Student and Advisor Gender Identity in STEM Doctoral Programs

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Tweet: PhD student outcomes are dependent on quality advising interactions, not student-advisor gender match. All students report more positive advising when their mentor is a woman, reflecting inequitable faculty mentorship expectations.

Audience: Doctoral advisors; Research supervisors

Key Points

- Advisor gender does not directly predict research self-efficacy, belonging, or research skill development among women doctoral students. However, all students, regardless of their gender, tend to report higher quality advising experiences when their advisor is a woman.
- Student outcomes are predicted by the quality of advising interactions.
- More work is needed to ensure equity in mentoring expectations of faculty advisors.

INTRODUCTION While previous research documents that women in STEM doctoral programs tend to fare better when their advisor shares their gender identity, this study provides new insights into the role of student-advisor gender identity congruence. We rely on a longitudinal sample of 281 PhD students in the biological sciences and use latent growth curve modeling to examine the relationship between student-advisor gender identity alignment and key PhD student outcomes, paying careful attention to how the quality of student-advisor interactions might mediate or moderate these relationships. The following questions guided this study:

1. To what extent do student-advisor interactions differ by advisor gender and student-advisor gender identity congruence? 2. To what extent do advisor gender and student-advisor gender identity congruence predict desirable outcomes for doctoral students (i.e., sense of belonging, self-efficacy, and research skill development)? 3. To what extent do student-advisor interactions mediate or moderate the relationship between advisor gender/student-advisor gender congruence and student outcomes?

FINDINGS Our findings reveal differences in how students report interacting with their faculty advisors as a function of advisor gender, such that all students (regardless of their gender) tend to report higher quality advising when their mentors are women. The role of advisor gender changes as students advance through their doctoral programs, with advisor gender potentially playing less of a role over time. Other analyses reveal that, while advisor gender

inconsistently predicted the outcome variables of interest, gender-outcome relationships were most often mediated by student–advisor interaction quality. In most cases, having an advisor who was a woman had similar effects on women and men students alike. In other words, our findings suggest that gender-matching plays little to no role in predicting student outcomes. Rather, all students may benefit from having an advisor who is a woman, likely because students with men advisors tend to report more negative advising experiences. For example, students (regardless of their gender) who had women as advisors tended to have greater sense of belonging, but this effect was indirect, operating through advising quality. Collectively, our findings underscore the importance of examining advisor gender within the larger context of student-advisor relationships, with a recognition that advising relationships and the salience of gender identity can change over time.

TAKEAWAYS Doctoral programs should work to ensure that all faculty are providing high-quality doctoral training experiences. This will require faculty and administrators to consider *why* students in our study reported lower quality experiences when their advisor was a man. As a first step, administrators and faculty could collaborate to develop systems for making faculty contributions to teaching and mentoring visible and transparent, ensuring that they are holding all faculty to equitable standards for providing high-quality advising.