Math and Science Attitudes as Predictors of High-school Students' STEM Career Plans

Colleen M. Ganley

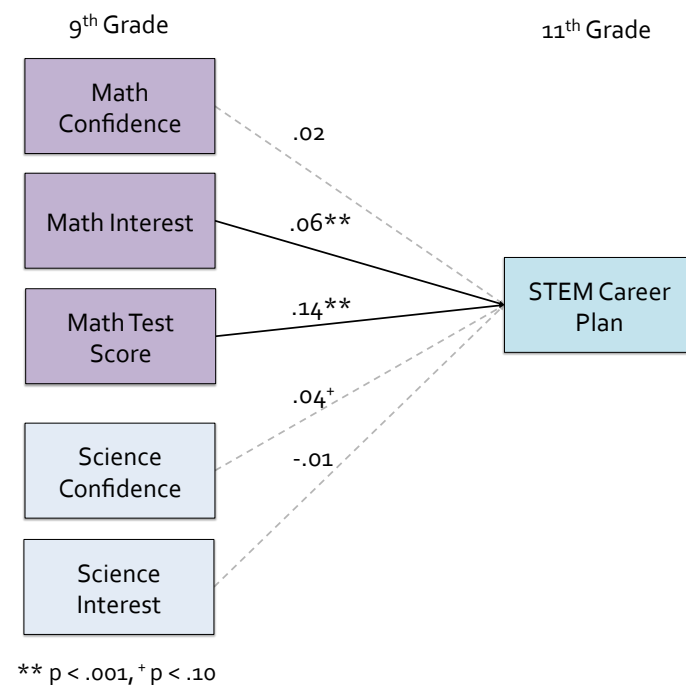Department of Psychology and Learning Systems Institute

Introduction

- The goal of this project was to examine how math and science attitudes and achievement relate to plans to enter into a STEM career.
- This study adds to the literature by

    1) including both math and science attitudes in one study, whereas past work often includes just one subject, usually math, and

    2) including both interest and confidence in one study, where as past work often includes one or the other. This is important because some work suggests interest may be a better predictor of STEM career plans (Köller et al., 2001), though confidence is a better predictor of achievement (Marsh et al., 2005).

Method

- Data
  - High School Longitudinal Study (HSLS; N = 6970) by NCES
  - Data were collected at 9th and 11th grades
- Measures
  - Attitudes: 3-4 items per scale
  - Test Performance: IRT score on algebra assessment
  - STEM Career Plan: Careers were coded as STEM or nonSTEM based on the O*NET classification.
- Analysis
  - I conducted a path analysis predicting STEM career plan using sampling weights and accounting for clustering at the school level

Figure 1. *Results of Path Analysis Predicting STEM Career Plan from Math/Science Attitudes and Math Test Performance*

9th Grade 11th Grade

Math Confidence — .02
Math Interest — .06**
Math Test Score — .14**
— .04[+]
Science Confidence — -.01
Science Interest
STEM Career Plan

** p < .001, [+] p < .10

Results

- Of the math variables, interest and test performance were significant predictors of a STEM career plan, but confidence was not.
- Neither science interest nor confidence were significant predictors, though science confidence was marginally significant (p = .06).

Conclusions and Future Directions

- Results suggest that science attitudes do not appear to factor in to STEM career plans, and that the critical math-related variables are math interest and test performance, but not confidence.
- Because there are gender differences in some of these factors, my next step is to examine how gender relates to STEM career plans and whether relations between variables are different for men and women.