

Michaela Takac
Junior
Communication/Film Production
Mindsets and Beliefs of Incoming College Freshmen on Math
Mentor(s): Dr. Danielle Cooper, Criminal Justice Department
Professor Yevgeniya Rivers, Department of Mathematics and Physics

Background Info

Dr. Cooper and Professor Rivers have been conducting their research with their students for the past several years, where they provide them with their mindset profiles. The goal with my study was to get a look into students' mindsets and beliefs before they even step into one of their classrooms. Carol Dweck, a professor of psychology at Stanford University, created the concept of growth and fixed mindsets. Dweck conducted a study with a group of 10-year olds and discovered that those with a growth mindset "understood that their abilities could be developed," (Dweck, 2014). Someone with a growth mindset understands that intelligence is flexible and can improve over time (Degol, 2017). On the other hand, Dweck noticed that those with a fixed mindset "run from difficulty," (Dweck, 2014). Those with a fixed mindset learn to have the highest level of intelligence and see success in their victories rather than in their improvement (Degol, 2017).

Methodology

The goal of the study was to see what students' mindsets were before they stepped into a college level math course; therefore, our target audience was the incoming freshmen class (Class of 2023). Data was collected through a survey distributed during the second day of SOAR. Each student received a bookmark with a QR code and link on the back to a 10 to 15-minute-long survey asking them a series of questions on their demographics, math experiences, math beliefs, and questions about their mindset. This helped with questions like: a) How do students feel in a math course? b) What do students believe about math? c) What are their mindset profiles? Data was also collected by conducting 20 to 30-minute interviews. The interviews allowed us to get a deeper look into students' personal experiences with math, allowing us to understand how past math experiences shaped mindsets and beliefs. At the end of each survey students had the option to be entered to win 1 of 4 \$25 Amazon e-gift cards, 4 winners were chosen for each SOAR session. Students also had the option to participate in 1 of 10 interviews which guaranteed a \$25 Amazon e-gift card. Interviews were conducted through Zoom web conferencing at the convenience of the interviewee.

Results

After all of the SOAR sessions, we had 169 people take the survey. In this sample, 91.3% said their last math course was during their senior year and most took pre-calculus as their most recent class. 80% said they received mostly A's and B's in high school and 75% said they were far or somewhat above average students. This data shows us that most students coming in have very fresh experiences and most took high level math courses that you would take in college. This data also shows that students did very well in high school and that most are very confident in themselves as students. When it came to questions about math, the majority of students strongly agreed or agreed to statements that positively reflected on math. For example, 70.4% believed that math is a very worthwhile and necessary subject and 65.7% said that math is one of

the most important subjects for people to study. In interviews, it was discovered that their math teachers had the biggest impact on them whether they attributed good grades to a good math teacher, or their math teacher was their biggest math influence. Many students were able to mention teachers by name when describing who was their greatest math influence. It was also discovered that the way the classroom is set up and organized affects students' performance in the course. While we can gather inferences, and examine correlation between mindsets and beliefs about math, we will not be able to determine a causation if one were to exist. We also excluded everyone 17 years old and younger and transfer students. For future projects, we can work to add them into the sample size and potentially following through with the students as they go through their college career.

References

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