Father's Profession Predicts Academic Outcomes for Women in STEM

Christopher Bach
crbkcd@mail.umsl.edu

Bettina Casad
University of Missouri-St. Louis

Follow this and additional works at: https://irl.umsl.edu/urs

Part of the Social Psychology Commons

Recommended Citation
Available at: https://irl.umsl.edu/urs/35

This Poster is brought to you for free and open access by the UMSL Undergraduate Works at IRL @ UMSL. It has been accepted for inclusion in Undergraduate Research Symposium by an authorized administrator of IRL @ UMSL. For more information, please contact marvinh@umsl.edu.
Father’s Profession Predicts Academic Outcomes for Women in STEM
Christopher R. Bach & Bettina J. Casad
University of Missouri-St. Louis

INTRODUCTION
Underrepresentation of Women in STEM
Despite earning a larger percentage of bachelor’s degrees than men, women earn less than half of bachelor’s degrees in most science, technology, engineering, and mathematics (STEM) fields (Casad, Petzel, & Ingalls, 2018). STEM fields are often high earning, highly innovative professions, and therefore underrepresentation of women in STEM is a concern (Burke, 2007; Hossain & Robinson, 2012).

Attitudes, Self-efficacy, and STEM Outcomes
Positive attitudes about math at a young age positively correlate with entrance into math related classes, leading to higher math self-efficacy and greater intent to pursue STEM careers (Wang, 2013). Because math self-efficacy tends to be lower among women students than men students (Wang, 2013), it is likely a strong factor in the underrepresentation of women in STEM.

Role Models and STEM Outcomes
Previous research shows a positive correlation between parental education level and women’s pursuit of STEM careers (Guyette & Mullen, 2006). Additionally, parental impact is predictive of math self-efficacy and math-attitudes (Casad, 2015). Because self-efficacy in a particular subject is predictive of course and career selection (Jacobs, 2005), this relationship warrants further exploration.

HYPOTHESES
Self-reported gender attachment will moderate the relationship between fathers’ profession and a) sense of belonging in STEM, b) academic self-efficacy, c) math performance expectations, and d) science performance expectations such that women with a father in a non-STEM field will report a) higher sense of belonging, b) higher academic self-efficacy, c) higher math performance expectations, and d) higher science performance expectations if they have higher gender attachment. No relationships between gender attachment and these outcomes were expected among women with a father in STEM.

METHOD
Participants
Participants (N = 688) were undergraduate women majoring in STEM. The sample represented 41.5% Caucasians/Whites, 18.2% Asians/Asian Americans, 15.0% Latinas, 13.2% African Americans/Blacks, and 12.1% identifying as other race or multiracial.

Procedure
Participants completed an online questionnaire. Each variable was measured using a scale ranging from 1 (very strongly disagree) to 6 (very strongly agree). Variables included:
- Gender Attachment (e.g., “I don’t care what happens to my gender group as a whole”)
- Math Performance Expectations (e.g., “I expect my future performance in my math classes will be excellent”)
- Science Performance Expectations (e.g., “I expect I will successfully meet my academic goals in science”)
- Academic self-efficacy (e.g., "I am a good student")
- Sense of belonging in STEM (e.g., “I feel accepted when I am in a STEM setting”)

RESULTS
Linear regression and simple slopes analyses indicated a two-way interaction between father’s profession and gender attachment on sense of belonging in STEM, academic self-efficacy, math performance expectations, and science performance expectations such that undergraduate women in STEM without a father in STEM experienced higher levels of sense of belonging in STEM (p = .001, b = .276), academic self-efficacy (p = .001, b = .359), math performance expectations (p = .001, b = .268), and science performance expectations (p = .001, b = .261) the higher their levels of gender attachment.

ACKNOWLEDGEMENTS
This research was supported by the National Institutes of Health (R01GM094536).