Self-Efficacy: Definitions, Context, and Findings Relative to Women in the Military

Response to DACOWITS RFI 2

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Chapter 1. Background on Self-Efficacy

Bottom Line Up Front

- **Self-efficacy** is "an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments." This can apply in general (e.g., an individual believes they have the capacity to overcome all challenges) or more specifically (e.g., an individual believes they have the capacity to overcome challenges in their job).
- Self-efficacy stems from four primary sources: (1) performance or mastery experiences, (2) vicarious experiences, (3) social persuasion, and (4) physiological and affective states.
- The primary tools for measuring self-efficacy are self-report questionnaires using Likert scale indexing; however, qualitative methods, such as interviews, focus groups, and observations, can uncover important contextual information about self-efficacy and decision making.

Various characteristics influence individuals' workplace performance, job satisfaction, career decisions, and likelihood of success. This section defines one of those characteristics, **self-efficacy**, and describes sources that influence individuals' self-efficacy, and strategies for measuring self-efficacy.

A. Defining self-efficacy

Self-efficacy is "an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments."[1] See *Example of Self-Efficacy in the Real World* for a descriptive example. Self-efficacy as a concept can be applied at various levels of specificity. For example, **general self-efficacy** describes an individual's beliefs about their ability to complete any task or deal with challenges in general,[2] while **domain-specific self-efficacy** describes beliefs about one's ability to complete tasks in a certain domain,[3] such as in the workplace, and **task-specific self-efficacy** refers to beliefs about one's ability to complete specific tasks within a domain,[4] such as completing the fourth quarter sales report as part of one's job responsibilities. In general, this literature review will discuss self-efficacy at the domain level, focusing on women's beliefs about their ability to succeed in male-dominated academic and professional settings.

An individual's level of self-efficacy, or belief in one's ability to complete a task or deal with obstacles, can influence various aspects of their academic and professional behaviors, beliefs, and performance, including:

> ### Example of Self-Efficacy in the Real World
>
> Imagine two students, Sally and Lucy, who are about to take the same math test. Sally and Lucy have the same exact ability to do well in math, the same level of intelligence, and the same motivation to do well on the test. They also studied together. They even have the same brand of shoes on. The only difference between the two is that Sally is very confident in her mathematical and her test-taking abilities, while Lucy is not. So, who is likely to do better on the test? Sally, of course, because she has the confidence to use her mathematical and test-taking abilities to deal with challenging math problems and to accomplish goals that are important to her—in this case, doing well on the test. This difference between Sally and Lucy—the student who got the A and the student who got the B-, respectively—is *self-efficacy*.
>
> Source: Noba Project (n.d.)

- How an individual approaches completing an activity
- The level of effort an individual exhibits during certain activities
- An individual's ability to overcome obstacles and failures; also described as resilience

▸ Whether perceived outcomes of an individual's efforts are positive or negative

▸ An individual's stress levels and likelihood of depression from being in difficult environments

▸ An individual's overall likelihood of success in completing tasks[5]

B. Sources of self-efficacy

Dr. Albert Bandura, one of the foundational scholars on self-efficacy, defined four sources from which self-efficacy originates and can be influenced. These sources are well recognized among self-efficacy researchers and are displayed graphically in Figure 1.1:

Figure 1.1. Bandura's Sources of Self-Efficacy
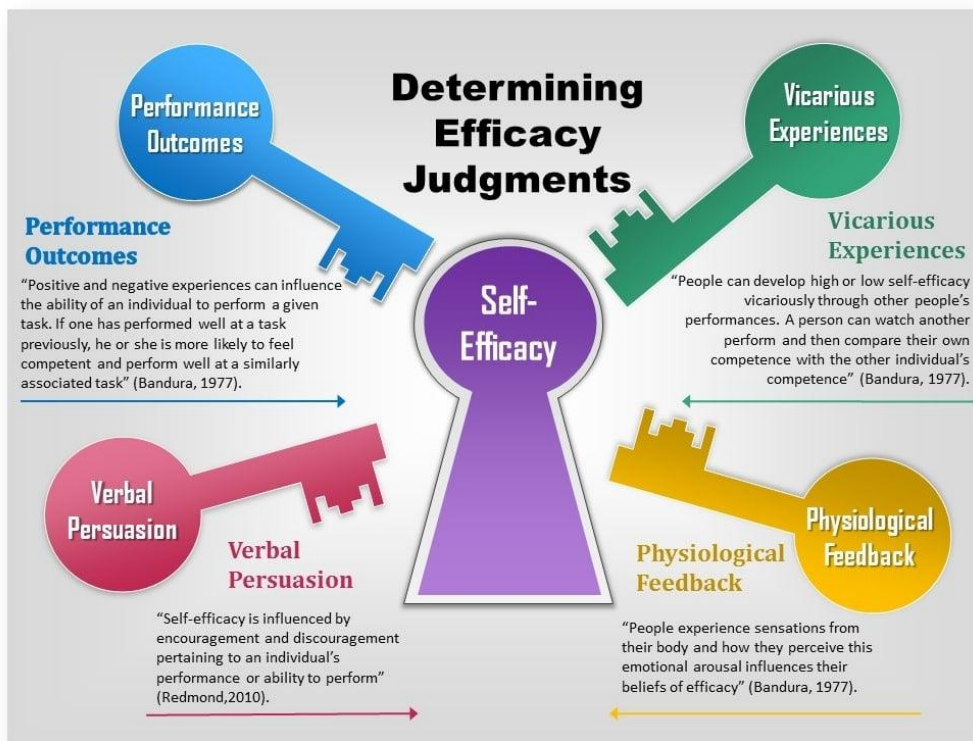
Source: Simply Psychology[6]

1. **Performance or mastery experiences** generate self-efficacy from lived experiences, whether those experiences are successes or failures. Direct experience of something is a very powerful source of self-efficacy. Success builds self-efficacy whereas failures or challenges may reduce one's sense self-efficacy, or internal belief in their ability to complete a task. The balance of successes and failures matters too, for instance, if one is used to succeeding and they fail, it may not erode their self-efficacy as much as someone who is used to failing, because they know they are typically able to succeed in most tasks.

2. **Vicarious experiences** can build self-efficacy through the experiences and observations of others, particularly significant others such as family or peers. Seeing others succeed by

accomplishing tasks or overcoming challenges can increase someone's belief that they can do it too.

3. **Social persuasion** identifies how self-efficacy can be influenced by the positive or negative words and sentiments of others, especially other people who are important to an individual. For instance, a family member telling someone they can or cannot succeed in the military can influence their own sense of self-efficacy related to military service.

4. **Physiological and affective states** refer to one's emotional state and how that affects perceptions of self-efficacy. Some amount of physical and emotional stimulation toward a situation may prompt one's motivation and self-efficacy, while too much, such as excessive fear and worry, could dissuade one from thinking they are capable of completing said challenge or task.[7, 8]

In addition to these sources of self-efficacy, Maddux (2013) also identified **imaginal experiences or visualization** as an additional source of self-efficacy. This source of self-efficacy involves visualizing oneself as successful in a situation or performing effectively and allows individuals to envision their goals as more achievable and improve their belief in their abilities.[9]

Although each of these sources has been found to influence individuals' self-efficacy, studies show that the extent to which each of these sources influence individuals' self-efficacy can vary based on individual and contextual factors, including gender, personality traits, or areas of study or work.[10, 11]

C. The difference between self-efficacy and related characteristics

Self-efficacy differs from other related concepts and characteristics such as self-esteem, outcome expectations, and self-confidence in important ways:

1. **Self-efficacy versus self-esteem:** The difference between self-efficacy and self-esteem has been described as "self-efficacy refers to how you feel about your ability to succeed in different situations, while self-esteem refers to your respect for your own value and worth." Studies have indicated a correlation between self-efficacy and self-esteem whereby individuals with higher levels of self-efficacy tend to have a higher level of self-esteem.[12]

2. **Self-efficacy versus outcome expectations:** Outcome expectations relate to thoughts or beliefs that certain behaviors or actions, if performed, will lead to an expected outcome. For example, a person may believe that studying for a math test will lead to a good grade on the test. However, this belief may or may not correlate with their beliefs in their own ability to do well in math, which is self-efficacy.[13]

3. **Self-efficacy versus self-confidence:** Self-confidence is similar to self-efficacy, however self-confidence is defined as a general confidence or belief in oneself where self-efficacy is related to specific tasks, contexts, or situations. For instance, a person may have high self-efficacy in intellectual tasks but low self-efficacy in physical labor tasks which may or may not be related to their overall sense of self-confidence.[14]

D. Measuring self-efficacy

Self-efficacy is a concept born out of psychology, a field that traditionally struggles with measuring many of its concepts due to the complexity and subjectivity of each concept and associated contextual factors. Therefore, researchers have developed, built on, and implemented strategies to measure self-efficacy in individuals over the years.

1. Self-report questionnaires

Self-efficacy measurement has primarily focused on capturing self-reported data through questionnaires using Likert scale responses (e.g., select 1 if you never feel competent in the workplace or select 5 if you always feel competent in the workplace). Developing and implementing questionnaires that rely on Likert scale-type responses allows researchers to index individuals' responses to create a total score of the concept being measured, such as self-efficacy.[15]

In general, two types of self-efficacy are investigated through self-report questionnaires: (1) measures of general self-efficacy (See *Questions from the General Self-Efficacy [GSE] Scale)*, or how an individual feels about their ability to succeed or address obstacles in general[16] or (2) measures of task-specific self-efficacy (See Table 1.2 for examples), or how an individual feels about their ability to succeed or overcome obstacles related to a specific topic (e.g., an example question from this type of questionnaire may be "I can usually handle challenges I face in workplace"). Bandura (2006) and other studies have found that task-specific measures of self-efficacy better predict the behaviors of questionnaire respondents in comparison to measures of general self-efficacy.

Questions from the General Self-Efficacy (GSE) Scale

The GSE is composed of the following eight items, which can be rated from 1 (strongly disagree) to 5 (strongly agree):

1. *"I will be able to achieve most of the goals that I have set for myself"*

2. *"When facing difficult tasks, I am certain that I will accomplish them"*

3. *"In general, I think that I can obtain outcomes that are important to me"*

4. *"I believe I can succeed at most any endeavor to which I set my mind"*

5. *"I will be able to successfully overcome many challenges"*

6. *"I am confident that I can perform effectively on many different tasks"*

7. *"Compared to other people, I can do most tasks very well"*

8. *"Even when things are tough, I can perform quite well."*

Source: Chen et al. (2001)

Table 1.2 Examples of Task-Specific Self-Efficacy Scales

Name of Scale	Description of Task Measured	Sources
Self-Efficacy for Learning Form (SELF)	The SELF scale explores student's self-regulatory skills in several areas of academic functioning. For example, the form asks students to rate their ability to take good lecture notes, find ways to remember information for tests, and ability to prioritize and allocate enough time for studying.	Reliability and Validity of Self-Efficacy for Learning Form (SELF) Scores of College Students Instrument

Name of Scale	Description of Task Measured	Sources
Career Decision Self-Efficacy Scale (CDSE)	The CDSE measures individuals' confidence in making career-related decisions. It covers tasks and competencies required for career decisions, such as self-appraisal, occupational information, goal selection, planning, and problem-solving.	Reliability and Validity of Five-Level Response Continua for the Career Decision Self-Efficacy Scale Instrument
Self-Efficacy for Exercise Scale (SEE)	The SEE assesses individuals' confidence in their ability to exercise despite various obstacles. For example, individuals are asked to rate their confidence in their ability to maintain an exercise schedule if they feel stressed, are too busy with other activities, or do not enjoy the exercise activity.	Testing the Reliability and Validity of the Self-Efficacy for Exercise Scale Instrument
Brief Parental Self-Efficacy Scale (BPSES)	The BPSES examines caregivers' and parents' beliefs about their ability to perform parenting tasks successfully. Caregivers and parents are asked to rate their confidence in assessing what their child needs and their ability to improve their child's behavior.	I Know What to Do; I Can Do It; It Will Work: The Brief Parental Self Efficacy Scale (BPSES) for Parenting Interventions Instrument

2. Qualitative methods for assessing self-efficacy

Researchers, such as Usher and Pajares (2008), have also discussed the value of implementing qualitative methods, including interviews, focus groups, and observations, to investigate individuals' subjective and objective feelings of self-efficacy, how these feelings change under different contextual conditions, and decision-making processes associated with self-reported self-efficacy questionnaires.[17]

Much of the existing research leveraging qualitative methods to explore self-efficacy focuses on teacher or student self-efficacy in an academic setting. Several of these studies support the use of qualitative data collection approaches to offer a more complete and nuanced understanding of self-efficacy. For example, one mixed methods study focused on teaching experience and self-efficacy by using self-report questionnaires and semi-structured follow-up interviews.[18] During the interviews, participants could expand beyond standardized questionnaire responses to describe how different factors combined or interacted to impact their self-efficacy. Another study explored teacher self-efficacy using self-report surveys, interviews, and lesson observations. The study found the lesson observations to be particularly helpful in elucidating teacher self-efficacy and suggested that qualitative data should be integrated alongside more traditional quantitative approaches when assessing self-efficacy.[19] Though these studies focus on teacher self-efficacy specifically, it stands to reason that qualitative data collection methods can allow for an enhanced understanding of self-efficacy in other contexts as well, including male-dominated career fields.

Chapter 2. Self-Efficacy Among Female Youth in Academic Settings and Career Planning

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Bottom Line Up Front

- Most studies on all age groups of children indicate that lower self-efficacy, not lesser ability, among girls is the main driver of the gender gap in STEM participation.

- Self-efficacy may be more important for girls during adolescence as they are more likely than boys to experience trauma and life changes during this time that bring about significant stressors. Self-efficacy has been found to be an important part of resilience in overcoming stressful situations.

- Interventions designed to increase girl's self-efficacy may be effective in closing the STEM gender gap.

- Girls tend to be more interested in sciences that are focused on helping other people, so influencers, such as teachers and coaches, may be able to close the STEM gender participation gap by highlighting the communal utility of certain STEM subjects, such as math and engineering.

Children develop self-efficacy as early as elementary school.[20] Although self-efficacy begins developing during early childhood, it continues to change and grow as children observe and experience the world throughout their adolescent period and adulthood. This section describes influences on young girls' self-efficacy throughout different periods of childhood, especially in academic subjects and STEM (Science, Technology, Engineering, and Mathematics), and the impact of self-efficacy on their lives and academic career. See *Student Voices* below for quotes from girls on discrimination and bias in STEM fields.

A. Self-Efficacy in early (birth to 6 years old) and middle childhood (6 to 12 years old) girls

Ideas of self-efficacy can develop in children younger than age 6 but sometimes do not develop in children until ages 9 or 10.[21, 22, 23, 24] Differences in self-efficacy among boys and girls have been shown to vary by topic and by country. For example, when examining interest in leadership roles among 5- to 10-year-old children, researchers found that leadership self-efficacy was similar between boys and girls, and when the leadership role was described in a way that emphasized helping others, that self-efficacy was stronger among both groups.[25] Alternatively, a study of fifth-graders found that while math skills differed between boys and girls for different subareas of math, with boys excelling in arithmetic and girls excelling in geometry, boys still consistently rated their self-efficacy as higher than girls, even in subareas of math where girls showed greater performance.[26] This self-efficacy gap in math and other STEM topics begins during elementary school and self-efficacy levels consistently decline for girls as they continue in their education.[27] For example, one study shows that girls in middle school often lose interest in STEM as they

Student Voices

"Women have been told through media and things like that, that they are inferior or unable to do certain things. They internalize that, and then they think that it's true. I think that's a big reason why there's not as many women in these positions . . . I think it's also women holding themselves back because of the way they can possibly be treated—just because of hearing things that have happened to other women who have had to not conform to what society is telling them to do. I think that it's disheartening, and makes some women draw themselves back and not show their full potential even if they have interests. "

(Brianna, Black, 11th grade)

Source: Riegel-Crumb (2022)

progress in school, and the motivation to pursue STEM classes is more likely to decline for high school girls, rather than boys.[28, 29] In summary, various studies suggest that gender differences in STEM fields are not based on biological ability at all, and in some countries outside the United States, where women have greater education opportunities, experience, and political power than men, this gender gap does not exist or is even reversed.[30]

Studies indicate that math anxiety is connected to lower math self-efficacy, and math self-efficacy is a major factor in motivating students to pursue the subject.[31] According to a study of seventh-graders, female students had higher math anxiety than male students, while male students reported slightly higher math self-efficacy and interest in a math or science career. This study also revealed that while performance in math is correlated with math anxiety and career interest for boys, performance in math is not correlated with either math anxiety or career interest for girls.[32] Another study followed students across all 3 years of middle school and also found that male students were more likely to choose STEM-related courses. However, this difference disappeared when holding mathematics anxiety and self-efficacy constant.[33] This suggests that the lower levels of self-efficacy—and, relatedly, higher levels of math anxiety—are driving the gender gap in STEM fields.

Self-efficacy goes hand-in-hand with self-esteem, and both contribute to individuals' internal beliefs. Researchers surveyed students in elementary school (11-year-olds) and students in their first year of middle school (13-year-olds) on self-esteem, academic self-efficacy, implicit theory of intelligence, and academic achievement to better understand how these factors are related and if there are differences by grade or gender.[34] Findings revealed that the elementary student cohort had higher levels of self-esteem and self-efficacy than the middle school cohort in general and that boys had higher levels of self-efficacy than girls in both grade levels. The difference in self-esteem between grades was also entirely driven by lower levels of self-esteem among girls, implying that self-esteem among girls may start lower than boys in elementary school and decrease in middle school, while boys' self-esteem does not change after entering middle school. However, girls scored higher on academic performance in middle school than boys. While this study explored general self-efficacy and achievement, not tied to a specific subject, these findings are similar to other studies on STEM fields such as math and science.[35, 36]

B. Self-efficacy in adolescent (12–18 years old) girls

Adolescence can be a challenging period of life for some girls who experience mental risk factors during this time, including stress, trauma, low self-esteem, and engagement with negative or troublesome peer groups.[37] Although many girls do not experience trauma during their adolescent years, nearly all girls experience life changes that can be difficult and stressful to manage.[38] Therefore, self-efficacy may be especially important for girls of adolescent age to mediate against negative mental health influences and stressors less identifiable in boys.[39, 40]

Interest in STEM fields has decreased among male and female high school students in recent years, though the gender gap in STEM participation still exists.[41] Using the U.S. High School Longitudinal Study dataset, researchers found that about a quarter of male students had chosen a college major in STEM, while only about six percent of female students did so. However, female students scored higher in STEM classes than their male counterparts in ninth grade and had a higher STEM-specific GPA. There were no differences in self-efficacy for math and science in 9th-graders, but in 11th grade, male students had stronger self-efficacy than female students among these topics. Surprisingly, even though the male students had higher self-efficacy, female students showed more interest in participating in math courses.[42] Similarly, in a study of 15-year-olds in Denmark, students took the Programme for International Student Assessment (PISA) 2015, an assessment that measures reading, math, and science

knowledge and skills, in addition to a survey that asked about the students' enjoyment and interest in science, and science self-efficacy. In this study, results showed that male students reported significantly more interest, enjoyment, and self-efficacy in science.[43]

Math anxiety also continues to impact female students at a higher rate than male students during adolescence. Another study of 15-year-olds in European countries, which used the PISA 2012 and a self-efficacy scale, found that male students had lower math anxiety, higher self-efficacy, and higher math performance scores than female students. When self-beliefs (math anxiety, self-efficacy, and self-concept) were held constant across genders, the differences in mathematics scores disappeared.[44] This was also studied in Italy, where research found that female students had higher math anxiety than male students, despite similar scores in math ability. Here, unsurprisingly, math anxiety was correlated with both achievement and self-perceived ability.[45] In summary, various studies show that adolescent boys and girls have similar grades in math, but girls are more likely to lack self-efficacy, or confidence in their abilities, which can affect their career interests and choices after school.[46, 47] Research indicates that friends and other social connections influence self-efficacy among adolescent girls as well. For example, one study found that adolescent boys and girls who attached themselves to friends who were not academically motivated tended to see a reduction in their own academic self-efficacy.[48] Relatedly, some studies have shown that adolescent boys and girls who see their peers perform well academically experience an increase in self-efficacy related to their education.[49]

Outside of relationships that impact academic performance and interests, research has also been done comparing emotional self-efficacy among boys and girls. Findings reveal that adolescent girls often report lower emotional self-efficacy than boys,[50] potentially due to greater restrictions in personal agency during early adolescence than boys.[51]

C. Interventions to improve self-efficacy in children and youth

In addition to research done to identify the importance, influence, and gender differences in self-efficacy, researchers have also studied and identified strategies to improve self-efficacy in young girls, especially related to STEM. For example, one study developed and implemented four STEM summer camps for middle school and high school girls. The camp curriculum included hands-on activities, such as website development and coding. Camp attendees also made and presented group projects based on what they learned. Attendees completed surveys before and after attending the camp, while a control group that did not go to the camp took the same survey (Students Attitudes Toward STEM survey). Results showed that, while the camp attendees had higher self-efficacy than the control group, the intervention did not impact interest in future careers in STEM.[52]

Another study assigned high school girls either to a 9-week STEM career development group or to a control group. The girls assigned to the intervention group participated in various activities and discussions focused on the importance of intentionally selecting a career. Students were surveyed three times—once before the intervention, once immediately after, and once 3 months later. There were no differences between the groups before the intervention, but at both the post-intervention time and the follow-up, the intervention group's career decision self-efficacy and STEM self-efficacy increased, while the control group remained the same.[53]

Researchers have also considered unique, technology-driven approaches to build self-efficacy in young girls. For example, researchers ran an experiment in which fourth-graders were either assigned to a virtual reality lab or a traditional teaching lab and were administered a pre- and posttest to investigate the impact of game-based virtual reality teaching on performance and self-efficacy in physics. While

male and female students in each group showed the same level of performance, researchers reported the level of interest in physics for male students in the experimental group was higher than that of female students. In addition, self-efficacy declined over the semester in male students in the control group, but no difference was seen among female students.[54]

Interventions to close the gender gap in STEM should focus on increasing female students' self-efficacy.[55] Often, STEM classes are focused on subject-matter knowledge and technical skills; however, encouraging creative problem-solving may help build interest and confidence in female students, potentially leading to better outcomes and a path toward STEM-related career fields. This style of STEM learning may be better suited outside the classroom, for example in extracurricular activities that allow more flexibility in curriculum and allow students to engage without being concerned about grades.[56]

D. Next steps and recommendations

As noted earlier, high performance or achievement in STEM subjects such as math does not necessarily make girls more likely to pursue such careers. Research indicates that this is largely because of the gender stereotype that careers in STEM are masculine.[57] Interventions at an early age to remove these stereotypes, reduce math anxiety, instill confidence in young women, and empower them to pursue STEM jobs are important.[58, 59, 60] When looking specifically at computer science, young male students often have more access to or spend more time on computers, which likely leads boys to be more comfortable with the subject and thus have a higher self-efficacy in computers than girls. Computer classes in early grade school before stereotypes can take hold, along with female teachers or role models, may help address this gap.[61,62]

Researchers have also found that gendered language matters to children when discussing future job opportunities. For example, one study explored how children between 7 and 12 years old, who spoke German or Dutch, reacted to different job titles. Specifically, researchers looked at the use of "pair form" versus "generic masculine" job titles. For example, researchers would use the word "firemen" for both male and female firefighters in "generic masculine" form, and "firemen and firewomen" in pair form. Children had higher self-efficacy regarding the pair form version of traditionally masculine jobs compared with the generic masculine version. While this was true for both boys and girls, boys felt more confident regarding stereotypically male jobs than girls. However, children also perceived the pair form versions as lower in status and less difficult than the generic masculine version. It is possible that self-efficacy improved not because of inclusive language, but because of this perception that the job is easier when described in pair form. When looking at occupations that are traditionally female, no effect was seen from this activity.[63] This study, and others, show that language used to describe masculine-type jobs is important when engaging with children, and it can alter their interest or self-efficacy in pursuing those titles.

Finally, many studies have found that interest in a subject is correlated with self-efficacy in that subject, especially for science and math. Adolescent female students seem to be more interested in life and health sciences than their male counterparts, but this is not the case for other sciences, such as physics. This may be explained because female students tend to be more interested in communal utility value, meaning they value science in terms of how it can help other people. This suggests that interest, and therefore self-efficacy, may be improved by highlighting the communal utility value of other subjects women are not traditionally drawn to. It is also suggested that science teachers share how the subject is directly useful in the students' lives to attract more women to its study.[64]

Chapter 3. Self-Efficacy in the Military and Other Nontraditional Career Fields

Bottom Line Up Front

- High self-efficacy is an especially important characteristic for Service members given the frequent complex, high-danger, and high-stress environment of their work. Research shows that high self-efficacy is linked with resilience and individuals' ability to overcome challenges and bounce back from failures.
- Young girls in the United States report much lower rates of self-efficacy related to multiple military activities, including completing basic training, leaving their family for a long time, and fighting in a war.
- The development and implementation of high-stress, high-difficulty trainings may increase servicemen's and servicewomen's self-efficacy through mastery experiences.
- Women face various challenges participating in male-dominated career fields, including gender discrimination, sexual harassment, ill-fitting equipment, a lack of promotion and professional development opportunities, and limited mentorship. However, higher levels of self-efficacy in women have been shown to mediate the impacts of such challenges and lead women to be more successful in these fields.

In addition to challenges young girls face in academic settings focused on STEM education, women face similar challenges in the workforce in male-dominated career fields. This section summarizes studies on women's self-efficacy in the military and recruitment programs, military-specific strategies to improve self-efficacy, and women's experiences with self-efficacy in other male-dominated career fields, including policing, firefighting, and construction.

A. Self-efficacy in the military

Service members' self-efficacy can significantly impact their experience and performance in the military. Self-efficacy is associated with trusting one's self and having the internal belief that one can complete activities or tasks, which is especially valuable in the military when tasks can be multistep, complex, dangerous, and high stress. Self-efficacy affects Service members' careers in the military in various ways, including influencing their professional performance, especially under pressure, likelihood of retention, leadership quality, and other aspects of life in the military, and servicewomen's self-efficacy is especially important to their experience in the male-dominated military due to gender discrimination challenges they must overcome.

This section highlights differences in the rates of self-efficacy among male and female military applicants, cadets, and Service members, various aspects of life in the military influenced by self-efficacy, and best practices for improving self-efficacy in the military.

1. Self-efficacy among individuals considering or training for military service

Based on DACOWITS focus groups with Service members focused on recruitment, it is evident that family members often have significant influence on an individual's decision on whether to join the military.[65] Gibson et al. found that parents specifically impact their children's intention to enlist through efficacy beliefs. In other words, parents' beliefs about how capable their child would be of succeeding in

a military career influenced their child's beliefs of how capable they would be of succeeding in a military career, which in turn affected their intention to enlist. [66]

Self-efficacy can also impact how likely recruits are to stay the course after they decide to enlist. For example one study found that self-efficacy affected how likely U.S. soldiers were to complete the Special Forces Assessment and Selection Course.[67] Self-efficacy may impact how likely recruits are to complete training in part because it impacts how individuals assess and respond to high-stress situations. Delahaij and colleagues explored how Netherlands cadets and recruits coped with a high-stress exercise following several months of training. The study showed that those with high coping self-efficacy may appraise a high-stress situation as a challenge, eliciting positive emotions like eagerness and excitement, which puts them in a better physiological state to handle the stress and focus on the task at hand. In contrast, those with low coping self-efficacy may appraise a high-stress situation as a threat, and experience negative emotions like anxiety or anger, which in turn may lead to withdrawal from the situation and a focus on negative emotions. [68]

2. Self-efficacy in female and male Service members

Research shows that male individuals report higher rates of self-efficacy related to serving in the military than female individuals at various time points, including before joining the military and while enrolled at Military Service Academies (MSAs). For example, the U.S. Department of Defense (DoD) Joint Advertising Market Research and Studies (JAMRS) reported that as of fall 2022, female respondents of the DoD Youth Poll were much less likely than their male counterparts to report believing that they could complete certain military activities, such as boot camp or fighting in a war (Figure. 3.1).[69] Similarly, Jordan et al. found in a survey study of 517 freshmen through senior cadets at an unnamed Corps of Cadet program that female cadets self-reported significantly lower rates of self-efficacy toward military service than male cadets.[70]

Figure 3.1. Male and Female Perceptions of Self-Efficacy on Certain Military Activities from 2022
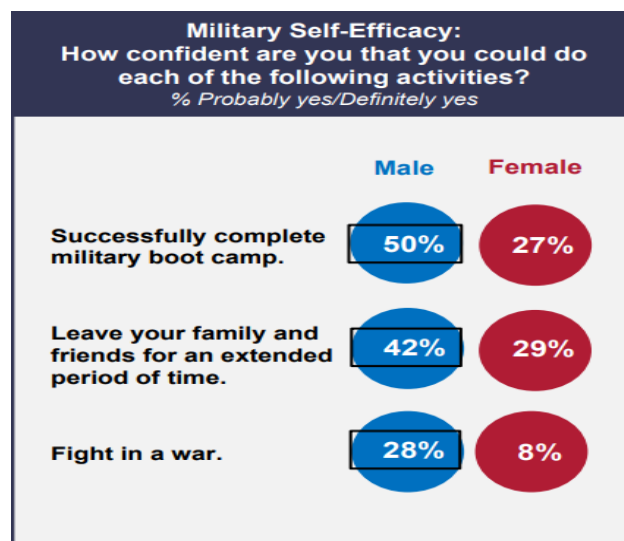
Source: Joint-Advertising Market Research and Studies

There are also differences in self-efficacy between active-duty servicewomen and servicemen. One study explored the effects of wartime experiences and their impacts on post-deployment mental health

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outcomes among U.S. Air Force personnel. Findings demonstrated that women reported lower levels of self-efficacy compared to men and that self-efficacy impacted the relationship between wartime experiences and mental health outcomes for women only. [71]

3. Strategies to improve self-efficacy among Service members

Several studies have explored ways to increase self-efficacy among Service members. One British study explored the impacts of multimodal psychological skills training (PST), which is often used to enhance athlete performance in high-intensity sports,[72] among military pilot-trainees who were experiencing course-related learning difficulties. Researchers found that the training resulted in increased self-efficacy and self-regulation behavior and reduced anxiety and worry. [73]

Another method to improve self-efficacy is to simulate a high-stress event within a safe learning environment. Nevins and colleagues studied this approach in which military medical students completed a hyper-realistic immersion training simulating real-life combat and mass casualty events. Results indicated that the training improved students' self-efficacy; students' increased confidence in their ability to handle difficult situations also strengthened their commitment to military service.[74]

Additionally, building self-efficacy in cadets is an important step in training them for the military. Research indicates that self-efficacy can be built in a variety of ways for cadets in Reserve Officers' Training Corps (ROTC) or MSAs, including through constructive feedback from instructors and mentors, the recognition of cadet achievements, and positive reinforcement of behaviors, especially after completing challenging activities.[75]

4. Team-efficacy in the military

In addition to self-efficacy, team efficacy is especially important in the military context. Team efficacy is describes an individual's belief that his or her team has the ability and resources necessary to complete a task or overcome obstacles.[76] Unlike self-efficacy, very little research has been conducted on team efficacy in the military. One study of mental and physical team efficacy in the Air Force that found higher rates of physical and mental team efficacy improved group cohesion.[77] More recently, Martin et al. found in 2022 that positive leadership climate was associated with higher levels of team efficacy.[78] Given the structure and team-focused mentality of life in the military, further research is necessary to identify the importance of team efficacy in military contexts.

B. Self-efficacy for women in other male-dominated career fields

The number of women working in male-dominated career fields in the United States remains low. As of 2020, only 6.5 percent of women with full-time employment were working in male-dominated industries, while only 5.4 percent of men were working in female-dominated fields.[79] This section focuses on a select few male-dominated career fields that share traits with military service, including dangerous, complex, high-stress working conditions and high physical demand. These career fields include policing (composed of 12 percent women),[80] firefighting (career firefighters composed of 5 percent women; volunteer firefighters comprised of 11 percent women),[81] and construction (composed of 11 percent women).[82] Although DACOWITS recognized STEM careers as male dominated in its RFI request, women comprise 35 percent of the total STEM workforce, making the field less male-dominated than others.

Women face various cultural, physical and mental challenges participating in male-dominated career fields, including social exclusion and isolation, marginalization, harassment, and gender-based discrimination.[83, 84, 85] Male-dominated career fields tend to foster environments in which masculine behaviors and culture are favored, which can make women uncomfortable being themselves if their identity is less masculine than preferred, and may influence them to try to be "one of the guys" to fit in with their colleagues.[86, 87] These challenges may explain why women are about three times as likely to leave their job in a male-dominated career field than other, nonmale-dominated industries.[88] However, various studies show that women with high-levels of self-efficacy, or belief in one's own ability to succeed at a task or in a career, are more likely to overcome these challenges to perform well in male-dominated positions.[89, 90] This may indicate that improving women's self-efficacy in male-dominated career fields could help mitigate the negative impacts of gender discrimination, harassment and other challenges on women's performance and satisfaction in these fields.

1. Women face various challenges participating in male-dominated career fields

Women in male-dominated career fields face challenges such as gender discrimination, sexual harassment, lack of mentorship and professional development opportunities, equipment inadequacy and societal beliefs about gender roles. These challenges often cause women in these positions to question their ability to accomplish tasks or succeed professionally in their chosen career. Therefore, developing and maintaining high-levels of self-efficacy is essential for women hoping to overcome these challenges and succeed in male-dominated career fields.

Research shows that women working in male-dominated career fields face higher rates of gender discrimination than women in gender-equitable career fields. Gender discrimination toward women in male-dominated career fields can take many forms, including treating women as less competent or less physically capable, gender-based harassment, inadequate equipment or physical supports, fewer opportunities for mentorship or professional development, and assignment of less favorable or physically demanding job assignments. Findings related to each of these types of gender discrimination are described below:

The treatment of women as less competent and mentally and physically capable

One of the primary challenges women face in male-dominated career fields is the perception from male and female colleagues alike that women are less competent than men in these jobs. Studies show that women in male-dominated workplaces are more likely to report being treated as incompetent in comparison to men than women working in nonmale-dominated workplaces.[91, 92] Relatedly, research indicates that women in all of the male-dominated career fields under consideration for this report feel like they need to work harder and meet a higher standard than their male colleagues to be perceived as competent in their field.[93, 94, 95, 96] However, this type of "overwork" has been found to result in higher rates of burnout among women.[97] Additionally, perceptions of women as incompetent compared to men can influence women's belief in themselves, leading them to believe that they may be less competent than their male colleagues (See *Women's Voices)*. This

Women's Voices

"Some people have attitudes that aren't going to change no matter what you do, no matter how good of a firefighter you are... you're a woman in man's job and you shouldn't be here."

"They (male counterparts) refused to train us because they didn't want us to be good. Because if we were good, then I guess they wouldn't look masculine maybe, I don't know ... they wouldn't even let me play basketball with them because it was a 'boy's club.' "

Source: Sinden et al. 2013

may negatively impact women's self-efficacy and may make them less likely to pursue promotions or professional development opportunities due to self-doubt.[98, 99, 100]

In addition to perceptions of women as less competent than men in male-dominated fields, many studies have found that women are perceived as physically incapable of performing job duties in male-dominated career fields at the same level as men. These perceptions differ in specifics across male-dominated career fields. For example, some male servicemen have been shown to believe servicewomen are less physically capable than men and therefore may reduce units' operational effectiveness, especially in combat roles.[101] Similarly, male police officers have been found to perceive women as incapable of handling physically demanding, dangerous aspects of their job, such as dealing with uncooperative offenders.[102, 103] Additionally, a qualitative study with female firefighters found that the female firefighters perceived themselves as less naturally physically capable as men, requiring them to work harder than their male colleagues to maintain their fitness and strength.[104] Some women have reported that, to address this type of physical discrimination, they are reluctant to request physical assistance from their male colleagues in order to show they are capable of performing physically demanding tasks, even if completing these tasks puts them at risk of injury.[105]

Gender-based discrimination and harassment

Women in male-dominated career fields experience gender discrimination in various ways, including receiving less favorable job assignments, fewer opportunities for promotion and professional development, and stereotyping in the workplace. For example, various studies show that women are more likely to be assigned to lower-risk, and less physically demanding job assignments than their male counterparts, even if the women desire higher-risk positions.[106, 107] Similarly, at least one study on women in policing found that women are more likely to be assigned jobs that address what are deemed to be "women's issues," such as domestic violence, child abuse, and sexual assault.[108] Because of these perceptions, women in policing report being passed over for professional development opportunities because they are deemed undeserving of trainings due to limited experience with high-risk situations. Women report that this type of discrimination also impacts their later careers, as fewer opportunities to participate in trainings reduce their career opportunities and may reduce their self-efficacy or belief in themselves to be able to handle certain situations.[109]

Women in male-dominated career fields experience gender-based harassment as well, including teasing, inappropriate joking, sexual harassment, and shunning or isolation.[110] Although some studies show that the prevalence of overt harassment toward women in some male-dominated career fields, such as policing, has fallen, subtle types of harassment still exist, such as inappropriate jokes and comments.[111, 112,] A survey study of more than 650 firemen and firewomen across 48 States in 2008 found that about 85 percent of female respondents reported feeling treated differently because of their gender,[113] while another survey of more than 1,700 female firefighters showed that 37.5 percent of respondents had experienced verbal harassment, 12.9 percent had experienced written harassment, 16.9 percent had experienced hazing, 37.4 percent had received unwanted sexual advances, and 5.1 percent had been assaulted.[114] Other studies have identified similar rates of female firefighters reporting feeling treated differently because of their gender, while also showing that only a small percentage of male firefighters (14 percent) believed female firefighters were treated differently.[115]

Women in male-dominated career fields also face higher rates of sexual harassment, compared to women in nonmale-dominated career fields. For example, the U.S. Equal Employment Opportunity Commission receives higher rates of sexual harassment claims from women in male-dominated career fields, including construction, utilities, mining, and transportation.[116] This type of harassment can have

devastating effects on the lives of women. Female firefighters who experience sexual harassment in the workplace have been found to have significantly higher rates of anxiety, depression, and suicidal ideations,[117] and were significantly more likely than male firefighters to believe supervisors neglected to address gender-based harassment in the workplace.[118] Additionally, some research indicates that although women in male-dominated career fields may not report experiencing gender or sexual harassment in general, they may still report behaviors associated with gender or sexual harassment, such as inappropriate jokes or comments about women's appearance that they may not consider to be harassment.[119]

Women often lack access to well-fitting equipment

Activities that make women in male-dominated career fields feel less competent and discriminated against due to their gender act primarily as mental challenges in the workplace, but women in these fields also face physical challenges, such as lack of access to equipment that fits them properly to maintain their safety and support success in their careers. This can be especially dangerous in career fields like policing and firefighting where equipment is fitted to protect individuals from dangerous in dangerous environments, such as from smoke or toxin inhalation, construction sites, or active crime.[120, 121, 122, 123, 124] Studies show that women in male-dominated career fields often have to advocate for themselves, sometimes for long periods of time, before their organization acquires well-fitting equipment for them, and that some women in these situations end up purchasing their own equipment due to delays in purchasing from the organization. [125]

Stereotyping and societal gender roles

Another challenge women participating in male-dominated career fields experience is stereotypes and societal expectations of the job roles they are supposed to fulfill. Many studies report that women feel the need to act more masculine than they would prefer in male-dominated positions for various reasons, including to avoid feeling isolated from colleagues, support building relationships with colleagues, and encourage participation in informal work discussions and social activities to ensure they are aware and well positioned for professional opportunities.[126, 127, 128, 129]

Women in male-dominated career fields also face challenges related to their family roles. Women are predominantly identified as caregivers for many families and may be required to take more time off than men, who historically, are usually not the family's primary caregiver. Additionally, supervisors in some male-dominated career fields, such as construction, may have less experience dealing with workers requesting time off to deal with family matters men are less likely to request time off for this reason.[130]

Lack of mentorship and professional opportunities

Women in male-dominated career fields face challenges seeking out and receiving mentorship due to low-rates of women in leadership positions, as well as receiving equitable professional benefits and opportunities. Women in male-dominated positions need mentorship to build and maintain their confidence and self-efficacy in their career field.[131, 132] However, women often desire female mentors that are better able to understand their career experiences and challenges, and this can be difficult to identify in male-dominated career fields due to few women in leadership roles. [133, 134, 135, 136] For example, with women only making up 5 percent of the firefighting force, very few women will have access to a female mentor in their own station.[137] Similarly, although there are higher rates of women in lower-level officer positions, the number of women in management positions consistently decreases at each step.[138, 139] This lack of mentorship can have various negative impacts on women, including high

attrition rates, delayed promotions, low pay, and poor mental health.[140] Although some studies have shown that female mentorship in career fields like construction and STEM positively impacted women's job satisfaction and reduced attrition,[141, 142] other studies found that mentorship had no impact on retention in these career fields.[143] Other studies show that female mentorship can reduce feelings of isolation in male-dominated career fields and help women develop support networks.[144, 145, 146]

Additionally, multiple studies show that women are often more reluctant than men to pursue promotions in male-dominated positions, at least partially because they believe they need more experience than men due to perceptions of women as less competent and capable than men.[147, 148, 149]

2. Strategies for improving self-efficacy of women in the workplace

Leadership workshops

Various studies have identified positive effects of workshops focused on improving self-efficacy among female workers or teaching supervisors strategies to support women in the workforce. One study in particular conducted three workshop sessions focused on identifying negative and harmful stereotypes and describing how they affect women in the workplace, including expectancy biases,[150] prescriptive gender norms,[151] occupational role congruity,[152] redefining credentials,[153] stereotype priming,[154] and stereotype threat.[155] To address these types of stereotyping in the workplace, the final session taught supervisors multiple direct behaviors they could use to address these types of stereotyping, thereby increasing their self-efficacy,[156] including:

- "Stereotype replacement (e.g. if girls are being portrayed as bad at math, identify this as a gender stereotype and consciously replace it with accurate information)"[157]

- "Positive counterstereotype imaging (e.g., before evaluating job applicants for a position traditionally held by men, imagine in detail an effective woman leader or scientist)"[158]

- "Perspective taking (e.g., imagine in detail what it is like to be a person in a stereotyped group)"[159]

- "Individuation (e.g., gather specific information about a student, patient, or applicant to prevent group stereotypes from leading to potentially inaccurate assumptions)"[160]

- "Increasing opportunities for contact with counterstereotypic exemplars (e.g., meet with senior women faculty to discuss their ideas and vision)."[161]

Establish equipment and accommodation requirements for women

Limited access to well-fitting gear is a challenge to women in male-dominated career fields, especially those where gear is meant to protect individuals from dangerous environments, such as fire, chemical spills, or active crimes. By not prioritizing access to well-fitting equipment, organizations show women that they are not a priority in male-dominated career fields, which can reduce their self-efficacy by calling into question whether they can succeed in their career without organizational support. To address this barrier, the Canadian Centre for Occupational Health and Safety suggests organizations adopt various strategies to accommodate women in male-dominated fields, including acquiring gender-inclusive designed equipment, conducting assessments with women in need of better fitting equipment, institute flexible policies that allow women to wear equipment that aligns to their body and comfort.[162] By involving women in these discussions, organizations can show that their safety and success is a priority to them.

Implement high-intensity, realistic trainings

One strategy that may be especially helpful for building self-efficacy among women in the military is implementing high-intensity, high-stress, realistic trainings to support the growth of self-efficacy through mastery experience. Being able to complete tasks close to the "real situation" is one of the best ways to build self-efficacy in an individual by showing them they have the capacity to complete a task in a realistic setting. Studies have shown that these types of training have helped build self-efficacy in military environments and even increased commitment to the service in participants.[163]

Chapter 4. Summary and Conclusions

Self-efficacy is a critically important concept affecting many aspects of an individual's, including academic and career pursuits and performance. Self-efficacy has an impact on whether youth envision themselves serving in the military, beliefs they could succeed in military contexts, and if they decide to join, can influence their success in initial entry training and their military career. This literature review provided highlights from academic research on definitions of self-efficacy and related concepts, self-efficacy among female youth including STEM education pursuits, self-efficacy for women in male-dominated career fields, and self-efficacy research related to women in military contexts. A summary of key findings and takeaways follows:

Self-efficacy can be general or specific. General self-efficacy refers to an individual's belief about their ability to complete a task or take on challenges in general, while domain-specific or task-specific self-efficacy focuses in on specific domains (e.g., work) or tasks within a domain (e.g., writing a report). Self-efficacy is distinct from, but related to, other concepts such as self-esteem and self-confidence. Self-efficacy related to military service has many components, including general beliefs about whether one can succeed in the military as well as occupational or task-specific self-efficacy for one's specific role or set of responsibilities.

For girls, self-efficacy diverges from boys early in education settings. Research, particularly on STEM in early education settings, shows that young girls' sense of self-efficacy differs from boys even when their actual abilities exceed their self-beliefs. This indicates that gender differences in self-efficacy start early and are likely to shape the trajectory of their future academic and career pursuits. Therefore, deep-rooted individual belief systems of self-efficacy may affect young women's sense of self related to their propensity or consideration of military service.

Language used to describe career fields influences youth. Various studies show that male-dominated career fields, such as policing, are viewed as masculine professions, even by young children. Describing male-dominated career fields as masculine in early education settings may contribute to women viewing these positions as "not for them," or not having the self-efficacy to pursue these career fields. The language and framing used by DoD youth programs or military marketing and advertising related to military career fields can have an impact on young people's perceptions of the job or career field.

Women report lower self-efficacy rates related to military activities. Research from DoD JAMRS shows female respondents to the DoD Youth Poll were much less likely than their male counterparts to report believing that they could complete certain military activities, such as boot camp or fighting in a war. Therefore, women who are qualified and capable of military service may not believe they could serve in the military or would be successful.

Women in male-dominated career fields, such as the military, face additional obstacles that make a high sense of self-efficacy even more important. Women face various challenges participating in male-dominated career fields, including gender discrimination, sexual harassment, ill-fitting equipment, a lack of promotion and professional development opportunities, and limited mentorship. However, higher levels of self-efficacy in women have been shown to mediate the impacts of such challenges and lead women to be more successful in these fields.

References

1 Vancouver, J. B., Alicke, M., & Halper, L. R. (2018). Self-efficacy. In D. L. Ferris, R. E. Johnson, & C. Sedikides (Eds.), *The self at work: Fundamental theory and research* (pp. 15–39). Routledge/Taylor & Francis Group. https://doi.org/10.4324/9781315626543-2

2 Chen, G., Gully, S., & Eden,D. (2001). Validation of a New General Self-Efficacy Scale. *Organizational Research Methods,* 4(1). https://doi.org/10.1177/109442810141004

3 Rigotti, T., Schyns, B., Mohr, G. (2008, May). A short version of the occupational self-efficacy scale : Structural and construct validity across five countries. *Journal of Career Assessment,* 16(2). https://doi.org/10.1177/1069072707305763

4 Lent, R. W., Brown, S. D., & Gore, P. A., Jr. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counseling Psychology, 44*(3), 307–315. https://doi.org/10.1037/0022-0167.44.3.307

5 Bandura, A. (1997). *Self-efficacy: The exercise of control.* W H Freeman/Times Books/ Henry Holt & Co

6 Simply Psychology. (2023, July). Bandura's Self-Efficacy Theory Of Motivation In Psychology.

7 Bandura, A. (1997). *Self-efficacy: The exercise of control.* W H Freeman/Times Books/ Henry Holt &

8 Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

9 Maddux, J. E. (Ed.). (2013). Self-efficacy, adaptation, and adjustment: Theory, research, and application. Springer Science & Business Media.

10 Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education. *Entrepreneurship Theory & Practice, 31,* 387–406. https://doi.org/10.1111/j.1540-6520.2007.00179.x

11 Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research, 78*(4), 751–796. https://doi.org/10.3102/0034654308321456

12 Cherry, K. (2024, June 25). Self Efficacy and Why Believing in Yourself Matters. *Verywell Mind.* https://www.verywellmind.com/what-is-self-efficacy-2795954

13 Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

14 Cherry, K. (2024, June 25). Self Efficacy and Why Believing in Yourself Matters. *Verywell Mind.* https://www.verywellmind.com/what-is-self-efficacy-2795954

15 Joshi, A., Kale, S. Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology.* 7. 396-403. 10.9734/BJAST/2015/14975.

16 Shek, D.T.L., Siu, A.M.H., Lee T.Y. (2006). Development and validation of a positive youth development scale in Hong Kong. *International Journal of Adolescent Medicine and Health,* 18(3):547–558. doi:10.1515/ijamh.2006.18.3.547.]

17 Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research, 78*(4), 751–796. https://doi.org/10.3102/0034654308321456

18 Gale J., Alemdar M., Cappelli C., & Morris D. (2021) A Mixed Methods Study of Self-Efficacy, the Sources of Self-Efficacy, and Teaching Experience. *Front. Educ.*6. doi: 10.3389/feduc.2021.750599

19 Glackin, M., & Hohenstein, J. (2017). Teachers' self-efficacy: progressing qualitative analysis. *International Journal of Research & Method in Education*, 41(3), 271–290. https://doi.org/10.1080/1743727X.2017.1295940

20 Cuder A., Pellizzoni S., Di Marco M., Blason C., Doz E., & Giofrè D. (2024). The impact of math anxiety and self-efficacy in middle school stem choices: A 3-year longitudinal study. *British Journal of Educational Psychology*.

21 Vervecken D., Hannover B. (2015). Yes I can! Effects of gender fair job descriptions on children's perceptions of job status, job difficulty, and vocational self-efficacy. *Social Psychology*. 2015 2015 2017-09-25;46(2):76-92. doi: https://doi.org/10.1027/1864-9335/a000229

22 Gonzalez A.M., Odic D., Schmader T., Block K., Baron A.S. (2021). The effect of gender stereotypes on young girls' intuitive number sense. *PLOS ONE* 16(10).

23 Cvencek D., Meltzoff A.N., Greenwald A.G. (2011). Math-gender stereotypes in elementary school children. *Child Development.* 82(3):766–779.

---

[24] Gonzalez A.M., Odic D., Schmader T., Block K., Baron A.S. (2021). The effect of gender stereotypes on young girls' intuitive number sense. *PLOS ONE* 16(10).

[25] Vial, A. C. and A. Cimpian (2024). Gender differences in children's reasoning about and motivation to pursue leadership roles. *Sex Roles: A Journal of Research,* 90(1): 42-65.

[26] Palomares-Ruiz, A. and R. García-Perales (2020). Math performance and sex: The predictive capacity of self-efficacy, interest and motivation for learning mathematics. *Frontiers in Psychology,* 11: 8.

[27] Wingard, A., Kijima, R., Yang-Yoshihara, M., & Sun, K. (2022). A design thinking approach to developing girls' creative self-efficacy in STEM. *Thinking Skills and Creativity,* 46. https://doi.org/10.1016/j.tsc.2022.101140.

[28] Fryer Jr, R. G., & Levitt, S. D. (2010). An empirical analysis of the gender gap in mathematics. *American Economic Journal: Applied Economics*, *2*(2), 210-240.

[29] Kerr*, B., & Robinson Kurpius, S. E. (2004). Encouraging talented girls in math and science: Effects of a guidance intervention. *High ability studies*, *15*(1), 85-102.

[30] Schmader, T. (2023). Gender Inclusion and Fit in STEM. *Annu Rev Psychol*, 74: 219-243. PMID: 35961037 https://doi.org/10.1146/annurev-psych-032720-043052

[3131] Cuder A., Pellizzoni S., Di Marco M., Blason C., Doz E., & Giofrè D. (2024). The impact of math anxiety and self-efficacy in middle school stem choices: A 3-year longitudinal study**.** *British Journal of Educational Psychology*.

[32] Huang, X., Zhang, J., & Hudson, L. (2019). Impact of math self-efficacy, math anxiety, and growth mindset on math and science career interest for middle school students: the gender moderating effect. *European Journal of Psychology of Education*, *34*, 621-640.

[33] Cuder, A., Pellizzoni, S., Di Marco, M., Blason, C., Doz, E., Giofrè, D., & Passolunghi, M. C. (2024). The impact of math anxiety and self-efficacy in middle school STEM choices: A 3-year longitudinal study. *British Journal of Educational Psychology*.

[34] Diseth, Å., Meland, E., & Breidablik, H. J. (2014). Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence. *Learning and Individual Differences*, *35*, 1-8.

[35] Huang, X., Zhang, J., & Hudson, L. (2019). Impact of math self-efficacy, math anxiety, and growth mindset on math and science career interest for middle school students: the gender moderating effect. *European Journal of Psychology of Education*, *34*, 621-640.

[36] Cuder, A., Pellizzoni, S., Di Marco, M., Blason, C., Doz, E., Giofrè, D., & Passolunghi, M. C. (2024). The impact of math anxiety and self-efficacy in middle school STEM choices: A 3-year longitudinal study. *British Journal of Educational Psychology*.

[37] Morton, M. H., & Montgomery, P. (2013). Youth empowerment programs for improving adolescents' self-efficacy and self-esteem: A systematic review. *Research on social work practice*, *23*(1), 22-33.

[38] Bacchini, D., & Magliulo, F. (2003). Self-image and perceived self-efficacy during adolescence. *Journal of youth and adolescence*, *32*, 337-349.

[39] Mikkelsen, H. T., Haraldstad, K., Helseth, S., Skarstein, S., Småstuen, M. C., & Rohde, G. (2020). Health-related quality of life is strongly associated with self-efficacy, self-esteem, loneliness, and stress in 14–15-year-old adolescents: a cross-sectional study. *Health and Quality of Life Outcomes*, *18*, 1-17.

[40] Moksnes, U. K., Eilertsen, M. E. B., Ringdal, R., Bjørnsen, H. N., & Rannestad, T. (2019). Life satisfaction in association with self-efficacy and stressor experience in adolescents–self-efficacy as a potential moderator. *Scandinavian journal of caring sciences*, *33*(1), 222-230.

[41] ACT, Inc. (2013). ACT: The condition of college & career readiness 2013. National. ACT, Inc.

[42] Sakellariou, C., & Fang, Z. (2021). Self-efficacy and interest in STEM subjects as predictors of the STEM gender gap in the US: The role of unobserved heterogeneity. *International Journal of Educational Research*, *109*, 101821.

[43] Dohn, N. B. (2022). A gender perspective on the structure of adolescents' interest in science. *International Journal of Science Education*, *44*(10), 1565-1582.

[44] Sakellariou, C. (2020). The contribution of self-beliefs to the mathematics gender achievement gap and its link to gender equality. *Oxford Review of Education*, *46*(6), 804-821.

[45] Wang, Z., Rimfeld, K., Shakeshaft, N., Schofield, K., & Malanchini, M. (2020). The longitudinal role of mathematics anxiety in mathematics development: Issues of gender differences and domain-specificity. *Journal of adolescence*, *80*, 220-232.

[46] Tiedemann, J. (2000). Parents' gender stereotypes and teachers' beliefs as predictors of children's concept of their mathematical ability in elementary school. *J. Educ. Psychol.* 92, 144–151. doi: 10.1037//0022-0663.92.U44

[47] Else-Quest, N. M., Mineo, C. C., and Higgins, A. (2013). Math and science attitudes and achievement at the intersection of gender and ethnicity. *Psychol. Women Q.* 37, 293–309. doi: 10.1177/0361684313480694

[48] Wentzel, K. R., Barry, C. M., & Caldwell, K. A. (2004). Friendships in middle school: Influences on motivation and school adjustment. Journal of Educational Psychology, 96(2), 195–203. doi:10.1037/0022-0663.96.2.195

[49] Schunk, D. H., & Miller, S. D. (2002). Self-efficacy and adolescents' motivation. In F. Pajares & T. C. Urdan (Eds.), *Academic Motivation of Adolescents* (pp. 29–52). Charlotte, NC: Information Age Publishing

[50] Muris, P. (2001). A brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioral Assessment*, 23 145–149.

[51] Kågesten, A., Gibbs, S., Blum, R. W., Moreau, C., Chandra-Mouli, V., Herbert, A., & Amin, A. (2016). Understanding factors that shape gender attitudes in early adolescence globally: A mixed-methods systematic review. *PloS one*, 11 e0157805

[52] Reed, A. H., Angolia, M., Sluder, L. G., & Pagliari, L. R. (2022). Using STEM camps to improve female interest in technology careers. *Journal of Youth Development*, *17*(3), 6.

[53] Falco, L. D., & Summers, J. J. (2019). Improving career decision self-efficacy and STEM self-efficacy in high school girls: Evaluation of an intervention. *Journal of career development*, *46*(1), 62-76.

[54] Korlat, S., Kollmayer, M., Haider, C., Hlavacs, H., Martinek, D., Pazour, P., & Spiel, C. (2024). PhyLab–a virtual reality laboratory for experiments in physics: a pilot study on intervention effectiveness and gender differences. *Frontiers in Psychology*, *15*, 1284597.

[55] Falco, L. D., & Summers, J. J. (2019). Improving career decision self-efficacy and STEM self-efficacy in high school girls: Evaluation of an intervention. *Journal of career development*, *46*(1), 62-76.

[56] King, A. E., McQuarrie, F. A., & Brigham, S. M. (2021). Exploring the relationship between student success and participation in extracurricular activities. *SCHOLE: A Journal of Leisure Studies and Recreation Education*, *36*(1-2), 42-58.

[57] Sakellariou, C., & Fang, Z. (2021). Self-efficacy and interest in STEM subjects as predictors of the STEM gender gap in the US: The role of unobserved heterogeneity. *International Journal of Educational Research*, *109*, 101821.

[58] Huang, X., Zhang, J., & Hudson, L. (2019). Impact of math self-efficacy, math anxiety, and growth mindset on math and science career interest for middle school students: the gender moderating effect. *European Journal of Psychology of Education*, *34*, 621-640.

[59]Sakellariou, C., & Fang, Z. (2021). Self-efficacy and interest in STEM subjects as predictors of the STEM gender gap in the US: The role of unobserved heterogeneity. *International Journal of Educational Research*, *109*, 101821.

[60] Reed, A. H., Angolia, M., Sluder, L. G., & Pagliari, L. R. (2022). Using STEM camps to improve female interest in technology careers. *Journal of Youth Development*, *17*(3), 6.

[61] Ashlock, J., Stojnic, M., & Tufekci, Z. (2022). Gender differences in academic efficacy across STEM fields. *Sociological Perspectives*, *65*(3), 555-579.

[62] Strohmeier, D., Gradinger, P., & Yanagida, T. (2024). Adolescents' digital career aspirations: Evidence for gendered pathways in a digital future. *Journal of Adolescence*, *96*(3), 526-538.

[63] Verwecke, D., & Hannover, B. (2015). Yes, we can! Effects of gender fair job descriptions on children's perceptions of job status, job difficulty, and vocational self-efficacy. *Social Psychology*, *46*(2), 76-92.

[64] Dohn, N. B. (2022). A gender perspective on the structure of adolescents' interest in science. *International Journal of Science Education*, *44*(10), 1565-1582.

[65] Stangle, J., Montgomery, S., Neenan, R., Fales, A., & Edwards, J. (2024*). Defense Advisory Committee on Women in the Services (DACOWITS) 2024 focus group report.* https://dacowits.defense.gov/

[66] Gibson, J. L., Griepentrog, B. K., & Marsh, S. M. (2007). Parental influence on youth propensity to join the military. *Journal of Vocational Behavior*, *70*(3), 525-541.

[67] Gruber, K. A., Kilcullen, R. N., & Iso-Ahola, S. E. (2009). Effects of psychosocial resources on elite soldiers' completion of a demanding military selection program. *Military Psychology*, *21*(4), 427-444.

[68] Delahaij, R., & Van Dam, K. (2017). Coping with acute stress in the military: The influence of coping style, coping self-efficacy and appraisal emotions. *Personality and Individual Differences*, *119*, 13-18.

[69] Office of People Analytics. (2023, May). The target population for military recruitment: Youth eligible to enlist without a waiver.
https://dacowits.defense.gov/Portals/48/Documents/General%20Documents/RFI%20Docs/June2023/OPA%20RFI%201.pdf?ver=BtY_S_YG5iKf9eAwGZbzzg%3d%3d

---

[70] Jordan, M. H., Gabriel, T. J., Teasley, R., Walker, W. J., & Schraeder, M. (2015). An integrative approach to identifying factors related to long-term career commitments: A military example. *Career Development International*, *20*(2), 163-178.

[71] Welsh, J. A., Olson, J. R., & Perkins, D. F. (2019). Gender differences in post-deployment adjustment of Air Force personnel: The role of wartime experiences, unit cohesion, and self-efficacy. *Military medicine*, *184*(1-2), e229-e234.

[72] Birrer, D., & Morgan, G. (2010). Psychological skills training as a way to enhance an athlete's performance in high-intensity sports. *Scandinavian journal of medicine & science in sports*, *20*, 78-87.

[73] McCrory, P., Cobley, S., & Marchant, P. (2013). The effect of psychological skills training (PST) on self-regulation behavior, self-efficacy, and psychological skill use in military pilot-trainees. *Military Psychology*, *25*(2), 136-147.

[74] Nevins, N. A., Singer-Chang, G., Dailey, S. F., Roche, R., Dong, F., Peters, S. N., ... & LaPorta, A. (2023). A mixed methods investigation on the relationship between perceived self-regard, self-efficacy, and commitment to serve among military medical students. *Military Medicine*, *188*(7-8), e2266-e2274.

[75] Miller, P. H. (2011). Theories of developmental psychology (5th ed.). Worth Publishers.

[76] University of California San Diego, School of Medicine. (n.d.). Team Efficacy. https://psychiatry.ucsd.edu/research/programs-centers/instep/tools-resource/definitions/emergent-states/affective-emergent-states/team-efficacy.html#:~:text=Definition,for%20successful%20task%20performance.%22%20(

[77] Hirschfeld, R. R., & Bernerth, J. B. (2008). Mental efficacy and physical efficacy at the team level: Inputs and outcomes among newly formed action teams. *Journal of Applied Psychology*, *93*(6), 1429.

[78] Martin, S. R., Emich, K. J., McClean, E. J., & Woodruff, C. T. (2022). Keeping teams together: How ethical leadership moderates the effects of performance on team efficacy and social integration. *Journal of Business Ethics*, *176*(1), 127-139.

[79] Institute for Women's Policy Research calculation based on U.S. Bureau of Labor Statistics. 2021. "Household Data Annual Averages Table 11. Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity."

[80] National Policing Institute. (2024). March: Women in Policing. https://www.policinginstitute.org/infocus/march-women-in-policing/

[81] National Fire Protection Association. (2022, September). U.S. fire department profile. https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/us-fire-department-profile

[82] Institute for Women's Policy Research calculation based on U.S. Bureau of Labor Statistics. 2021. "Household Data Annual Averages Table 11. Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity."

[83] Bridges, D., Wulff, E., Bamberry, L., Krivokapic-Skoko, B., & Jenkins, S. (2020). Negotiating gender in the male-dominated skilled trades: A systematic literature review. *Construction management and economics*, *38*(10), 894-916.

[84] Wadham, B., Bridges, D., Mundkur, A., & Connor, J. (2018). 'War-fighting and left-wing feminist agendas': gender and change in the Australian Defence Force. *Critical military studies*, *4*(3), 264-280.

[85] Wright, T. (2016). Women's experience of workplace interactions in male-dominated work: The intersections of gender, sexuality and occupational group. *Gender, Work and Organization*, 23(3), 348–362. https://doi.org/10.1111/gwao. 12074

[86] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[87] Bridges, D., Wulff, E., Bamberry, L., Krivokapic-Skoko, B., & Jenkins, S. (2020). Negotiating gender in the male-dominated skilled trades: A systematic literature review. *Construction management and economics*, *38*(10), 894-916.

[88] Cha, Y. (2013). Overwork and the persistence of gender segregation in occupations. *Gender & society*, *27*(2), 158-184.

[89] Marra, R. M., Rodgers, K. A., Shen, D., & Bogue, B. (2009). Women engineering students and self-efficacy: A multi-year, multi-institution study of women engineering student self-efficacy. *Journal of engineering education*, *98*(1), 27-38.

[90] Hutchison, M. A., Follman, D. K., Sumpter, M., & Bodner, G. M. (2006). Factors influencing the self-efficacy beliefs of first-year engineering students. *Journal of Engineering Education*, *95*(1), 39-47.

[91] Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the national academy of sciences*, *109*(41), 16474-16479.

[92] Parker, K. (2018, March). Women in majority-male workplaces report higher rates of gender discrimination. *Pew Research Center*. https://www.pewresearch.org/short-reads/2018/03/07/women-in-majority-male-workplaces-report-higher-rates-of-gender-discrimination

[93] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[94] Parker, K. (2018, March). Women in majority-male workplaces report higher rates of gender discrimination. *Pew Research Center*. https://www.pewresearch.org/short-reads/2018/03/07/women-in-majority-male-workplaces-report-higher-rates-of-gender-discrimination

[95] Todak, N. (2023). "A Panel of Good ol'Boys": Women Navigating the Police Promotions Process. *American Journal of Criminal Justice*, *48*(4), 967-983.

[96] Todak, N., Leban, L., & Hixon, B. (2021). Are women opting out? A mixed methods study of women patrol officers' promotional aspirations. *Feminist Criminology*, *16*(5), 658-679.

[97] Crawford, J. T. (2021). Imposter syndrome for women in male dominated careers. *Hastings Women's LJ*, *32*, 26.

[98] Rabe-Hemp, C. (2008). Survival in an "all boys club": Policewomen and their fight for acceptance. *Policing: An International Journal of Police Strategies & Management*, *31*(2), 251-270.

[99] Rabe-Hemp, C. E. (2009). POLICEwomen or policeWOMEN? Doing gender and police work. *Feminist criminology*, *4*(2), 114-129.

[100] Martin, P., & Barnard, A. (2013). The experience of women in male-dominated occupations: A constructivist grounded theory inquiry. *sa Journal of industrial psychology*, *39*(2), 1-12.

[101] Wadham, B., & Goldsmith, A. (Eds.). (2018). *Criminologies of the military: militarism, national security and justice*. Bloomsbury Publishing.

[102] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[103] Martin, S. E., & Jurik, N. C. (2006). *Doing justice, doing gender: Women in legal and criminal justice occupations*. Sage Publications.

[104] Sinden, K., Macdermid, J., Buckman, S., Davis, B., Matthews, T., & Viola, C. (2013). A qualitative study on the experiences of female firefighters. *Work*, *45*(1), 97-105.

[105] Ibid.

[106] Silvestri, M. (2018). Pioneering women police chiefs: A tale of conflict and cooperation. In *Leading the Police* (pp. 193-210). Routledge.

[107] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[108] Rabe-Hemp, C. E. (2009). POLICEwomen or policeWOMEN? Doing gender and police work. *Feminist criminology*, *4*(2), 114-129.

[109] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[110] Rabe-Hemp, C. E. (2009). POLICEwomen or policeWOMEN? Doing gender and police work. *Feminist criminology*, *4*(2), 114-129.

[111] Rief, R. M., & Clinkinbeard, S. S. (2020). Exploring gendered environments in policing: Workplace incivilities and fit perceptions in men and women officers. *Police Quarterly*, *23*(4), 427-450.

[112] Silvestri, M. (2018). Pioneering women police chiefs: A tale of conflict and cooperation. In *Leading the Police* (pp. 193-210). Routledge.

[113] Hulett D. M., Bendick M., Thomas S. Y., and Moccio F., *A National Report Card on Women in Firefighting*, 2008, International Association of Women in Fire & Emergency Services, Madison, WI, USA.

[114] Jahnke, S. A., Haddock, C. K., Jitnarin, N., Kaipust, C. M., Hollerbach, B. S., & Poston, W. S. (2019). The prevalence and health impacts of frequent work discrimination and harassment among women firefighters in the US fire service. *BioMed research international*, *2019*(1), 6740207.

[115] Griffith J. C., Roberts D. L., and Wakeham R. T., Bullying at the fire station? Perceptions based on gender, race and sexual orientation' by John Griffith, *American International Journal of Social Science*. (2016) **5**, 34–44.

[116] Zhavoronkova, M., Khattar, R., & Brady, M. (2022). Occupational segregation in America. *Center for American Progress.*

[117] Boffa, J. W., Stanley, I. H., Hom, M. A., Norr, A. M., Joiner, T. E., & Schmidt, N. B. (2017). PTSD symptoms and suicidal thoughts and behaviors among firefighters. *Journal of psychiatric research*, *84*, 277-283.

[118] Griffith J. C., *Does the Fire Station Have A Glass Ceiling?: Perceptions of Female Firefighters*, 2015, National Emergency Training Center.

[119] Davis, H., Lawrence, S., Wilson, E., Sweeting, F., & Poate-Joyner, A. (2023). 'No one likes a grass' Female police officers' experience of workplace sexual harassment: A qualitative study. *International Journal of Police Science & Management*, *25*(2), 183-195.

[120] Jahnke, S. A., Poston, W. C., Haddock, C. K., Jitnarin, N., Hyder, M. L., & Horvath, C. (2012). The health of women in the US fire service. *BMC women's health*, *12*, 1-12.

[121] McQuerry, M., Kwon, C., & Johnson, H. (2019). A critical review of female firefighter protective clothing and equipment workplace challenges. *Research Journal of Textile and Apparel*, *23*(2), 94-110.

[122] Hulett, D. M., Bendick, M., Thomas, S. Y., & Moccio, F. (2008). *A national report card on women in firefighting*. Madison, WI: International Association of Women in Fire & Emergency Services.

[123] McQuerry, M., Kwon, C., & Poley-Bogan, M. (2023). Female firefighters' increased risk of occupational exposure due to ill-fitting personal protective clothing. *Frontiers in Materials*, *10*, 1175559.

[124] Hollerbach, B. S., Kaipust, C. M., Poston, W. S. C., Haddock, C. K., Heinrich, K. M., and Jahnke, S. A. (2020). Injury correlates among a national sample of women in the US fire service. *J. Occup. Environ. Med. NLM (Medline)* 62 (8), 634–640. doi:10.1097/JOM.0000000000001918

[125] Sinden, K., Macdermid, J., Buckman, S., Davis, B., Matthews, T., & Viola, C. (2013). A qualitative study on the experiences of female firefighters. *Work*, *45*(1), 97-105.

[126] Denissen, A. M., & Saguy, A. C. (2014). Gendered homophobia and the contradictions of workplace discrimination for women in the building trades. *Gender & Society*, *28*(3), 381-403.

[127] Sinden, K., Macdermid, J., Buckman, S., Davis, B., Matthews, T., & Viola, C. (2013). A qualitative study on the experiences of female firefighters. *Work*, *45*(1), 97-105.

[128] Angehrn, A., Fletcher, A. J., & Carleton, R. N. (2021). "Suck it up, buttercup": understanding and overcoming gender disparities in policing. *International journal of environmental research and public health*, *18*(14), 7627.

[129] Rabe-Hemp, C. E. (2009). POLICEwomen or policeWOMEN? Doing gender and police work. *Feminist criminology*, *4*(2), 114-129.

[130] Sugerman, L. (2018). # MeToo in Traditionally Male-Dominated Occupations: Preventing and Addressing Sexual Harassment. *Chicago Women in the Trades*.

[131] Lavender, L., & Todak, N. (2022). Exploring the value of mentorship for women police officers. *Policing: An International Journal*, *45*(6), 1064-1081.

[132] Sturgeon, V. (2022, May 19). All hands needed: Creating opportunities for women in male-dominated fields. Forbes.

[133] Hyland, S. S., & Davis, E. (2019). Local police departments, 2016: Personnel. *Las Vegas: United States Department of Justice Office of Justice Programs Bureau of Justice Statistics*.

[134] Hulett, D. M., Bendick, M., Thomas, S. Y., & Moccio, F. (2008). *A national report card on women in firefighting*. Madison, WI: International Association of Women in Fire & Emergency Services.

[135] Lavender, L., & Todak, N. (2022). Exploring the value of mentorship for women police officers. *Policing: An International Journal*, *45*(6), 1064-1081.

[136] Bridges, D., Wulff, E., & Bamberry, L. (2023). Resilience for gender inclusion: Developing a model for women in male-dominated occupations. *Gender, work & organization*, *30*(1), 263-279.

[137] Hulett, D. M., Bendick, M., Thomas, S. Y., & Moccio, F. (2008). *A national report card on women in firefighting*. Madison, WI: International Association of Women in Fire & Emergency Services..

[138] Alexander, K. D., & Nowacki, J. S. (2022). Women in power? Examining gender and promotion in policing through an organizational perspective. *Feminist Criminology*, *17*(2), 293-311.

[139] Goodison, S. E. (2022). Local police departments personnel, 2020. *Bulletin (NCJ 305187)*.

[140] Bridges, D., Wulff, E., & Bamberry, L. (2023). Resilience for gender inclusion: Developing a model for women in male-dominated occupations. *Gender, work & organization*, *30*(1), 263-279.

[141] Kaminsky, S. E., & Behrend, T. S. (2015). Career choice and calling: Integrating calling and social cognitive career theory. *Journal of Career Assessment*, *23*(3), 383-398.

[142] Arcand, C. (2016). Women in construction and the workforce investment act: evidence from Boston and the Big Dig. *Labor Studies Journal*, *41*(4), 333-354.

[143] Morello, A., Issa, R. R., & Franz, B. (2018). Exploratory study of recruitment and retention of women in the construction industry. *Journal of professional issues in engineering education and practice*, *144*(2), 04018001.

[144] Fouad, N. A., Chang, W. H., Wan, M., & Singh, R. (2017). Women's reasons for leaving the engineering field. *Frontiers in psychology*, *8*, 875.

[145] Moir, S., Thomson, M., & Kelleher, C. (2011). Unfinished business: Building equality for women in the construction trades.

[146] Menches, C. L., & Abraham, D. M. (2007). Women in construction—Tapping the untapped resource to meet future demands. *Journal of construction engineering and management*, *133*(9), 701-707.

[147] Schafer, J., Dunlap, B., Mancini, M., & Linhorst, D. (2024). Gender discrimination and family stressors: Perceptions and experiences of women police officers. *Policing: A Journal of Policy and Practice*, *18*, paae027.

[148] Rabe-Hemp, C. (2008). Survival in an "all boys club": Policewomen and their fight for acceptance. *Policing: An International Journal of Police Strategies & Management*, *31*(2), 251-270.

[149] Rabe-Hemp, C. E. (2009). POLICEwomen or policeWOMEN? Doing gender and police work. *Feminist criminology*, *4*(2), 114-129.

[150] Caouette, J. D., Ruiz, S. K., Lee, C. C., Anbari, Z., Schriber, R. A., & Guyer, A. E. (2015). Expectancy bias mediates the link between social anxiety and memory bias for social evaluation. *Cognition and Emotion*, *29*(5), 945-953.

[151] Burgess, D., & Borgida, E. (1999). Who women are, who women should be: Descriptive and prescriptive gender stereotyping in sex discrimination. *Psychology, public policy, and law*, *5*(3), 665.

[152] Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological review*, *109*(3), 573.

[153] Uhlmann, E. L., & Cohen, G. L. (2005). Constructed criteria: Redefining merit to justify discrimination. *Psychological science*, *16*(6), 474-480.

[154] Banaji, M. R., Hardin, C., & Rothman, A. J. (1993). Implicit stereotyping in person judgment. *Journal of personality and Social Psychology*, *65*(2), 272.

[155] Carnes, M., Geller, S., Fine, E., Sheridan, J., & Handelsman, J. (2005). NIH Director's Pioneer Awards: could the selection process be biased against women?. *Journal of women's health*, *14*(8), 684-691.

[156] Carnes, M., Devine, P. G., Manwell, L. B., Byars-Winston, A., Fine, E., Ford, C. E., ... & Sheridan, J. (2015). The effect of an intervention to break the gender bias habit for faculty at one institution: a cluster randomized, controlled trial. *Academic Medicine*, *90*(2), 221-230.

[157] Devine, P. G., Forscher, P. S., Austin, A. J., & Cox, W. T. (2012). Long-term reduction in implicit race bias: A prejudice habit-breaking intervention. *Journal of experimental social psychology*, *48*(6), 1267-1278.

[158] Blair, I. V., Ma, J. E., & Lenton, A. P. (2001). Imagining stereotypes away: the moderation of implicit stereotypes through mental imagery. *Journal of personality and social psychology*, *81*(5), 828.

[159] Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of personality and social psychology*, *78*(4), 708.

[160] Heilman, M. E. (1984). Information as a deterrent against sex discrimination: The effects of applicant sex and information type on preliminary employment decisions. *Organizational Behavior and Human Performance*, *33*(2), 174-186.

[161] Allport GW. The Nature of Prejudice. Reading, MA: Addison-Wesley Publishing Company; 1979.

[162] Canadian Centre for Occupational Health and Safety. (n.d.) Personal Protective Equipment- Body Type and Gender Discrimination. https://www.ccohs.ca/oshanswers/prevention/ppe/personal-protective-equipment-body-type-and-gender-considerations.html

[163] Nevins, N. A., Singer-Chang, G., Dailey, S. F., Roche, R., Dong, F., Peters, S. N., ... & LaPorta, A. (2023). A mixed methods investigation on the relationship between perceived self-regard, self-efficacy, and commitment to serve among military medical students. *Military Medicine*, *188*(7-8), e2266-e2274.

Appendix A

Self-Efficacy: Request for Information 2

December 2024

The Committee requests a **literature review** from the **DACOWITS' Research Contractor (Westat)** on the topic of self-efficacy related to women in the military, in a military context, in nontraditional environments, and in male-dominated career fields.

1. Summarize and provide an overview of definitions and concepts of self-efficacy or related relevant concepts from peer-reviewed literature. Provide and summarize any findings on self-efficacy in the military or in military contexts.

2. Synthesize peer-reviewed literature on self-efficacy for women and girls.

3. Provide research findings on self-efficacy for women and girls in nontraditional environments and male-dominated career fields, such as in STEM, military, police, firefighting, construction, etc.

4. Identify any recommendations from peer-reviewed literature on how to increase self-efficacy for women and girls, and if possible, recommendations for increasing self-efficacy in women and girls in nontraditional environments and male-dominated career fields