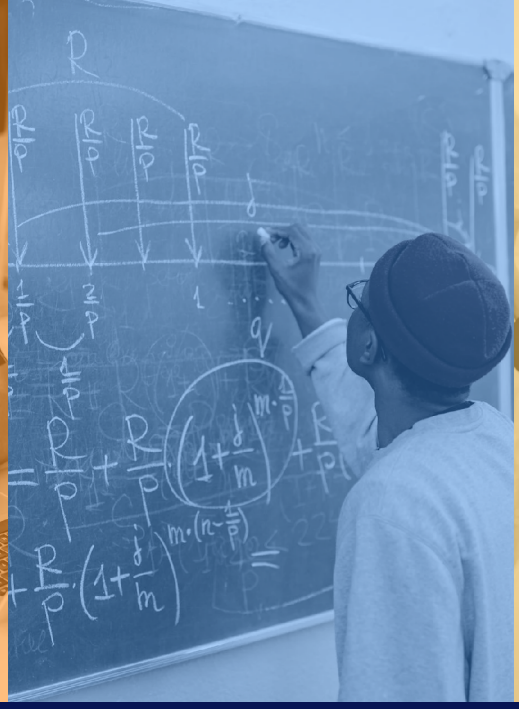




BEYOND THE NUMBERS:

A Critical Look at Math Instruction Through the Experiences of Racially Minoritized Students

Prepared by:

Drs. Hannah Lawler and Rebecca Pena
Institutional Research

Silvana Carrion-Palomares
Equity Pathways & Inclusion

SMC Data Coaching

Cohort 7 - Math Faculty
(January - December 2024)

SANTA MONICA COLLEGE
Data Coaching Program

SANTA MONICA COLLEGE

Introduction

Since its launch in 2017, Santa Monica College's (SMC) Data Coaching Program has aimed to advance racial equity at the college. The program brings together a cohort of campus practitioners each year to participate in a learning community focused on using data and inquiry to inform institutional change. Through a combination of skill-building, collaborative inquiry, and critical reflection, participants examine how systemic factors within programs, policies, and classroom practices contribute to persistent racial equity gaps. Grounded in race-conscious and equity-minded approaches, the program equips campus practitioners with the tools to uncover root causes and design more just and responsive interventions that improve outcomes for racially minoritized students.

The seventh cohort of the Data Coaching Program brought together twelve full-time faculty members from the Math Department who participated across the Spring and Fall 2024 semesters. Together, they analyzed course outcome data disaggregated by race/ethnicity and investigated potential contributors to equity gaps in math courses, focusing on the experiences and outcomes of Black/African American and Latine/x students.

Methodology

Research Question

The study sought to answer the following research question: "What instructional practices, classroom conditions, and support structures do Black/African American and Latine/x students identify as fostering or hindering their learning, help-seeking, and success in math courses at SMC?"

Selection Criteria for Interviews

Students who identified as Black/African American and/or Hispanic or Latine/x and were currently or recently enrolled in a math course at SMC were invited to participate in a one-hour interview.

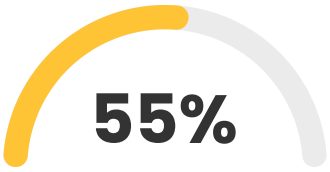
Participant Demographics

During November and December 2024, math faculty serving as Data Coaches conducted semi-structured, one-on-one interviews with eleven (11) students. To encourage open and honest dialogue, students were not interviewed by any faculty member who had previously taught or were currently teaching them. Each interview was led by a faculty Data Coach and supported by a notetaker from the Data Coaching administrative team. Participants selected pseudonyms to protect their identities, and all quotes in this report are attributed accordingly. As a token of appreciation, each student received an Amazon gift card.

The following describes the demographics of the interview sample:

Gender Identity

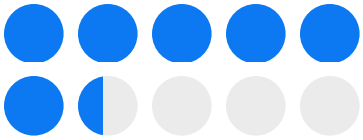
Slightly more participants identified as female (55%; n = 6) than male (36%; n = 4). One student chose not to disclose their gender identity.

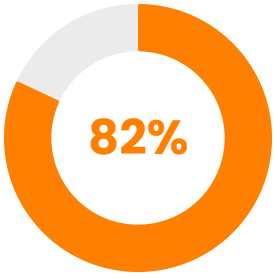


Race/Ethnicity

Approximately 64% of participants identified as Black/African American, including four students (36.4%) who identified exclusively as Black and three students (27.3%) who identified as Black and another race. An additional four participants (36.4%) identified exclusively as Latine/x.

64%





were first-generation college students

64%

of participants (n = 7) were between the ages of 25 and 40

Enrolled Full-time in Fall 2024 (12+ Units)

55%

Theme 1: Faculty Engagement and Culturally Responsive Relationships Matter

Across interviews, students repeatedly emphasized the central role instructors play in shaping their learning experiences, not solely through the content they teach, but in how they show up as people. **When instructors demonstrated care, responsiveness, and a commitment to students' growth beyond the classroom, students not only persisted, but felt inspired, confident, and capable.** This form of instructional engagement, rooted in **high expectations, meaningful relationships, and affirming feedback,** was especially powerful for students who identified as Black and/or Latine/x, many of whom described years of complicated relationships with math and schooling in general. As one student reflected:

> "When it comes to math, I've had a rough time since high school. I used to cry before tests. **It always felt like I wasn't smart enough, even when I studied.** That kind of feeling **doesn't just go away, it follows you."**

Such experiences reflect how educational trauma, often rooted in deficit-based teaching and repeated failure, can accumulate over time, eroding students' confidence and sense of belonging in math. In this context, instructors who offer rigorous, supportive learning environments serve not only as teachers, but as agents of healing and transformation.

One student shared how their experience in an accounting class led them to change their major, not just because of the content, but because of the way the professor consistently connected course concepts to real-world experiences and actively supported their goals:

> *"My accounting class with Professor X was so good that I changed my major to accounting. He connected the lessons to real-world experiences. People say he's a tough professor, but he gives you everything you need to succeed, so it's worth it."*

For this student, who described themselves as shy, the instructor's **proactive mentorship and commitment to their future** exemplified what culturally responsive teaching looked like in practice: providing rigorous instruction, building trust, and facilitating access to opportunity. Their investment disrupted prior patterns of disengagement and affirmed the student's sense of direction and belonging.

He gives you more than just lectures. He sends out opportunities, programs, jobs. He really wants us to succeed outside the class, too.

After that class, I realized I could really do this. She believed in us and expected us to show up; we had to meet her there.

Similarly, another student recalled their English professor as pivotal in helping them believe in their academic abilities. Although the instructor's style was direct and demanding, it was **grounded in care and a belief in students' potential**:

> She was not pushy, but she was strict... **I think sometimes we want a little push.** She had expectations from students, and you had to meet them. Her expectations as a teacher were honorable to me.

These examples underscore how **students interpret high standards as a form of care, especially when paired with clear feedback, availability, and encouragement.** For many, **it was the first time they felt a professor truly believed in them.**

In stark contrast, students also shared experiences with instructors and classroom environments that conveyed **low expectations or disinterest** for the course or their students. These situations not only undermined motivation, but also became barriers to learning, particularly in math. For example, one student recalled a math class where the instructor consistently arrived late, did not provide a syllabus, and made it clear they did not want to be there:

> He made it very clear he did not want to teach Pre-Calculus. He was above it. He was very good at math, but that was the whole vibe: **'I'm above it, you guys'.**

Rather than feeling encouraged to learn, the student felt dismissed and unworthy of their instructor's time or energy. These types of classroom dynamics directly contrast with the empowering environments described elsewhere, reinforcing that **how instructors show up matters as much as what they teach.**

Theme 2: Peer Support and Community Play a Critical Role in Math Learning

Across interviews, students emphasized that success in **math was not solely an individual endeavor, it was often made possible through peer interaction and a sense of community.** For many, relationships with classmates, study partners, and even informal group chats were not just helpful for learning content, they were vital sources of motivation, accountability, and emotional support. Several students described how forming or joining peer study groups helped them persist through difficult material and maintain consistent engagement with coursework:

> **If I didn't have people to talk to, I probably would've given up. Sometimes we didn't even know the answers. We just felt better knowing we were all trying.**

Peer spaces created a buffer against isolation and self-doubt. Instructors and tutoring centers were valuable, but it was often the **shared struggle and encouragement from fellow students that helped learners feel they belonged** in a math course:

> I met someone in class, and we started working on problems together. J**ust having someone else there who gets stuck too made it less scary.** I wasn't the only one.

Several students shared that even brief check-ins before or after class, or classmates who asked questions during lectures, helped normalize confusion and promoted a collaborative learning culture:

> *"When someone else **asked a question I was too scared to ask,** I was like, 'thank you!' **It helped me and made me feel like I wasn't dumb for not knowing.**"*

For first-generation or returning students, community was particularly critical. Many spoke about the difficulty of navigating college without prior models of how to succeed. In this context, peers became both emotional anchors and sources of institutional knowledge.

I didn't know what I was doing my first semester, but other students gave me tips, like go to tutoring, don't wait, or how to use office hours. That made a big difference.

There were times I felt like dropping the class, but my friend was like, 'No, let's just go to tutoring together.' That support helped me push through.

In some cases, peer relationships developed into friendships or long-term academic partnerships that extended across semesters. These connections helped students stay committed to their goals, especially when they doubted themselves or struggled with the course.

Ultimately, the student interview findings suggest that belonging and collaboration are not just nice to have for Black/African American and Latine/x students, they are essential components of persistence and learning, especially in challenging subjects like math. **When classrooms foster interaction, or when institutions intentionally support peer connections, they strengthen students' resilience and confidence.** The presence of a supportive academic community can serve as a powerful antidote to the alienation and anxiety many Black and Latine/x students have historically experienced in math spaces.

Doing problems together helped me see different ways to solve them. It's not just about getting the answer, it's how you think about it.

Theme 3: Math Anxiety Shapes Performance – But It's Rooted in Preparation and Perceived Fairness

For many students, math assessments, especially high-stakes tests, elicited strong emotional reactions, including fear, anxiety, frustration, and confusion. These reactions were not simply about test difficulty; they reflected deeper concerns about fairness, preparation, and whether the grades they received truly captured the effort they put in. For the Black and/or Latine/x students who were interviewed, prior educational experiences often shaped a fragile relationship with assessments in math, where success felt both uncertain and emotionally charged. Some quotes that support this sentiment include:

"I always felt like I wasn't good at math, especially on tests. It's like **no matter how much I study, I second-guess everything** when I sit down to take it."

"In high school, I failed so many math tests, I just started thinking **I wasn't meant for this.** That fear stayed with me when I got to college."

"I've been told for years that math just isn't my thing. When I fail a test, it feels like proof of what everyone already assumed."

Several students described putting in significant effort (studying consistently, doing well on homework), only to find that test questions felt unfamiliar or misaligned with what they had practiced:

I felt like I understood the homework, but the test had questions that were totally different. It felt like I was being tricked.

I stayed up late every night reviewing, and I still got a D. It made me question whether it was even worth trying that hard.

I blank out during math tests. I could know how to do it the day before, but once I sit down, it's like my brain goes quiet.

Some students were only able to improve their test performance after independently discovering new strategies, such as time management, practice under pressure, or tutoring, skills they weren't explicitly taught :

> *"It took me failing the first test to realize how I had to study. I needed to practice under test conditions, not just look over notes."*

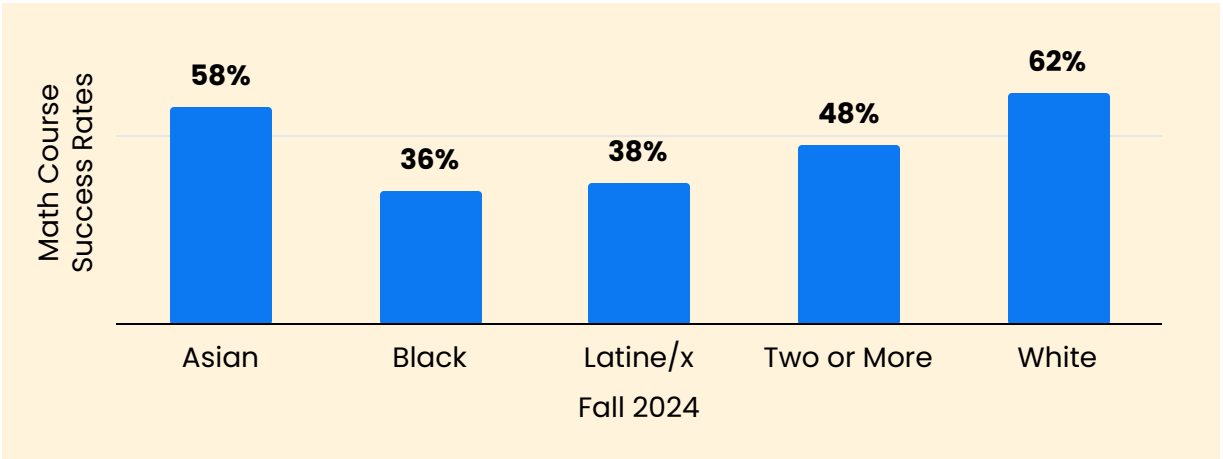
At the same time, students were quick to acknowledge when faculty made the assessment process feel fair and transparent. These instructors were clear about expectations, aligned tests closely with homework and class content, and provided opportunities for feedback or revision:

> "One of my professors gave us **practice problems** that were really similar to the test. That helped me **feel more prepared and less nervous.**"

> "She broke down exactly what to expect and how to study, so **there were no surprises.** That made a **huge difference** for me."

> "Having a **review session** before the test helped me **feel more confident** going in. I felt like **I actually had a chance.**"

The insights shared by students reveal that for math assessments to be equitable, they are not only rigorous, but also transparent and aligned with instruction. When assessments feel fair and support student growth (paired with helpful feedback - see theme 4), they can build student confidence and motivation. When they feel disconnected or punitive, they risk reinforcing long-standing inequities, particularly for those already navigating math-related trauma or academic doubt.



Theme 4: Instructor Feedback and Structure Improve Confidence and Learning

Many students shared that **clear feedback and structured support** from instructors **boosted both their learning and confidence.** In particular, when professors broke down assignments into manageable steps and explained what was expected, it reduced anxiety and made learning feel more achievable:

> *"My professor gave us a practice activity, then went over it together. Then we had time before the test to ask questions. That helped a lot."*

This kind of **scaffolded instruction,** where students first try, then receive guided feedback, was cited by multiple students as a turning point in how they approached studying and prepared for assessments.

Overall, formative, learning-oriented feedback, especially with chances to revise, allowed students to adjust their approach and improve over time. Several students said it clarified expectations, reduced uncertainty, and helped them persist even when the material was challenging. For some, it marked a shift in how they viewed their own academic abilities.

> **"After that class, I started to feel like maybe I could actually be good at math. Before, I always thought it just wasn't for me."**

IMPACT OF INSTRUCTOR FEEDBACK

Clear, Direct Feedback Boosted Skills Development

"Once the professor explained what I was doing wrong, it made more sense. I just needed someone to show me the pattern I was missing."

Constructive Feedback Encouraged Growth

"She gave very clear feedback, not going around the bushes. I followed her suggestions, and now I can write a paragraph in an hour, not over a weekend."

Explanations of Errors Improved Understanding

"The professor didn't just say it was wrong, he explained [why] and showed a better way to think about it."

Written Feedback Helped Identify and Correct Misunderstandings

"Getting back the test with notes helped me see what I misunderstood. It wasn't just a grade, it was something I could learn from."

Theme 5: Studying and Help-Seeking are Strategic, But Emotionally Complex

In multiple interviews, students described deeply **intentional and sustained efforts to succeed in their math courses.** Their study routines were not casual or passive; instead, they were structured, proactive, and time-intensive. Students reported using a combination of strategies: attending tutoring, reviewing class recordings, using generative AI tools, creating flashcards, re-copying notes, and collaborating with peers. These behaviors reflect a high level of academic agency and self-regulation, even when students did not always identify themselves as "math people."

> **"I go to tutoring, then immediately do the homework while it's fresh... I created flashcards, re-copied my notes."**

Despite these efforts, many students expressed ongoing anxiety, particularly around assessments. Several described feeling **extreme stress related to math exams, regardless of how much they prepared:**

> **I left the test thinking I failed... I'm literally in therapy about it."**

These emotional reactions often stem from earlier school experiences often shaped by low instructor expectations, exclusion, or culturally unaligned curriculum, which can lead racially minoritized students to **internalize a fragile sense of belonging in STEM or math spaces** (Cokley, McClain, Enciso, Martinez, 2013; Jackson, 2011).

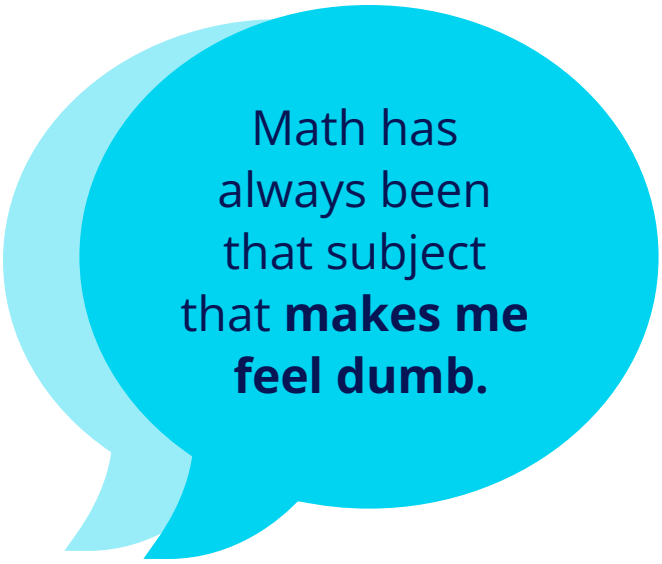
Seeking help was essential but not always straightforward. One student described having to try multiple tutors before receiving effective support:

> **"I had to go to three tutors before one could help... the first two didn't know how to solve the problem.**

This quote illustrates that it is not simply the availability of support but the **quality and cultural responsiveness of that support that makes an impact.**

Recommendations from Student Voices

> **"**I've always struggled with math. **It just never came easy to me."**



> I had so many bad experiences with math growing up that **I just assumed I couldn't do it."**

The Black and Latine/x student interviewees shared critical insights into how SMC can better support their success in math courses. Their reflections emphasized the importance of culturally responsive teaching, strong student-instructor relationships, transparent feedback, and accessible academic support. They also made clear that thriving in math requires more than their own efforts - it requires instructional practices and classroom environments that affirm their identities, recognize their potential, and foster a sense of belonging.

In addition, a sixth cross-cutting theme emerged:

Belonging and Identity in Math Spaces are Shaped by Past Experiences

Over half of the interviewed students shared a longstanding belief that they "weren't good at math" or "didn't belong" in academic spaces, beliefs shaped by past experiences of failure, discouragement, or exclusion (see quotes shared in themes 1, 3, and 4). Even when they were succeeding in college-level math, those feelings often lingered and shaped how they responded to new learning challenges in their math courses, leading them to doubt themselves or interpret setbacks as signs they didn't truly belong.

The summary on the following page outlines the six themes from the interviews and offers equity-minded recommendations for the Math Department. Each recommendation is grounded in student insights and aligned with the department's commitment to advancing racial equity.

THEME	RECOMMENDATION
#1 - Faculty Engagement and Culturally Responsive Relationships Matter	**Build culturally responsive, relationship-centered classrooms** • Provide sustained professional learning opportunities for faculty on culturally responsive teaching, focusing on racial identity affirmation, relationship-building, and high expectations. • Encourage practices that humanize math instruction and support faculty to mentor students beyond the classroom.
# 2 - Peer Support and Community Play a Critical Role in Math Learning	**Foster Peer Learning and Academic Community** • Create structured peer study groups or learning communities. • Integrate collaborative work and peer support into class time.
#3 - Math Anxiety Shapes Performance – But It's Rooted in Preparation and Perceived Fairness	**Implement Assessment Practices that Reduce Anxiety and Promote Confidence** • Include revision opportunities and multiple ways to demonstrate learning. • Ensure exams align with what was taught and practiced, and offer clear expectations.
#4 - Instructor Feedback and Structure Improve Confidence and Learning	**Make Feedback Timely, Clear, and Growth-Oriented** • Provide feedback that is specific, timely, and focused on what students can do to improve—not just what they got wrong. • Encourage formative assessments (e.g., ungraded quizzes, scaffolded assignments) that allow students to learn from mistakes early. • Use affirming language in feedback to support growth mindsets and counter messages of deficiency that racially minoritized students may have internalized.
#5 - Studying and Help-Seeking Are Strategic, But Emotionally Complex	**Strengthen Academic Support Systems** • Evaluate and improve tutoring services to ensure tutors are knowledgeable, trained in culturally responsive communication, and matched to student needs. • Embed support into classes and raise awareness of available resources.
Overarching Theme - Belonging and Identity in Math Spaces Are Shaped by Past Experiences	**Acknowledge and Interrupt Deficit Framing in Curriculum and Instruction** • Facilitate department-wide conversations about racialized messages students receive (implicitly and explicitly) in math spaces. • Reflect on how instructional practices, course policies, and grading norms might reinforce deficit narratives, and explore alternatives. • Incorporate positive racial identity and belonging into classroom norms and department culture.

Appendix: Semi-Structured Interview Protocol

Overall Classroom/Learning Experience

1. Tell me about a class that you would describe as a "good class" at SMC.

- What was/is happening in the class?
- What was/is the instructor doing in this class?
- What were you/are you doing?
- What were/are the interactions with your instructor/other students like in this class?
- How did the "good class" impact you?

2. Now tell me about a class that you would describe as a "bad class" at SMC.

- What was/is happening in the class?
- What was/is the instructor doing in this class?
- What were you/are you doing?
- What were/are the interactions with your instructor/other students like in this class?
- How did the "bad class" impact you?

Studying for a Math Class

3. In general, when you need help with a class, where do you go? Who do you ask? Is this different for a math class?

- Think back to a time when you sought help, and you got the help you needed? What happened? Describe the person or program who helped you.
- Think back to a time when you sought help, but you didn't get help. What happened?

4. Think about how you spend your time outside of class preparing for your math class (for example, studying, working on your assignments or homework).

- What strategies do you use? Probe for SI/tutoring
- How have your study skills changed over time (since starting SMC, since high school, etc.)?
- Overall, how do you think those strategies are working for you and why?
- What do you think your instructor/SMC could do to help you improve your study skills for this course, specifically?

Perceptions of Math Assessments

5. What do you think a student needs to do in order to earn an A grade in a math class at SMC?

- How would they study? What strategies would they use? What would they do in class? What would their typical day in school look like? What would their interactions with faculty look like?

6. Tell me about a time when your assessment results (grade) in a math class accurately reflected the effort you put in. An assessment can be a project, quiz, exam, etc.

- Describe the assessment, what did it ask you do to? What type was it?
- What did the instructor do/didn't do to help prepare you?
- What were you feeling when you were completing the assessment? What was going through your mind?
- How did these things impact you when you were completing the assessment?

7. Now tell me about a time when your grade in a math class did NOT match the effort you put in.

- Describe the assessment, what did it ask you do to? What type was it?
- What did the instructor do/didn't do to help prepare you?
- What were you feeling when you were completing the assessment? What was going through your mind?
- How did these things impact you when you were completing the assessment?

Last Thoughts

8. If you were to give advice to a future SMC math student, what advice would you give them?

Data Coaching Cohort 7 Participants

Dr. Colleen McGraw (Chair)
Brian Rodas (Assistant Chair)
Dr. Alex Bene
Dr. Matthew Hancock
Dr. Hafedh Herichi
I-Shen Lai
Jamar London
Dr. Keith Ouellette
Novita Phua
Kristin Ross
Aaron Simo
Jason Wang

Data Coaching Program Team

Sherri Bradford
- Faculty Co-Lead
- Program Leader, Black Collegians Umoja Community

Silvana Carrion-Palomares
- Administrative Co-Lead
- Project Manager, National Science Foundation Grant

Dr. Hannah Lawler
- Program Founder, Administrative Co-Lead
- Dean, Institutional Research

Dr. Rebecca Peña
- Program Co-Facilitator
- Research & Planning Analyst (50% Student Equity & Achievement Funded)

This cohort's Data Coaching activities were supported by funding from the District Planning and Advisory Council (DPAC) through the 2022–2023 Annual Action Plan #3.