A Qualitative Approach to Understanding Students' Attitudes Towards Statistics

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Introduction

Statistics is a dreaded required course for countless undergraduate majors and students' attitudes are correlated with academic performance. Research on attitudes toward statistics is primarily quantitative and may not capture the full picture of how students' attitudes towards statistics originate and take shape. Research questions: (1) which components of attitude are associated with deeper conceptual understanding, in-class participation, and group dynamics? (2) how are the different attitude sub-scales connected to student-student and student-instructor relationships?

Methods

- 45 undergraduate students were recruited from an introductory statistics course for non-majors
- 3 classroom observations
- 1 voluntary survey (23 respondents)
  - Questions were largely based on the Survey of Attitudes Towards Statistics (SATS-36)
- 1 student interview
- Data were coded in the constant comparative method to triangulate components of attitudes towards statistics which are associated with deeper conceptual understanding, overall course performance, and in-class participation.

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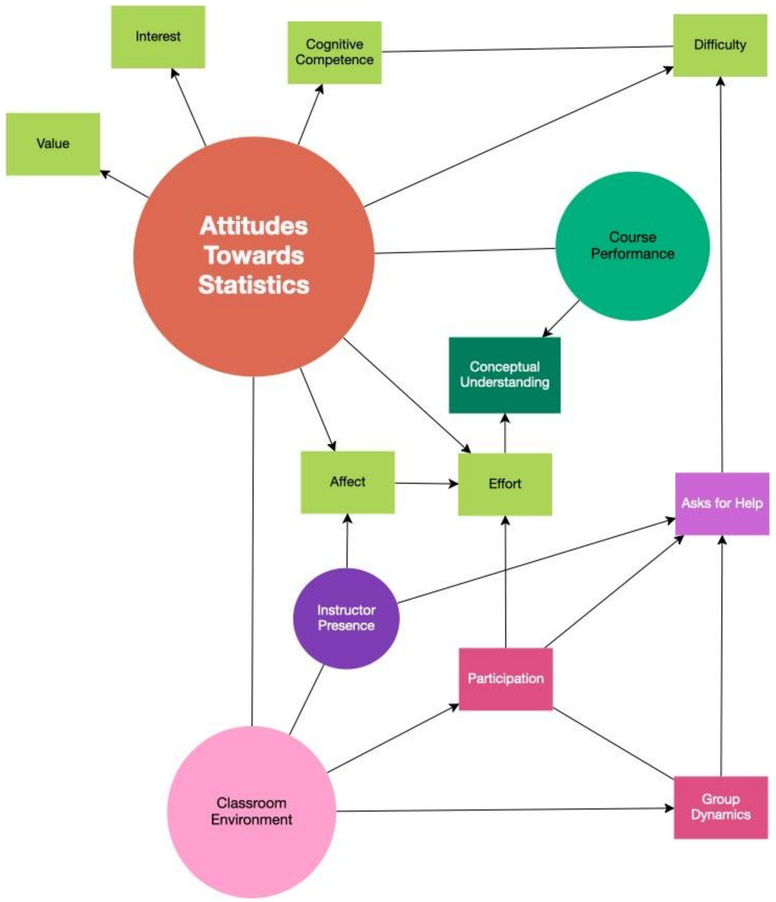
Students who **engaged with the instructors** frequently were more likely to have a **positive view** of the material and **participate in class.**

Students who **asked for help** from group members and instructors reported **lower levels of perceived difficulty.**



Highlighted Results

- Student engagement with instructors (+ associated positive affect) noticeably improved conceptual understanding as seen through student comments in class and submitted coursework.

"I try my very best to participate with my group members and try to be the most engaged as possible. The interactions are really positive and do help contribute greatly to my learning."

- The majority of survey respondents reported feeling confident in their ability to learn statistics and many enjoyed statistics or were neutral in affect.

"I think I am able to learn and explain most concepts after I have had time to think about them"

"Math isn't my favorite subject but it is cool to do applied stats in this class as I've been able to understand a lot more research"

- The interview highlighted that it is possible that affect and self-efficacy beliefs play a role in the relationship between positive instructor interaction and in-class participation.

"As far as my own attitude towards statistics. I will say that if I would have maybe altered my thought process on the subject, before actually starting the class I think my success, my academic success, would have been a little bit better than it is now…the one thing that I wish I could have probably done different is just changed my mindset"

Final Thoughts

Survey responses and classroom observations provide a nuanced understanding of the relationship between students' attitudes towards statistics and student interactions with peers, instructors, and course material. The existing forced-choice SATS-36 does not capture student interactions with each other, instructors, or course materials. The relationship between participation, perceived effort, and the existing subscales of attitudes towards statistics can be used to design new items to measure aspects of students' attitudes and class participation.

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