Investigating Links Between Peer Mentoring, Undergraduate Self-Development, and Professional Identity

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Introduction

The Problem: Dropout rates are high in Science, Technology, Engineering, and Mathematics (STEM) fields, particularly among women and minorities. This has been attributed in part to an unwelcoming climate in these majors (Foster et al., 1994).

Two constructs may act as mechanisms for anchoring students to STEM majors:

Peer Mentoring refers to receipt of mentoring support and guidance from someone close in age and/or position (Kram, 1983).

• Peer mentoring has been linked to outcomes such as satisfaction and commitment.
• While much research has focused on formal mentoring programs, mentoring can occur in naturally developing relationships.
  • This study will focus on such informal relationships.

Capitalization refers to the voluntary, proactive participation in professional development opportunities. (Judge & Hurst, 2007)

Examples: (1) Joining a student organization; (2) Participating in a study group; (3) Practicing skills outside of class

• Workplace research has linked capitalization to outcomes such as satisfaction, commitment, and involvement. (Blau et al., 2008)
• These findings are expected to be generalizable to academic settings, as qualitative research has found that STEM students identify and capitalize upon a variety of opportunities (Holland et al., in press).

Rationale:
• Both peer mentoring and capitalization will lead to an increase in positive outcomes that help students identify as STEM professionals, strengthening their ties to their major.
• The social support and self-efficacy gained from peer mentoring may be instrumental in encouraging students to capitalize.

Hypotheses

H1: Peer mentoring will be positively related to: (a) satisfaction with major, (b) commitment to major, (c) major involvement, and (d) willingness to mentor others.

H2: Capitalization will be positively related to: (a) satisfaction with major, (b) commitment to major, (c) major involvement, and (d) willingness to mentor others.

H3: Peer mentoring will be positively related to students’ capitalization participation.

H4: Capitalization partially will mediate the relationships between peer mentoring and the aforementioned four student outcomes.

Method

• 214 undergraduate STEM students ($M_{age} = 20.18; 70\%$ male).
• Participants were recruited via an online research participation system and with the help of several course instructors.
• Participants completed an online survey assessing the mentoring received from their most influential peer, amount of participation in capitalization activities, and their attitudes towards their major.

Discussion

Hypotheses were tested using hierarchical multiple regression analyses. The Baron and Kenny (1986) approach was used to test for mediation, along with Sobel (1982) tests.

• H1 was supported. Peer mentoring significantly predicted satisfaction ($\beta = .33, p < .001, \Delta R^2 = .11$), commitment ($\beta = .32, p < .001, \Delta R^2 = .10$), involvement ($\beta = .27, p < .001, \Delta R^2 = .08$), and willingness to be a mentor ($\beta = .29, p < .001, \Delta R^2 = .08$).

• H2 was supported. Capitalization significantly predicted satisfaction ($\beta = .15, p < .05, \Delta R^2 = .01$), commitment ($\beta = .15, p < .05, \Delta R^2 = .01$), involvement ($\beta = .17, p < .05, \Delta R^2 = .03$), and willingness to be a mentor ($\beta = .15, p < .05, \Delta R^2 = .02$).

• H3 was supported. Peer mentoring significantly predicted capitalization participation ($\beta = .17, p < .05, \Delta R^2 = .03$).

• H4 was not supported. When peer mentoring and capitalization were entered into the regressions together, the beta weight for peer mentoring did not significantly decrease. Mediation was not supported.