Mathematics Learning and Identity: A look at Black undergraduate students' experiences

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Background Problem

- Mathematics education research related to African American students often focuses on analysis of "achievement" data (i.e. "achievement gap")

- Martin (2007) argues that existing literature has juxtaposed "***African American status, underachievement, and marginal participation***" to create what Giroux, Lanskshear, McLaren, and Peters (1996) call a **masternarrative** (e.g. Lubienski, 2002; Strutchens, Lubienski, McGraw, & Westbrook, 2004; U.S. Department of Education, 2003).

Research Questions

1. What are the mathematics educational experiences of Black students majoring in mathematics-intensive majors at the University of Virginia?

1. What factors of their experiences serve to mediate their identities as mathematics learners?

Constructions of Identities

- **Constructions [of identities] involves the passive experience of being "made" by external forces, including not only material circumstances but also the claims that other persons or groups make about the group in question, and the active process by which the group "makes" itself.** The world around us may "tell" us that we are . . . distinct, or our experience at the hands of circumstances may "tell" us that we constitute a group, but our identity is also a product of the claims we make. The claims may build on the messages we receive from the world around us or may depart from them rejecting them, adding to them, or refining them. (Cornell & Hartmann, 2007, p. 83)

Highlights from Literature

- African Americans have long experienced differential treatment and differential access throughout their schooling experiences (Darling-Hammond, 2007; Hale, 2001; Kozol, 1991; Oakes, 1990; Perry, 2003).
- This has led to decreased opportunities to learn and consequently fewer opportunities for academic and career success (Tate, 2005).
- There are African American students that have been successful with mathematics even in the environments that are in opposition to their success (Berry, 2003).

Data Collection

- Interviews
- Focus Groups
- Academic Records
- Mathematics Autobiography
- Multiple Inventory of Black Identity

Students

Student	Year	College	High School Demographics	Residence
Alex	3rd	Engineering	Majority White	Small Town
Angie	2nd	Arts and Sciences	Majority Black	Urban City
Brian	2nd	Engineering	Majority Minority	Urban City
Brit	2nd	Engineering	Majority White	Large County
Chris	4th	Arts and Sciences	Majority White	Urban City
Chloe	4th	Engineering	Majority White	Suburban City

Assertions

The students in this study…

1. Changed their definitions of success in mathematics over time. **As mathematics became more advanced and as the learning environment changed, success was viewed through the lens of competency as opposed to grades.**

2. Became increasingly aware of race and its implications through various experiences. **Over time, these students began to negotiate who they are to others based on their experiences with race and perceptions of racialized stereotypes.**

3. Experienced isolation in mathematics classrooms and other mathematics learning environments**. As a result, these feelings isolation began to influence how they chose to interact with others.**

Assertion I (change definition of success)

- Brian stated…
  - "I thought I was real good at mathematics coming out of high school. I mean, once you transition from high school to college, for the most part, everybody's smart. Your point of you being good at math kind of turns into everybody's good at math. **While I thought I was good at math, I found out I'm just average. UVA makes you realize and makes you work hard for your math grades.** The fact that you can make it through UVA's math curriculum, that's an accomplishment."

Assertion II (race and racialized stereotypes)

- Chris…
  - "**I don't know how I'm perceived in class. I don't know if I'm perceived as this super genius Black guy, or if I'm perceived as the dumb Black kid that shouldn't be there.** I guess those thoughts actually deter me from trying to join in with people." It did not help that during his first year at the University, his association dean insisted, **"You could never be good at math and you shouldn't try it. You are not cut out for math**… you should look into something like sociology."

Assertion III (feelings of isolation)

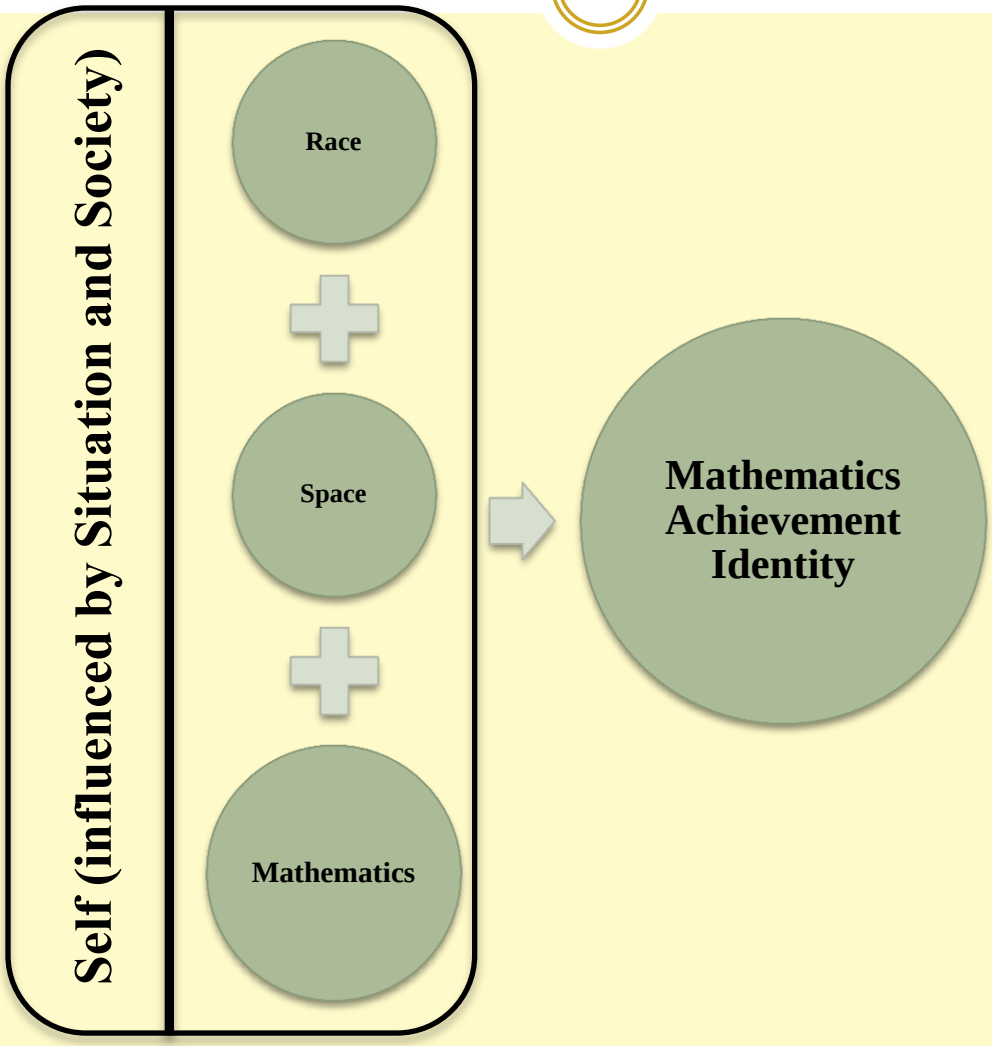
- Angie…
  - "Sometimes when I'm doing homework, I'm might think, '**I wish I had someone else to talk to about this**,' so I would not have to go to office hours."

- Chris…
  - "**They come in (class) six deep and sit on the same row and talk to each other the whole time**…. That makes me not want to interact."
  - "**It makes me just want to be a loner, and in these classes you can't be a loner.** You need to have some source of network in these classes, because it is easy to miss something. It is easy to not understand something."

Reconceptualizing the Framework

Controlling Factors	Mediating Factors
Self	Race (racialized experiences and perceptions of stereotypes)
Situation	Space (participation and interaction in learning space)
Society	Mathematics (success and self-efficacy)

Construction of Mathematics Achievement Identities



Summary and Conclusion

- For Black students majoring in mathematics-intensive majors at the University of Virginia, their mathematics achievement identities, who they are and who they present themselves to be in mathematics learning situations, depends largely on the internal negotiations of situations and perceptions of self and society within the self.

Moving Forward

- It is my sincere desire that more researchers will begin to examine the experiences of Black students, as opposed to primarily examining their performance… *It is possible that more can be gained from understanding the process by which students come to achieve than merely understanding their level of "achievement."*

Concluding Thoughts

- In agreement, all students insisted, “You get used to being the only Black student in mathematics classes at UVA.”
  - While students may became accustomed to being the “only one,” most seemed comfortable.