their feelings of isolation and uncomfortableness in the workplace. Many of the participants decided to tackle

their issues in the workplace by being proactive. For example, one participant decided to be assertive and tell his superior about his capabilities in the workplace.

However, others dealt with the lack of diversity through other means such as silence, changing teams or positions, and accepting the fact that there is a divide between work and diversity. One participant looking for more diversity in their workplace stated, “I was looking for Black engineers, but...there’s no one”. Another participant completely discarded the idea of searching for diversity in networking groups because they felt that such groups would not help them advance their career, so instead made the decision to focus on work: “I don’t know how much time I would’ve spent going to any type of [networking group] at the time... I paid my dues before, you know, career kept doing that.” For this participant, earlier efforts to participate in networking groups had not been helpful.

Judgement in the workplace

Judgement in the technology industry can commonly be due to racial factors. The researchers defined judgement as being any comments relating to race. Participants dealt with indirect negative statements related to race, condescending emails because of race, and being judged explicitly based on skin color. Along with judgement came microaggressions, which appeared throughout all the participants’ experiences and which are described as “nuanced forms of insulting, disrespectful communications that occur during everyday exchanges” (Yang & Carroll, 2016). Facing microaggressions in the moment was difficult for participants; however, thinking about them later was often harder to deal with. One participant found that addressing microaggressions with humor was a good way to lightheartedly address the issue stating:

I don’t always address [microaggressions], but a lot of the times I do actually address them and say things either as a joke or just ‘hey, it’s not cool’, because I feel like [coworkers] don’t know and they don’t think about it and they’re not used to dealing with [people like me] and that’s how I do it.

Another participant found that it was easier to ignore microaggressions because their international coworkers may not have understood the hurtful nature of what they were saying. Furthermore, one participant was specifically targeted because of their race. These instances of racial targeting were sometimes said in a non-discreet manner. A racist incident at one participant’s company involved a racially insinuating email. When describing the incident, the participant stated:

I think I had done something really good the week before. And then this email chain got forwarded to me and here’s this Black guy, this deformed Black guy with a Superman shirt on. I started laughing when I saw it cause I thought it was funny, but then I was like wait, hold-up, I’m the only Black guy in this entire building, you know. So, I knew what it was.

Many of the judgements made by coworkers were often based on racial stereotypes that were inaccurate and humiliating for the participant. For example, participants’ felt that their coworkers would classify them with stereotypes such as being loud or wearing certain clothing because of their skin color. These stereotypes led to double standards being imposed onto the participants. The participants’ superiors would let another employee’s action slide, but if the participants made a mistake or said something inappropriate they felt they were the first to be blamed.

Company Policy

In the participants' narratives, they described how the companies they worked for did not follow the principles of diversity the companies had set for themselves. While diversity was taken into account when recruiting and hiring, many participants felt that there was not enough funding to support their company's policies regarding diverse hiring practices. The lack of funding not only impacted diversity recruitment, it also impacted the amount of training resources, such as black networking groups and diversity training, that the participants and their coworkers had access to. One participant stated, "Unfortunately, I felt that [the economic environment] impacted things negatively in terms of making connections throughout the company, making connections with other groups, individuals, that exchange of ideas across different organizations became more lost in the shuffle."

Many of the participants were also very skeptical about their company's hiring practices. The participants felt that oftentimes hiring was not focused on diversity in engineering. Companies would look for other places where diversity could be implemented such as human resources or other operations groups. One participant decided to take action to change the hiring practices and went to their superior; however, their answer was "...we're just going to hire...focus our attention on [Historically Black Colleges and Universities]".

Some of the participants also felt skeptical about their company's distribution of promotions, whereas one participant felt that promotions were given out objectively. One participant was inquisitive about the influence of race in distribution of promotions stating, "I went to my boss and was like how is that guy already [at that level], we both know he's not that good. And he was like, 'Well, his director promoted him'."

Company culture had a large impact on the participants' feelings about their workplaces. When the company culture was focused on fostering inclusivity, by means of providing resources such as mentorship opportunities and black networking groups, the participants felt comfortable sharing their ideas and voicing their opinion about issues they were having related to their position. Additionally, mentorship in the workplace provided participants with people whom they could relate to. One participant felt that having a mentor whom they could relate to helped them actively participate in their workplace:

I felt that some of the things I may have been hesitant about you know speaking up in a group environment to express ideas about projects. Nerves feeling as though I didn't have a voice, there was this mentor who shared a very similar background that I had, that allowed me to feel comfortable to have a platform to be a participant, to be engaged.

Later Career

Although similar themes were also found in the later portion of the participants' careers, several new themes were uncovered due a climate change at the workplace. The later portion of the participants' careers may have consisted of being at a new job or later in their career at the same company. Two participants changed companies later in the career to find a more welcoming environment or to find a position more in line with their career goals. One participant moved from a large company to a start-up, which they found to be more inclusive and welcoming of diverse perspectives, although they still experienced microaggressions. Others, however,

continued to experience the same difficult environments as early in their careers. With greater experience they sometimes changed strategies to deal with those difficult environments.

Feelings regarding diversity practices

When faced with tough situations in their workplaces, the participants oftentimes had emotional reactions to the situations they had to deal with. The participants who stayed at their jobs despite lack of diversity continued to feel isolated from fellow coworkers. The lack of diversity programs continued to affect their ability to deal with racial incidents and ultimately led to trust issues in the workplace and feelings of discomfort in certain situations. One participant felt that the lack of diversity put a strain on the team, instead of them self as an individual stating:

[The lack of diversity] hasn't impacted me directly. I think it impacts our overall team, I think we limit ourselves in that area...You already feel a couple steps behind coming into this industry as...an African American...and so, just imagine if you don't have the basic things that you would need as an employee to succeed.

However, a participant who left their company to work for a start-up had different feelings regarding diversity at the company. The participant felt more optimistic and hopeful about working at a smaller company because the work environment was more welcoming. Although there was less diversity, there were more people who were willing to listen to their opinion. This participant stated:

And there's things about being the only [Black person] still that come into play, but I think that we're set up...I know that if my startup grows I can have a voice early on and like what we need to do and who we need to hire and things we need to be looking for and attitudes we need to have.

Actions/Lack of Actions of Participants

Some participants had a self-defined process to deal with the lack of diversity in their companies, while others did not. These processes or lack thereof were what the researchers identified as actions or lack of actions of the participants. Many of the participants decided to take the issue into their own hands or voice their opinions to their superiors about the need for more diverse educational programs. One participant decided to take a less forward approach and joined a Black employee network outside of work and participated in diverse community outreach programs. Instead of focusing on making their generation comfortable in the workplace, the participant found ways to try and make the younger generations understand how they can make the workplace more diverse. The participant hoped that being involved in the community would help the younger generations value the importance of diversity stating:

I guess through the [employee resource groups],...or through our group now is that there will be fostering of a pipeline, breakthrough in Silicon Valley, and those kids come and that's kind of a really roundabout way to go about it.

While some participants decided to act later in their careers, others decided the best option was to lay low and avoid conflict in order to keep their job. As stated by one participant:

...at this point in my life, you know I just got married, I'm looking to buy a house. I want to provide a bit of stability for a few years, so because of that I'm not pushing the envelope, I'm just sitting back collecting my paycheck.

Perceptions of Fairness/Lack Thereof

Fairness in the workplace is often hard to achieve; however, many of the participants sought a workplace in which they perceived that people were hired and rewarded based on their technical abilities. Many of the participants felt more comfortable in their workplaces when they considered the hiring system and distribution of promotions to be focused more on work completed instead of other factors such as race. When the participants felt that the hiring process and distribution of promotions was based on the individuals technical expertise, they felt that others weren't as questioning of their position. One participant felt that their superior's approach to distributing promotions helped reduce controversy in the workplace stating, "He actually went out of his way, not just from a racial standpoint, but from a meritocracy standpoint, to try and put some defined metrics into our promotions." These metrics not only made the participant more comfortable in the workplace, but it also helped their coworkers to understand the quality of work necessary to earn a promotion.

Participants who felt that there was a strong aura of bias in their workplace felt that race was a large factor that outweighed their qualifications. Despite being more qualified than their coworkers, i.e. having a more technical degree, these participants were constantly facing hurdles to obtain a more advanced leadership role. For example they felt that race was often taken into account, and even if that wasn't a factor, participants felt that personality and favorites in the workplace were given higher consideration. One participant felt particularly dejected about the unfair distribution of promotions stating, "There's no way I'm going to be able to become a director, a VP, at these companies unless somebody there really takes a liking to my attitude, my energy, and they want that to be contagious to their organization".

Company Policy

The companies' diversity policies were often decided by the executives' priorities. However, while these priorities could push for diversity, time and funding was often lacking to support diversity. One participant who was committed to learning more about the company's diversity policy confronted the head of Human Resources and understood the real reason behind the lack of diversity, "...Yeah we care about diversity and inclusion and that's 20% of my day job, what is that like every Friday you just work on...diversity..." While the companies claimed they were dedicated to diversity recruiting, participants felt they were not putting in their full effort to find the right people. When one participant discussed diversity at their job they discussed how their company's focus on the bigger picture often caused the employees to be lost in the shuffle.

Discussion

The four interviews that have been conducted to date provide examples as to the experiences of Black engineers in the technology industry. While the participants were of different genders and backgrounds, all had to deal with racial dilemmas in the workplace. However, the way that the participants dealt with their situations varied. Some participants were more reluctant than others to address racism. These participants tried to block out microaggressions and racist comments and directed more attention to their work. Some participants' emotional states and psyche were greatly affected by these microaggressions as was found by Camacho and Lord (2011). However, other participants used humor or other creative methods to address judgement and microaggressions.

The findings from this study connect to previous literature conducted, but also present areas for additional research. The participants' experiences align with other studies that have examined diversity in the workplace. Gibbs (2008) and Rice (2011) found that nepotism, cultural mismatch, perceptions of under-qualification, and lack of peers and overall diversity were major factors contributing to hardships for Black engineers in the workplace. All of the participants in the study discussed having to deal with these factors. In order to deal with their situations in the work environment some of the participants decided to move to smaller companies whereas others decided to stay in their workplace to maintain stability for their families.

While some authors have described situations in which Black engineers maintain personal agency to combat personal mismatch and uphold their personal identity (Ross, 2016; Ross & Godwin, 2016), our study demonstrated several participants who were not able to do so in such uncomfortable work environments. Our findings showed that some participants were outspoken in the workplace to combat racism and unfair situations. However, others isolated themselves and avoided uncomfortable situations.

Future Work

One of the most important findings from this pilot data is the suggestion that these Black engineers are navigating between two cultures, one that represents their "authentic" self and one that represents their workplace. From overt acts of racism to less overt acts such as being passed over for a promotion, they learned to deal with these acts by setting them aside, or as one interviewee put it, "and I've just always had that [a specific racial incident] in the back of my mind. But, I just let it go for myself." In our future work we want to explore these experiences more deeply to understand how and when Black engineers find it necessary to wear a mask (Anzaldúa, 1990; Dunbar, 1913). By focusing on this aspect of our pilot findings we can understand the ways in which the culture of the workplace impacts engineers' feelings that they belong and why they may choose to leave.

We have designed a study to interview 10 engineers each at the intersections of Black/White and female/male (40 interviews in total). Data will be analyzed using the Listening Guide approach which emphasizes multiple readings of the transcripts through different lenses (Doucet & Mauthner, 2008; Pawley & Phillips, 2014). Two of the lenses we will use are Faulkner's (2000a, 2000b, 2007, 2009a, 2009b) concept of in/authenticity and Kendi's (2016) history of racist ideas. These two frameworks will allow us to examine the data at both the individual and institutional level, providing new insights into how workplace culture affects engineers' experiences.

Conclusions

Our study is limited by the small number of participants and the limited analysis we have conducted to date. A more comprehensive study, such as that described in Future Work, will allow us to delve more deeply into the meaning of these experiences for engineers at the intersections of multiple identities. Nevertheless, the analysis of the four interviews provided a very strong picture of the racialized experiences for these Black engineers and how they navigated the varied climates in their companies. The four participants in the study shared their varied experiences dealing with racism at work which allowed the researchers to view common themes between experiences. The themes throughout the participants careers were feelings of isolation, company diversity policies, judgement in the workplace, fairness (or lack thereof), and actions taken (or not taken) to deal with the lack of diversity.

The participants often had to deal with feelings of isolation due to lack of Black networking groups and training resources that would teach them how to deal with microaggressions. One of the main reasons for lack of diversity in the workplace was due to company policies. The participants felt as though the companies' public images differed from their actual policy. Not only was policy not in accordance with actual diversity recruitment, but the funding for diversity recruitment was either underbudgeted or if the funds were there, recruiters weren't doing enough to ensure proper use of it. However, there were participants who were content with their companies because of a perception of objectivity in the workplace.

This study allowed the researchers to view the many issues surrounding lack of diversity in the technology industry, which lays a foundation for future studies on how diversity can be improved in the technology industry.

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