KEY FACTORS INFLUENCING BLACK WOMEN AND UNDERREPRESENTED MINORITIES (URM) IN PURSUING A COMPUTER SCIENCE TECHNOLOGY DEGREE

ALBERTO DE LA CRUZ
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PURPOSE AND RESEARCH QUESTION

Purpose of the study

The purpose of this study is to identify factors that influence young Black women and underrepresented minorities (URM) to pursue a degree in the STEM discipline, primarily in computer science technology.

Research Question:

What are the key factors and influences for Black women and URM students pursuing and enrolling in a Computer Science Technology program?

THEORETICAL FRAMEWORK

Social Cognitive Theory (SCT) – Albert Bandura (1986)

- Individuals learn and develop interests through observation of role models and the social environment surrounding them.
- This framework emphasizes the interplay between experiences, external social factors, and the modeling of behaviors, ultimately shaping the educational pathway and career ambitions of individuals.

SCT- Observational Learning and Role Models

- Plays a critical role in shaping interests and aspirations for individuals' success
- Erroneous perception among young women and URM students due to the absence of relatable role models in computer science or related STEM fields

SCT- Social Environment and Reinforcement

- It affects individuals' perception and engagement with STEM opportunities
- Erroneous perception among young women and URM students due to the unintentional gender stereotype biases created by parents and educators
- Programs promoting community and support among peers will enhance Black women and URM students' confidence and commitment

SCT- Self-Efficacy and Motivation

- The core of SCT is the belief in one's ability to succeed in specific situations.
- Black women and URM students experience lower self-efficacy regarding their skills in STEM due to social stereotypes perceived in this field

Social Cognitive Theory - Why?

- This theoretical framework emphasizes the misperceptions and barriers identified in the literature review that are needed to increase the representation of Black women and URM students.
- Incorporates constructs of planned behavior that affect students' intention to pursue a degree in the computing field
- Foster supportive learning environments that include mentorship, exposure to role models, etc. enhancing motivation and persistence in this field of study

LITERATURE REVIEW

Literature Review - Themes

- The STEM population and background, primarily in computer science, is extremely low compared to other STEM majors (Van Sickle et al., 2020; Skvoretz et al., 2020; Sax et al., 2017; Bystydzienski et al., 2015)
- The lack of interest due to erroneous perception (Banerjee & Santa Maria, 2013; Stewart-Williams & Halsey, 2021; Yadav et al., 2017)
- K-12 Preparation prepares Black female students to pursue a degree in computer science in college (Escobar et al., 2021; Gale et al., 2022)
- Exposure to computer science camps and programs increases the awareness of Black women and URM students to pursue a degree in computer science (Chipman et al., 2018; Sax et al., 2017; Miller et al., 2018; Gale et al., 2022; Rankin et al., 2021)
- Student support, encouragement, and retention to increase the number of young women and URM pursuing a degree in computer science (Mitchell et al., 2017; Morton, 2021; Sharma et al., 2021, Nguyen et al., 2021; Ferguson & Martin-Dunlop, 2021)

IMPLICATION FOR FUTURE RESEARCH

Implications and Future Research

- The study highlights the key factors needed to increase awareness among young Black female and URM students and the need for:
  - Early exposure in the K-12 to computer science courses
  - Institutional support resources to encourage
  - Lack of representation and role models in this field
  - Educational challenges and an inclusive environment create an erroneous perception of young Black female students
- The study can explore in more detail the effectiveness of institutional resources to encourage young Black females and URM students to study computer science.
- Explore in-depth the importance of role models to mentor young Black females in computer science.

Implications and Future Research, Cont.

- To explore further investigation to prevent and provide support to educational challenges and an inclusive environment faced by Black female and URM students.
- To explore more in-depth the early exposure of K-12 students in summer programs to initiate awareness of computer science.