Annotated Bibliography

Greene, M. L., & Coley, B. C., & Thomas, K., & Brisbane, J. M., & Maitra, D., & London, J. S. (2022, February 20). *PhD ing while Black: unpacking the emotions of navigating engineering as a Black student and the implications for mental health*. Paper presented at 2022 CoNECD (Collaborative Network for Engineering & Computing Diversity) , New Orleans, Louisiana. https://peer.asee.org/39134

This article seeks to understand the emotional experiences of black graduate students as they make their way through their doctoral programs. Narrative interviews were conducted on Black graduate students involved in the National Society of Black Engineers and/or Black Greek Letter Organizations about their experiences in their graduate programs. The group's high activation positive valence emotions, high activation negative valence emotions, low activation positive emotions, and low activation negative valence emotions were identified with a total of 44 emotions across all groups. Black graduate engineering students' struggles and the extent of their struggle are clear through the high activation of negative valence emotions. These experiences resulted in black graduate students having feelings of anxiety due to their identity; feeling the need to prove themselves; and complex emotions such as weathering and racial battle fatigue. Coping mechanisms such as emotional-focused coping and problem-focused coping were found to be necessary when navigating their graduate spaces.

Mobley, C., & Brawner, C. E., & Brent, R., & Orr, M. K. (2021, January 24).*The centrality of Black identity for Black students in engineering*. Paper presented at 2021 CoNECD, Virtual https://peer.asee.org/36127

This article seeks to learn about the identities of black engineering students studying Computer Engineering, Electrical Engineering, or Mechanical Engineering and how they connect to their levels of retention in their programs. This study sought out to do this through the use of several theoretical frameworks that include intersectionality, critical race theory and racial identity theory. To conduct the study, black engineers from historically black colleges and universities and predominantly white institutions were given a qualifying survey. The qualified students went on to partake in interviews where identity circles were created and models of multiple dimensions of identity were created. The identity circles highlighted the factors students stated were most central to their identity. While students placed race in all three categories of the circle, twenty-twoo of the thirty-three students put race in the innermost circle. The models of multiple dimensions of identity produced an average score of forty-three out of fifty-six for students from historically black colleges and universities and forty-one out of fifty-six for students from predominantly white institutions. From these data forms, it can be concluded that race played a large role in most black engineering students' identities enrolled in Computer Engineering, Electrical Engineering, or Mechanical Engineering.

Mondisa, J. L. (2018). Examining the mentoring approaches of african-american mentors. *Journal of African American Studies 2018 22:4*, *22*(4), 293–308. https://doi.org/10.1007/S12111-018-9411-Y

This article seeks to identify mentoring approaches African American mentors use to help African American undergraduate students persist and succeed in STEM majors. African American students and professors face challenges that can be combated through the establishment of relationships between the groups. African American professionals were purposefully sampled based on if they had a history of impacting African American STEM undergraduates, if they had a history of commitment to mentoring underrepresented minority undergraduates, and if they had national acclaim or recognition. The research showed that these mentors used three main approaches: a familiar mentoring approach; a guidance and resources acquisition approach, and an empathetic approach. These approaches individually helped create beneficial relationships for both the mentor and mentee. The familial approach created a greater sense of community between mentors and mentees, the guidance and resources acquisition approach reinforced community, and the empathetic approach reinforced community. However, the application of these approaches proved to be different depending on the gender of the mentor. While male mentors focused on a “prove-them-wrong” approach, female mentors focused on a “show-them-who-you-are'' approach.

Ross, M. S., & Huff, J. L., & Godwin, A. (2021). Resilient engineering identity development critical to prolonged engagement of Black women in engineering. *Journal of Engineering Education*, *110*(1), 92–113. https://doi.org/10.1002/jee.20374

This article is

Sellers, V. B., & Villanueva, I. (2021, July 26). *ASEE PEER - What strategies do diverse women in engineering use to cope with situational hidden curriculum?* 2021 ASEE Virtual Annual Conference Content Access. https://peer.asee.org/what-strategies-do-diverse-women-in-engineering-use-to-cope-with-situational-hidden-curriculum

This article seeks to identify the strategies used by diverse women to cope with a situational hidden curriculum. A hidden curriculum is defined as the untold values, assumptions and perspectives not acknowledged in an environment. Several women, mostly from marginalized groups due to purposeful sampling, were a part of a large mixed-method survey that looked at the four factors of the hidden curriculum: awareness, emotions, self-efficacy, and self-advocacy. From this survey, white women and Asian women were labeled as the majority group while black, hispanic/latinx and Native American women were labeled as the minority. Three themes were then developed to categorize the coping mechanisms. The first theme discussed how some women choose to change their environment instead of changing themselves. This theme either saw similar use by the majority and the minority or more use by the majority. The second theme involved women changing themselves in response to the hidden curriculum as opposed to challenging it. This theme is either used similarly amongst the majority and the minority or more by the majority. The third theme involves minimal to no

action by the women. This is mainly used by women in minority groups. This research highlighted that more often than not, women compromise themselves by not speaking up or changing themselves to fit into the hostile environments they are presented with. Such behavior comes from many women having stigma consciousness but not having the tools or support to change their circumstances.

Thomas, K. Reyes, D. (Manuscript submitted, 2022) Journal of Diversity in Higher Education- Bare and unfair: How Black graduate students persevere through the chilly climates of engineering.

This article is centered around the experience of black engineers in the "chilly" engineering environment. This "chilly" environment is characterized by its traditional values, bootcamp feel, and perpetual feeling of inadequacy if standards were not met. While counterspaces have the ability to elevate some of the chilliness for black engineers, they do not fully shield black students from the harsh environment. (Theoretical framework) Comfort theory. The participants included Black doctoral students that participated in the National Society of Black Engineers and/or Black Greek Letter Organizations. Analysis of the interviews of these participants through comfort theory revealed three cold fronts that Black engineers face. First, black engineers are deceived into entering engineering by perceiving it as "full of sunshine" to find it to be hostile and not equipped with proper support. Second, the field comes across as a blizzard through a hypervisibility that leaves black students exposed. Lastly, the field contains hail through it allowing black students to be subject to microaggressions.

Thomas, K., Coley, B. C., Greene, M. L., & London, J. S. (2021, January 24). *Black faces, white spaces: understanding the role of counterspaces in the Black engineering graduate student experience*. https://peer.asee.org/black-faces-white-spaces-understanding-the-role-of-counterspaces-in-the-black-engineering-graduate-student-experience

This article seeks to identify and associate values of the counterspaces used by Black engineering students throughout their academic careers. Narrative interviews were given to Black graduate students who participated in the National Society of Black Engineers and/or Black Graduate Letters Organizations on counterspaces (or the lack of counterspaces) effect on their experiences in their undergraduate and graduate programs. While Black Graduate Letters Organizations or the National Society of Black Engineers participation were qualifiers to be a part of this study, other counterspaces such as church and friends were identified by participants. These counterspaces were described as at least falling into one of the following categories: professionalism, identity, familial, or wellbeing. These counter spaces allowed participants to gain career opportunities; grow personally; develop their identities and agency; and create feelings of belonging and acceptance.

Thomas, K. Greene, M. L., Coley, B. C.,Maitra, D., Brisbane, J. M., London, J. S. (2022, February), *For Us, By Us: Recommendations for Institutional Efforts to Enhance the Black Student Experience in Engineering* Paper presented at 2022 CoNECD (Collaborative Network for

Engineering & Computing Diversity) , New Orleans, Louisiana. https://peer.asee.org/39118

This article looks at the recommendation Black graduate students in engineering have for their institutions based on their experience. Sixteen Black graduate students enrolled in doctoral programs across the country took place in semi-structured interviews that built an understanding of their experiences and their recommendations. These interviews created themes: faculty awareness and development; intentional recruitment; accountability and metrics to assess diversity, equity, and inclusion. Faculty awareness and development entails support from faculty, an end to microaggressions from faculty, and training to equip them to handle diverse spaces. Intentional recruitment involved intentional recruitment of black staff and students to build a continuous stream of diverse individuals. Lastly, accountability and metrics to assess justice, equity, diversity, and inclusion is as the title says.

Thomas,K., (2022). American Society for Engineering Education 2022 Annual Convention- "Is this good for me?": exploring the experiences of black engineers in leadership.

This article seeks to uncover the experiences of early-career black engineers that influence their leadership development and what elements are critical. Leadership is an important quality for black engineers. Leadership has the ability to amplify identities and provide opportunities to black engineers, sending them well on their way to success. The leadership identity development model as a framework helps build an understanding of leadership as a means to inspire others as opposed to management. The participants leadership and engineering experiences resulted in five themes: mentorship, managing stereotypes, role of racially affirming spaces, the obligation to lead, and managing identity threats.