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Academic Self-Efficacy and Undergraduate Research Opportunities Predict Intentions to Pursue Graduate School

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Introduction

Undergraduate Research Opportunities

- The Annual Biomedical Research Conference for Minority Students (ABRCMS) provides an opportunity for underrepresented minority students to present their research and further their career opportunities (Casad, Chang, & Pribbenow, 2016).
- Faculty and peer relations in a research setting predict intentions to pursue graduate school (Hall, Roesler, & Modi, 2018).

Academic Self-Efficacy

- Students with higher levels of academic self-efficacy believe that they will be able to achieve their academic goals (Parajas, 1996).
- Research shows that higher academic self-efficacy is associated with higher academic achievement, more classroom involvement, and more confidence in one's academic discipline (Drago, Rheinheimer, & Detweiler, 2018).

Intention to Pursue Graduate School

- Greater levels of academic self-efficacy can make a student more likely to plan to pursue graduate school (Casad, Chang, & Pribbenow, 2016).
- Greater participation in undergraduate research is associated with a likelihood to pursue graduate school (Campbell & Skoog, 2004).

Hypotheses

Study 1: Participation in undergraduate research, specifically attending ABRCMS, will predict greater intentions to pursue graduate school.

Study 2: Students with higher levels of academic self-efficacy will have greater intentions to pursue graduate school.

Methodology

Study One

- Participants were 68% female and 93% minority men and women (see Table 1).
- Underrepresented students in science, technology, engineering, and mathematics (STEM) fields who attended the ABRCMS (n = 533) completed an online questionnaire that assessed their research confidence and intentions to pursue graduate school.

Table 1. Frequency of attendance, presentations, and awards by gender and race/ethnicity

	URM	Non-URM	Women	Men
Conference attendance				
First-time attendee	245 (58%)	37 (80%)	195 (61%)	85 (57%)
Second attendance	134 (32%)	9 (20%)	95 (30%)	49 (33%)
Third attendance	38 (9%)	0	26 (8%)	12 (8%)
Fourth attendance	7 (2%)	0	4 (1%)	4 (3%)

Study Two

- Participants were 61% female and 52.6% minority men and women.
- Undergraduate students (n = 68) completed an online questionnaire with items that assessed mentor experience, student experience, science identity, and academic self-efficacy.

Results

Study One

- Logistic regression indicated that frequency of attendance at ABRCMS significantly predicted student intentions to pursue a research degree in graduate school, $\chi^2(1, n = 524) = 15.19, p < .01, R^2 = 0.042, 95\% \text{ CI } [1.263, 2.09]$ (see Figure 1).

Study Two

- Multiple regression indicated that the four items assessed significantly predicted graduate school intentions, $F(9, 57) = 2.21, p < .05$, such that a moderate amount of variance in graduate school intentions was explained, $R^2 = 0.26$. Academic self-efficacy alone significantly predicted graduate school intentions, $\beta = 1.37, p < .05$ (see Figure 2).

Discussion

- Results can help further our understanding of underrepresented minorities' experiences with undergraduate research.
- Exposure to undergraduate research opportunities, such as attending ABRCMS, is important in improving the academic self-efficacy of underrepresented minority students, particularly in STEM fields.
- Increasing undergraduate research opportunities can increase the number of underrepresented students who pursue STEM fields, which can lead to more advances in science

Figure 1. Effect of Conference Attendance Frequency on Graduate School Intentions

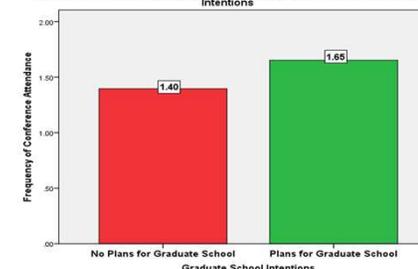
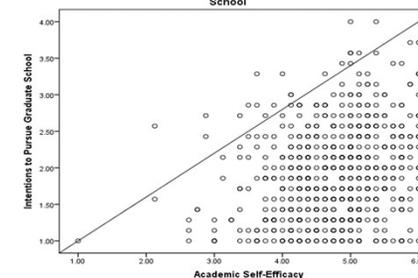


Figure 2. Effect of Academic Self-Efficacy on Intentions to Pursue Graduate School



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