



Engineering and Science Education Seminar
Friday, February 27, 2009, 9:00 – 10:00 am
302 Rhodes

**Developing a Physics Identity: Modeling the effect of career outcome expectations
and high school physics experiences for females and males**

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Abstract

This study addresses the overall low enrollment in physics degree programs, and especially the under-representation of women in physics, by exploring how students' physics identities are shaped by their experiences in high school physics classes and by their career outcome expectations. The study's theoretical framework is based on the concept of a physics identity that includes performance, competence, recognition by others, and interest. Drawing data from the Persistence Research in Science & Engineering (PRiSE) project, which surveyed College English students nationally about their backgrounds, high school science experiences, and science attitudes, the study uses multiple regression to examine the responses of 3829 students from 34 randomly selected US colleges and universities. Confirming the salience of the identity dimension for young persons' occupational choices, the measure for students' physics identity used in this study was found to be strongly related to their intended choice of a physical science career. Physics identity, in turn, was found to correlate positively with a desire for an intrinsically fulfilling career and negatively with a desire for personal/family time and opportunities to work with others. Physics identity was also positively related to several high school physics characteristics/experiences such as a focus on conceptual understanding, real world connections, students answering questions or making comments, students teaching classmates, and having an encouraging teacher. Explicit discussion of under-representation of women in science was positively related to physics identity for female students but had no impact for male students. This study exemplifies a valuable theoretical framework based on identity which can be used to further examine persistence in science and illustrates possible avenues for change in high school teaching.

Presenter Biographical Sketch

Dr. Zahra Hazari is an Assistant Professor in the Department of Engineering & Science Education and the Department of Mathematical Sciences at Clemson University. Her Ph.D. (in physics education) from the University of Toronto focused on gender differences in introductory university physics performance with particular attention to the connection with high school preparation. She also has an M.S. in physics and B.S. in physics and mathematics. She joined Clemson University after a postdoctoral fellowship at the Harvard Smithsonian Center for Astrophysics. Dr. Hazari's research focuses on issues related to the persistence and performance of females in the physical sciences. She approaches these issues through large-scale curriculum evaluation addressing the efficacy of physics curriculum (pedagogy, content coverage, and assessment techniques) currently being used in classrooms around the US. She has been actively involved in NSF-funded Project FICSS (Factors Influencing College Science Success), Project Crossover (studying the transition from graduate student to scientist), and Project PRiSE (Persistence Research in Science & Engineering). Dr. Hazari has taught undergraduate physics/math courses and methods courses to pre-service high school science teachers and STEM graduate students.

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