Hispanic Chemistry Pushout Throughout Higher Education
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Background
- Colleges often lack resources to help Hispanic students adjust to higher education environments (Contreras & Contreras, 2015)
- Hispanic underrepresentation in colleges often causes students to experience a social identity threat (Hernandez et. al, 2017)
- Loss of interest due to the discrepancy in STEM teaching in high school and college (Capri et. al, 2013)
- They tend to lack the cultural knowledge of college classrooms (Moller et. al, 2014)
- Students have a lack of direction when relating their goals to STEM introductory courses (Acevedo-Gil, 2015)

Research Questions

RO1 What are the intended majors of freshman Hispanic undergraduates enrolled in gateway chemistry courses and how do they differ by gender?

RO2 Are chemistry majors changing their majors by the end of their first term? Are females changing their majors at greater proportions than males?

RO3 What proportion of Hispanic students will continue with their sequence of chemistry courses?

Method
Data and Sample
- Students attending introductory chemistry courses at large Southern California University designated as a Hispanic Serving Institution
- N= 180 Hispanic students (76% women & 48% First generation college-going students) completed pre- and post-survey about their thoughts about their major

Measures
- Pre-survey Questions:
  - What is your major (or intended major)?
  - Responses were recoded into three categories: Life Sciences, Physical Sciences, and Non-Stem Majors.
  - Why did you choose this major?
  - Responses were put into thematic categories: Occupation Oriented, Enjoyment/Emotion, Future Public Good, Competence, No Decision, Other
  - What is your gender?

- Post-survey Questions:
  - Have your major plans changed since the beginning of the quarter?
  - Do you plan to take the next course in the chemistry series?

- N=81 filled out pre and post survey questions

Statistical Analyses
- Descriptive analyses

Results

RO1 What are the intended majors of freshman Hispanic undergraduates enrolled in gateway chemistry courses and how do they differ by gender?

- Men were equally likely to be in Life Sciences and Physical Sciences
- 55% difference in women pursuing Physical Sciences compared to Life Sciences

RO2 What are their reasons for choosing this major?

- Majority of students reported choosing their major due to considerations of future occupation (43%) or enjoyment (40%)
- 17% picked their major due to considerations of the future public good or other reasons

RO3 Are chemistry majors changing their majors by the end of their first term? Are females changing their majors at greater proportions than males?

- N=81 students reported that they intended to change their major at the end of the term
- Out of these students:
  - 55%/40% of men/women who started in Life Sciences major stayed in Life Sciences major
  - 17% of women who started as Non-Stem Majors intended to switch to Life Sciences
  - All men who started as Non-Stem Majors (7%) intended to switch to Life Sciences

RO4 What proportion of Hispanic students will continue with their sequence of chemistry courses?

- A total of 10% do not plan to continue
- Over 90% of women plan to continue the chemistry series at their school
- 25% of men will not take the next chemistry course

Discussion

- Most students in introduction to chemistry courses are in Life Sciences
- Majority of students were women
- Women were more likely to switch to Life sciences at end of term
- Men were equally likely to be in Life and Physical Sciences
- Students are more likely to chose their major if they perceive it helps advance their future career or brings them joy
- Students plan to persist in chemistry course series

- Limitations:
  - Sample size decreased from pre- and post-survey potentially leading to less precise results
  - Did not assess other factors leading students to chose certain majors (e.g., experiences in other courses, outside influences)

- Future research:
  - Asking in depth questions about why students changed their major or stayed in it
  - Assess how many students finished in their declared major
  - Analyze why they may have changed or stayed in their majors
  - Investigate long-term persistence
  - Analyze if they have job in their major post graduation

References


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