# Students' Relationship with Science: It's Complicated

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Introduction:

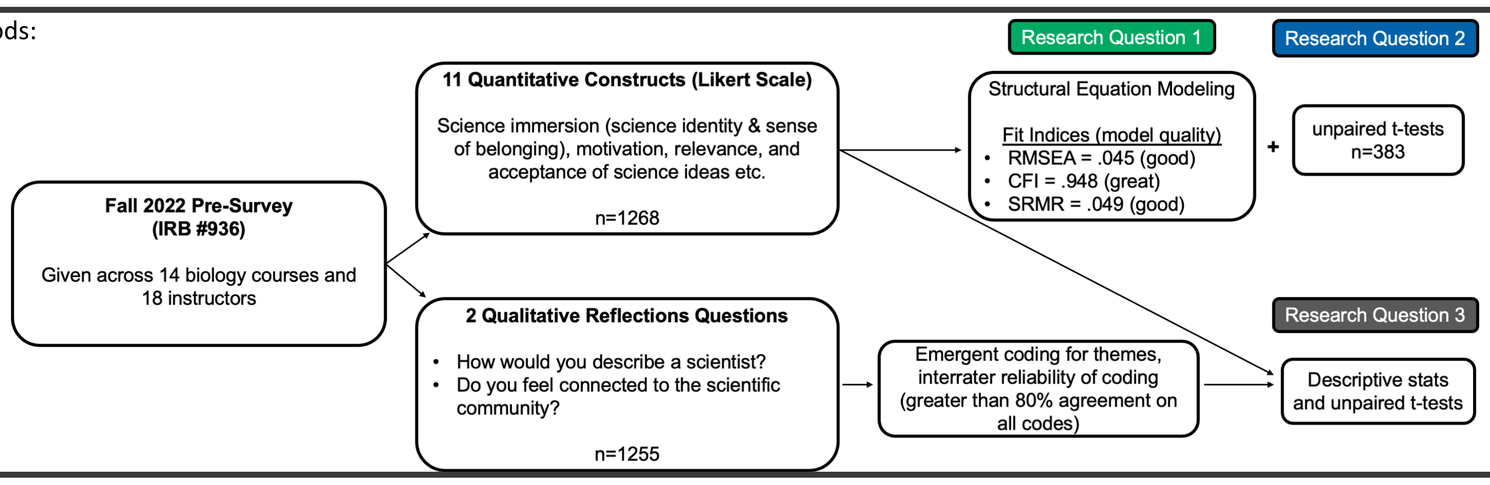
- Supporting students' pursuits of science careers is not only a national priority (NSB, 2020), but critical to the goals of science instructors.
- Factors important to student science success are: motivation, identity, and sense of belonging in science.
- Previous research rarely examines the interconnectivity of these constructs including their impact on student conceptions of science relevance and acceptance of controversial science ideas.
- How students conceptualize science and scientists have yet to be linked to many of these outcomes at non-research intensive (R1) institutions.

**Research Question 1:** How does science immersion relate to students' motivation, acceptance of science ideas, and science relevance?

**Research Question 2:** How do students' medical experiences and religion relate to their motivation, identity, and belonging in science?

**Research Question 3**: How are student views of scientists connected to their sense of belonging, identity, and motivation in science?

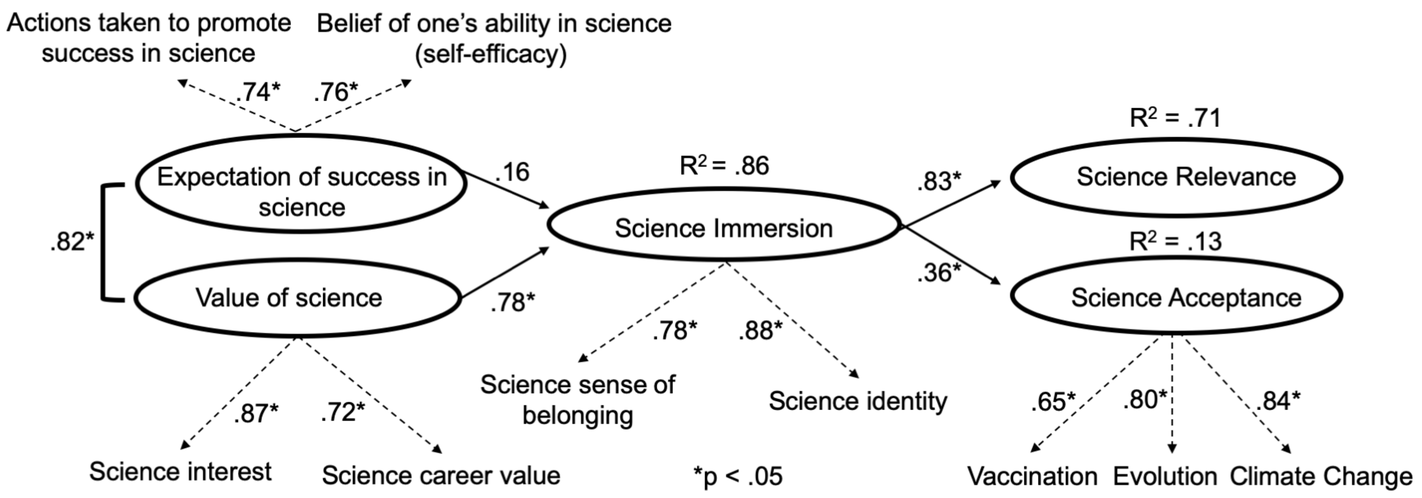
Methods:



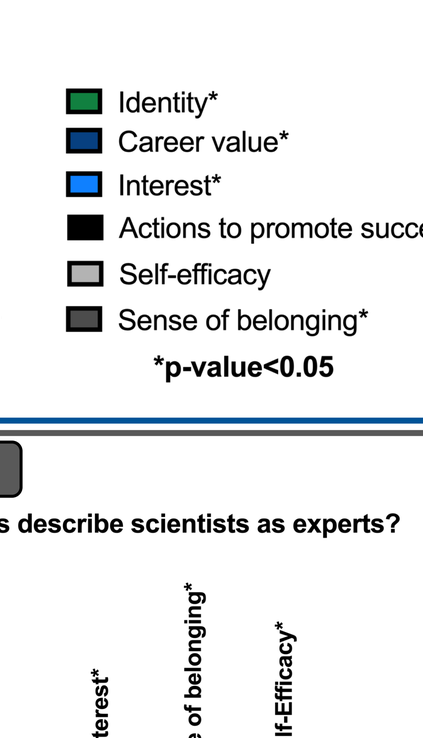

Demographics:

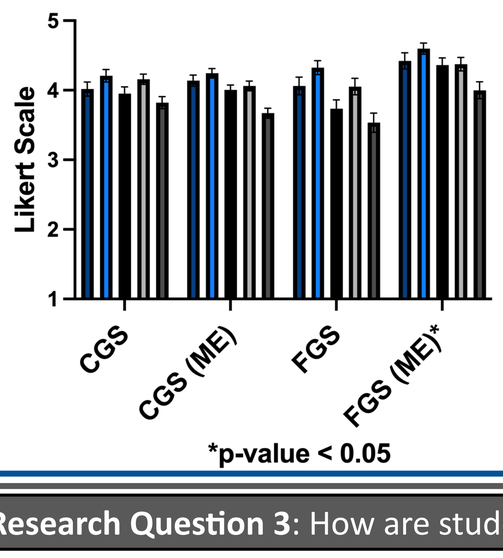
- 20% underserved ethnic/racial group
- 47% women
- 24% first-generation students (FGS)
- 68% Latter-Day Saints (religious affiliation)
- 57% of students had a medical experience (hospitalization, chronic medical condition, and/or issues with mental, physical, emotional health)
- 67% STEM majors

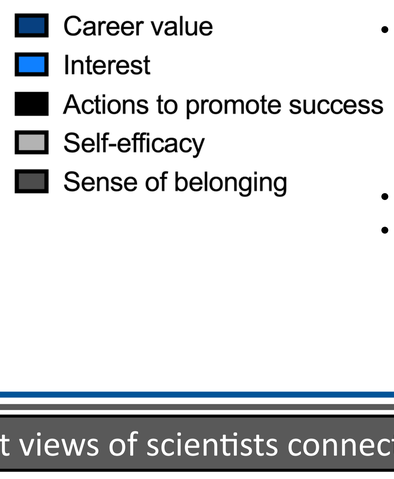
- The hypothesized model (below) had between good and great fit to the data.
- Only students' value of science significantly predicted science immersion ($p$ <.05), while expectations of success did not (**figure below**)
- When examining model differences between STEM and non-STEM majors:
  - STEM majors' science immersion was significantly predicted by **both** success and value of science. **Only** the value of science significantly predicted science immersion for non-STEM major students.
  - Science immersion predicted 18% of STEM majors' acceptance of science ideas, but only predicted 3% for non-STEM majors.



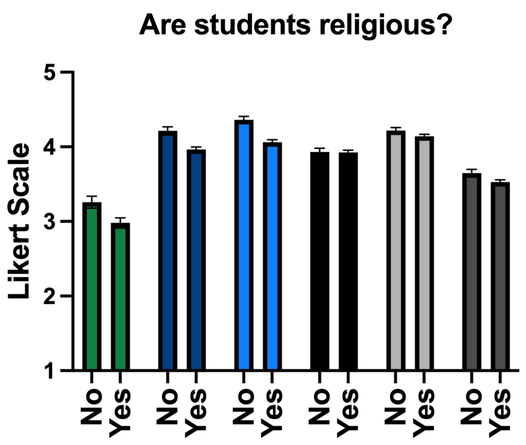

- 84% of students agree evolution is occurring, but differ in their views about whether scientists agree on evolution
- The figure to the **right** demonstrates potential interactions between students' beliefs about evolution occurring and their views of scientist agreement. Students that disagree with evolution occurring are proportionally more likely to believe that scientists themselves do not agree on evolution.
- NAND= neither agree nor disagree



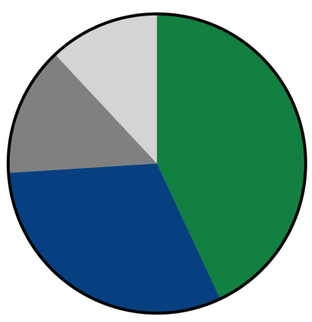



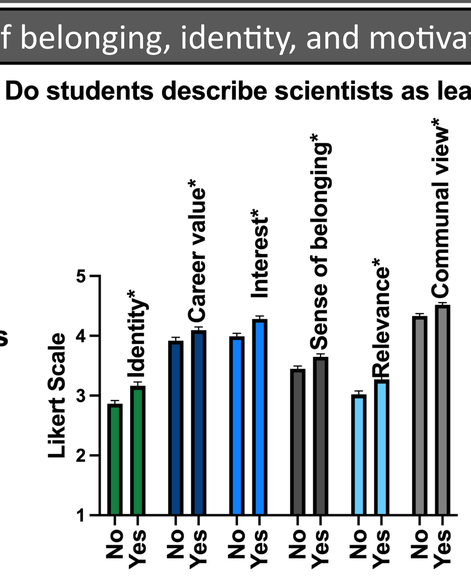



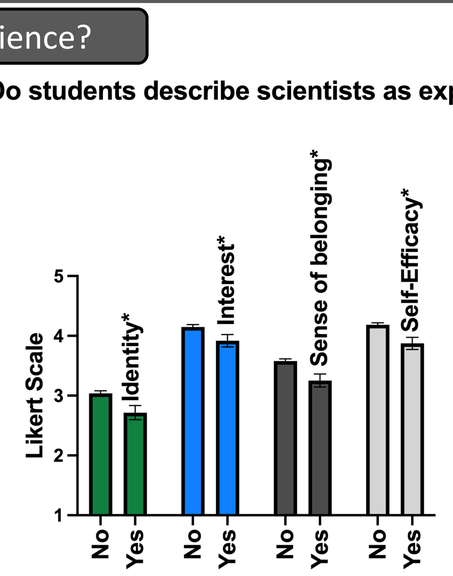

- 57% had a medical experience (ME) (22% chronic condition)
- Unique interactions were found for students that were FGS with medical experiences (FGS ME). FGS ME had significantly higher values than others for the categories to the **left**.
- 76% of students were religious
- Religious students reported significantly lower values for some aspects of motivation, identity, and belonging related constructs on the **right**.




- The most common codes for describing sciences were as learners (43%), experimenters (31%), and experts (14%). (IRR 83-97%) (**immediate right**)
- Student agreement that their scientist descriptions matched them varied by categories. Learner = 49%, Experimenter = 34%, Expert = 7%
- These results suggest that there are significant relationships between student views of who scientists are and their own science sense of belonging, identity, and motivation. (**far right figures**)

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