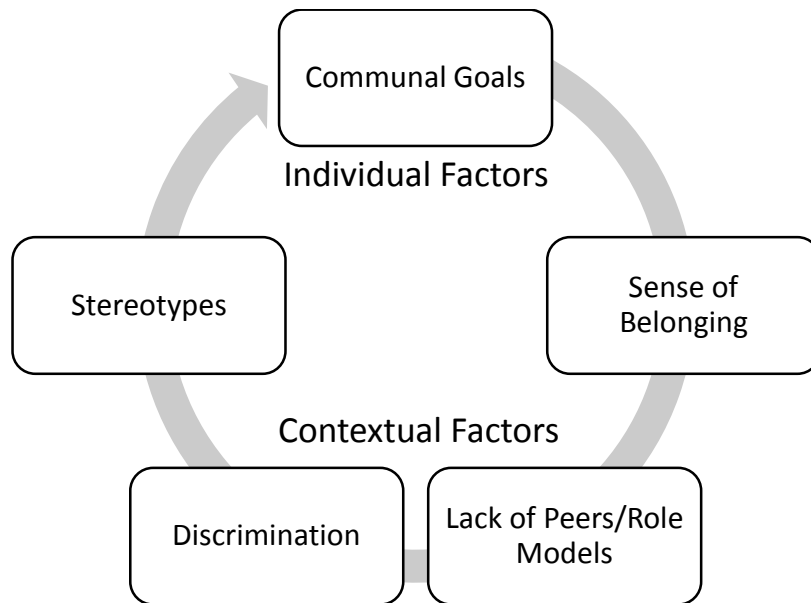


SPIFIE – Women & STEM

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Why are women underrepresented in certain STEM fields?



Based on your experiences and expertise as STEM educators, what can *you* do about it?

What could your department, college, or university do about it?

Strategies Shown to Be Effective

Communal Goals: Women are more likely to have communal goals than men, so emphasizing the applied aspect of STEM fields (i.e., how can STEM fields help people live better lives?) and the collaborative nature of STEM work (i.e., working together instead of alone) can increase women's interests in STEM fields (Diekmann, Clark, Johnston, Brown, & Steinberg, 2011).

Sense of Belonging: Feeling a sense of belonging is a core social motive in human behavior, yet women often report feeling as though they don't "belong" in STEM fields. Encourage a sense of belonging by deemphasizing gender stereotypes and encouraging a "growth" mindset (i.e., a belief that one can improve their STEM skills/knowledge through hard work, rather than relying on innate talent; Good, Rakkan, & Dweck, 2012). Be cognizant of cues that you send about who "belongs" in STEM via what you say, how you talk about yourself and the field, and what objects are in your office/classroom/lab/building (Cheryan, Plaut, Davies, & Steele, 2009).

Lack of Peers/Role Models: Women's performance tends to suffer when they are the only woman in a testing situation (Sekaquaptewa & Thompson, 2003) and women's interest in STEM wanes when STEM fields are portrayed as having few women (Murphy, Steele, & Gross, 2007). Having peer mentors matched on gender/race/background (Dasgupta, 2011), learning communities for certain groups within STEM (Ramsey, Betz, & Sekaquaptewa, 2013), and highlighting women in the field (Stout, Dasgupta, Hunsinger, & McManus, 2011) have all shown to help women's performance, interest, and sense of belonging in STEM fields.

Discrimination: Discrimination against women in STEM is often (though not always) subtle and committed unknowingly (Moss-Racusin et al., 2012). A sense of personal objectivity can actually *increase* bias (Uhlmann & Cohen, 2007), and so it is important to maintain vigilance and try to avoid situations where bias may occur. For example, grading work anonymously and calling on students systematically rather than randomly or based on which students volunteer could curb some biases in the classroom (Lavy & Sand, 2015). Be especially wary of ambiguous situations (Heilman et al., 2004) – high-achieving students are often encouraged to pursue STEM regardless of gender, whereas mid-level boys are likely encouraged more than mid-level girls.

Stereotypes: Stereotypes that women are not good at STEM tasks can interfere with women's interest and performance in STEM via stereotype threat (Spencer, Steele, & Quinn, 1999). Reduce stereotype threat by reframing the task as gender-fair (Quinn & Spencer, 2001), deemphasizing threatened identities (Stricker & Ward, 2004) perhaps by emphasizing other identities (Rydell, McConnell, & Beilock, 2009), encouraging self-affirmation by allowing students time to think about the characteristics, skills, values, or roles that they value (Schimel, Arndt, Banko, & Cook, 2004), emphasize high standards and students' ability to meet them (Cohen, Steele, & Ross, 1999), provide role models (Marx & Roman, 2002), and provide external attributions for difficulty (Ben-Zeev, Fein, & Inzlicht, 2005).