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3-2017

**Poster: Lessons Learned from Successful Black Male “Buoyant Believers” in Engineering and Engineering-Related Fields**

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**Scholarly Commons Citation**

Long, L. L., & Henderson, T. S. (2017). Poster: Lessons Learned from Successful Black Male “Buoyant Believers” in Engineering and Engineering-Related Fields. , (). Retrieved from <https://commons.erau.edu/publication/1368>

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# Lessons Learned from Successful Black Male “Buoyant Believers” in Engineering and Engineering-Related Fields





## BACKGROUND

- In high-demand fields like science, technology, engineering and mathematics (STEM), more success strategies are needed to effectively recruit and retain college students.
- One-size fits-all approaches (i.e., those that are supposed to work for all students) often neglect the unique needs of underrepresented populations.
- Although some strategies exist for helping minority students succeed in STEM, the present investigation uncovered detailed information about how Black male students in engineering and engineering-related fields develop important academic traits such as confidence and resilience.
- To add to the limited body of literature on Black males in STEM, interview data from **27 Black male students majoring in engineering or engineering-related fields** were analyzed through the lens of Strayhorn’s ‘buoyant believers’ framework.<sup>1,2</sup>
- The framework offers practitioners, faculty, and staff – who work with minority engineering students – guidance for addressing challenges students face and creating pathways for their success.**

## PURPOSE

- The purpose of this paper is to critically examine the narratives of successful Black engineering students with specific attention to the intersections of two social-psychological dimensions: **students’ (a) academic self-efficacy and (b) resiliency.**
- This paper will explore lessons learned from the experiences of a few Black males in engineering and engineering-related fields who are classified as **confident and resilient**, or “buoyant believers.”
- Strategies to ensure student success can be gathered from the stories of Black male “buoyant believers.” Building on the utility of the ‘buoyant believers’ typology, we describe strategies related to building and maintaining both academic self-efficacy and resiliency among **successful Black males in engineering and engineering-related fields.**

## “BUOYANT BELIEVERS” FRAMEWORK

<p><b>“Buoyant Believers”</b></p> <ul style="list-style-type: none"> <li>Students who have high academic self-efficacy and high academic resilience</li> </ul> 	<p><b>“The Ballers”</b></p> <ul style="list-style-type: none"> <li>Resilient students with low confidence</li> </ul> 
<p><b>“Blamers”</b></p> <ul style="list-style-type: none"> <li>Confident students who lack resilience</li> </ul> 	<p><b>“The Avoidant Give-Up’ers”</b></p> <ul style="list-style-type: none"> <li>Students with low confidence and low resiliency</li> </ul> 

## INTERVIEW THEMES AND EXCERPTS

### Attribute 1: Childhood adversity

- “I grew up in [a large Midwestern city], two parent household, neighborhood was pretty decent but where I travelled to and from school [the] majority [of] high school it was a pretty rough neighborhood, **I had a lot of adversities that I had to overcome** as far as being a statistic **but I had a great foundation with my parents.** I got a scholarship to play basketball in high school at a Catholic private school downtown so I took advantage of that so I didn’t have to go to my neighborhood school which wasn’t a great school but high school is where **I kind of transitioned from being focused purely on basketball not academics** and I just kind of used basketball as a tool to get me where I am now which is in college.” - Charles, a senior aerospace engineering major



### Attribute 2: Refusal to quit

- “There was a lot that sustained my interest [in my major]. For one during my time here [in college] I have funding through a NASA program that I got accepted to in high school so one big reason was keeping my grades up and knowing that I was having funding from them definitely kept me motivated to stay within the major...so I fell into that category and definitely knew that I needed the funding to go here [to college] so that was one reason. **I didn’t want to become like a lot of the few parents that I did know who went off to college and switched majors a bunch of times or dropped out** I just didn’t really want to go through that route if I could avoid it, circumstances happen and then I just knew that I was gonna get over it somehow whether it be more studying or reaching out to people, **it just never crossed my mind to change my major or quit.**” – Homer, a senior electrical engineering major



### Attribute 3: Prior academic success

- “Actually the reason why I first wanted to be an engineer, my parents said that when I was four years old my uncle is a structural engineer in [West Africa] and I admire him a lot and sometimes he would take me to his job sites and kind of show me like this is what I’m doing, this is the bridge I’m doing and I’m in charge of making sure it’s built so that was the type of stuff so I’ve always wanted to be an engineer, which is weird since I was four and most people don’t know what engineering is till they are in college. And, then as I went through school like **math and science were like my first subjects so I always did well in those classes and I did first-year robotics** and I kind of got interested in electrical [engineering] because I wasn’t sure what kind of engineering I wanted to do..” – Derrick, a senior electrical engineering major



### Result: Collegiate achievements

- I don’t have the best GPA or I didn’t do as well in that class as I like to but I’m at a point now **I’m about to graduate, I have a job after school** so I wouldn’t trade those experiences for nothing. I definitely feel that I got the most out of my time here. I definitely could have been another statistic, black male who dropped out of college and didn’t finish, but I definitely was able to weather the storm to get there and definitely with some luck and prayer involved.” - Homer, a senior electrical engineering major



## RECOMMENDATIONS

### Attribute 1: Childhood adversity

To help students draw on past difficulties as sources of resiliency, we recommend faculty and staff:

- Solicit responses from students which allow students to describe times when they previously faced and overcame adversity; encourage students to use lessons from prior adversity to handle present and future challenges
- Avoid deficit-based thinking** when interacting with Black males - the notion that students, particularly low-income minorities, fail in school because their families experience deficiencies that obstruct their learning process<sup>3,4</sup>



### Attribute 2: Refusal to quit

To help students develop an attitude in which they are committed and able to persevere, we recommend faculty and staff:

- Solicit responses from students which allow students to explain why they chose their major and what motivates them to succeed; inspire students to hold firm to their goals
- Create an atmosphere inside and outside of the classroom where all students feel a **sense of belonging**<sup>5</sup>



### Attribute 3: Prior academic success

To help students build academic confidence, and draw on that confidence to build academic resilience, we recommend faculty and staff:

- Solicit responses from students about previous academic successes; remind students that their previous academic successes have earned them a place in the engineering classroom
- Establish an environment where **academic challenges and setbacks become opportunities for learning and growth**, rather than only being evaluative measures



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## ACKNOWLEDGEMENTS

This study is part of a larger, longitudinal study titled, *Investigating the Critical Junctures: Strategies that Broaden Minority Participation in STEM Fields*, funded by the National Science Foundation (NSF). The study focused on Black and Latino college students majoring in STEM fields. While the larger study consists of both quantitative and qualitative components, this report is based on interview data only.