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Guy Ilagen
The Citadel

Jill Ilagen
The Citadel

Annie N. Simpson
Medical University of South Carolina

Todd Shealy
The Citadel

Jennifer Bennett-Mintz
National Oceanic and Atmospheric Administration (NOAA)

See next page for additional authors

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Abstract

Women undergraduates at military colleges are likely to experience challenges including heightened stress, isolation, and discrimination. Wilderness-based programs show promising outcomes in an array of areas including stress-coping, fitness motivation, self-efficacy, social support, and improved cognitive functioning. This mixed-methods exploratory study examined outcomes for 17 cadet women (N=17) who participated in a preparatory workshop series and backpacking event. Quantitative data indicated the backpacking workshop series was associated with decreases in perceived stress ($p < .05$). The backpacking trip was associated with increases in self-efficacy ($p < .01$). Cadets attributed decreases in perceived stress and increases in self-efficacy to interpersonal/intrapersonal factors and the wilderness/backpacking experience. These results support the use of wilderness experience to bolster coping and wellness among cadet women.

Keywords: women, outdoor recreation, wilderness, college, military education

Guy Ilagan, The Citadel, Zucker Family School of Education; **Jill Ilagan,** The Citadel, Clinical Counseling; **Annie N. Simpson,** Medical University of South Carolina, Healthcare Leadership and Management; **Todd Shealy,** The Citadel, Zucker Family School of Education; **Jennifer Bennett-Mintz,** National Oceanic and Atmospheric Administration, Regional Coordination, Outreach and Education; **Kally McCormick,** Civil Engineering Consulting Services, Environmental Scientist

Address correspondence to Dr. Guy Ilagan at: gilagan@citadel.edu; 843-693-9269; 171 Moultrie Street, Charleston, SC, 29409

Women cadets were admitted to the state-supported military colleges in 1995 (Jacob 2011). Jacob (2011) conducted a study on factors that influenced women cadets' decisions to attend a military college and found the following themes: personal challenge, finances, fulfilling a career goal, getting away from home, attaining the attention of their father, and adventure. There are five military service academies and six senior military colleges in the United States. Among the service academies, no institution has a percentage of women greater than 35% of the student body. The senior military colleges do not include an institution with more that 15% women students (Service Academies and Senior Military Colleges, 2016).

Concerns about experiences of women in military education are well documented. The Department of Defense (2015) reported that despite the high incidence of sexual harassment at military academies, female students were likely to experience unclear procedures and obstacles to reporting. Additionally, it was observed that they expect negative repercussions if they do report sexual harassment. For example, Brubaker (2009) noted male-dominated cultures lead to problematic policies around sexual assault prevention and response. The literature also reveals concerns about the socialization of masculine culture leading to male cadets' sexist attitudes towards female students (Do, Samuels, Adkins, Clinard, & Koveleski, 2013). Also, Young and Nauta (2013) found that compared to non-military college students, male military-affiliated college students held more negative attitudes towards women in the military. Thus, the unwelcoming environment, relative isolation, and minority status of women in military education raise concerns about their well-being and academic persistence.

Outdoor Education

Despite the well documented benefits of outdoor education on mental, emotional and physical health, women are underrepresented in the literature (McNiel, Harris, & Fondren, 2012). It is notable that women are drawn to outdoor adventure recreation to achieve social, sensation-seeking, and self-image needs (Ewert, Gilbertson, Yuan-Chun, and Voight, 2013). In addition, it has been shown that both leisure time and physical activity in the outdoors provide multiple and varied benefits for women, including a sense of autonomy, confidence, social belonging, improved self-perception, a positive attitude towards life, access to new opportunities, and an overall perception of improved well-being (Lloyd & Little, 2010). Furthermore, adolescent girls have shown gains in self-esteem and self-efficacy as a result of outdoor recreation (O'Shea, 2009). Likewise, psychological benefits for

women, following a backpacking experience, include gains in interpersonal confidence, psychological well-being, authenticity, and a reconsideration of values (Hinds, 2011). It is clear from what little research there is, that the benefits of outdoor education are multiple and varied and of interest to promote health and well-being among this population.

Concerning more specific benefits of outdoor experience for women, researchers observed gains in stress-coping. Lundberg, Taniguchi, McGovern, and Smith (2016) explored the effects of an outdoor recreation program on female United States (US) military veterans. Those researchers found that outdoor activity provided a novel environment to provide distraction, redirection, and relief from stress. Similarly, Dolgin (2014) examined outcomes from 21 adolescents (13 identified as female, 8 as male) who engaged in group wilderness activity and found the participants showed a variety of gains including feeling understood, empathy, emotional expression, and increased skill to cope with stressors.

Outdoor experience leads to increases in self-efficacy. For example, Passarelli, Hall, and Anderson (2010) employed a mixed-methods design with 58 college student participants, 39 of whom were female. Over a three-week outdoor adventure course, participants engaged in vigorous outdoor activities, including hiking, rappelling, canyoneering, surfing and snorkeling. When surveyed at the end of the trip, the participants reported relying on their existing and newly developed beliefs in their ability to face physical challenges, interpersonal challenges, and fears associated with the outdoor adventure program. The authors reported that there were no significant differences between males and females on any of the outcomes.

In additional research concerning wilderness experience and self-efficacy, Frauman and Waryold (2009) conducted a study with 147 college students (60% female) in a four-day wilderness orientation program. The purpose of the study was to explore the influence of the program on participants' perceptions of life effectiveness. Participants showed significant efficacy gains in areas including time management, task leadership, social competence, emotional control, and active initiative compared to the control group. The authors did not report outcome differences for males and females.

A greater sense of social connectedness has also been associated with outdoor experience. For instance, in a study of 12 female US military veterans, it was observed that along with the benefit of positive emotions, the participants experienced purposeful bonding and a strong sense of interconnectedness with each other (Lundberg, Taniguchi, McGovern, & Smith, 2016). Likewise, 14 college freshmen who participated in a six-day outdoor orientation program reported and displayed a strong experience of bonding with fellow participants. Participants (8 female; 6 male) displayed concern

for the well-being of their new social connections and a desire to continue developing those relationships (Wolfe & Kaye, 2011). Similarly, female participants' post-experience responses on qualitative surveys showed a greater sense of belonging with the group members and more open expressions of emotion than pre-trip responses (Dolgin, 2014).

The purpose of the present exploratory study was to address two research questions: 1) Following a backpacking workshop series and backpacking trip, will women cadet participants report improvements in stress-coping, self-efficacy and social support? 2) What aspects of the backpacking workshop series and backpacking trip will participants attribute to any perceived gains in stress-coping, self-efficacy and social support?

Method

This mixed-methods exploratory study was an endeavor to learn of possible benefits of a workshop series and three-day backpacking excursion for undergraduate cadet women. The variables of interest were stress-coping, self-efficacy and social support. The quantitative data were collected via pre-, mid-, and post-test surveys. The qualitative data were gathered from open-ended questions posed to participants on an exit survey. The investigators received IRB approval from the research site university. Expenses for the preparatory workshops and backpacking trip were covered by funds administered by the director of campus recreation. The three female guides received honoraria for the event, paid by campus intramurals. The primary researcher did not receive compensation.

Participants

The participants were 17 undergraduate women students at a state supported, co-educational military college. The students represented all four classes (freshman through senior) and ranged from ages 18 to 21. The participants' institution is one of six military United States senior military colleges. While graduates of the research site institution are not required to enter military service, about 30% of graduates choose to do so. Undergraduate students, called cadets, are immersed in a rigorous, military-style experience throughout their undergraduate career. The college began admitting women to their corps of cadets in 1996. Academic year 2014–2015, year one of the present study, showed enrollment of 2,352 cadets, which included 2,188 (93%) men and 164 (7%) women (The Citadel, 2016). In year two of the study, academic year 2015–2016, the cadet population at the institution was 2,291cadets, which included 2,201 (92.5%) men and 171

(7.5%) women (The Citadel, 2016). In year two of the study, two of the participants who attended the 2014 trip returned for the 2015 experience.

Additional demographic information for the cadet women participants are as follows. In year one of the study 12 students attended, representing all four classes: Freshmen (4), Sophomores (3), Juniors (4), and a Senior (1). The students identified their ethnicity as Caucasian (9), Black/African-American (2), and Hispanic American (2). In year two, five students participated. There were Freshmen (2), Sophomores (1), a Junior (1), and a Senior (1). The students identified their ethnicity as Caucasian (3), Black/African-American (2).

Instrumentation

The project required administration of three quantitative surveys and six qualitative questions. The quantitative surveys included The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988), The Social Provision Scale (Cutrona & Russel, 1987), and the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995). In addition to the quantitative questionnaires, six qualitative items were added to the post-test surveys to better understand the beneficial aspects of the trip as perceived by the participants; these specifically related to possible gains in stress coping, social support, and self-efficacy.

The Perceived Stress Scale.

The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988) is a 14 item self-report questionnaire designed to assess the degree to which individuals assess their experiences as difficult to manage and overwhelming. The scale was designed for use among population samples with a minimum junior high school level education. Machulda et al., (1998) reported that the PSS has demonstrated good internal reliability (α=0.84–0.86, Cohen et al., 1983), as well as adequate concurrent validity correlating (r=0.62) with the Daily Stress Inventory. Persons who score higher on the PSS also tend to report poorer health practices, such as sleeping fewer hours, inadequate nutrition, and consuming greater quantities of alcohol (Cohen & Williamson, 1988).

The Social Provision Scale.

The Social Provision Scale (SPS, Cutrona & Russell, 1987) has 24 items covering six areas of social provisions. The six provisions are attachment, reliability, alliance, guidance, reassurance of worth, social integration, and opportunity for nurturance (Cutrona & Russell, 1987). The SPS, based on the premise that people need certain provisions from relationships (Bell,

2006), measures the perceived benefits obtained from connection to others (Cutrona & Russell, 1987). The test-retest reliability of the total SPS score (0.915) was estimated according to the formula for reliability of a linear combination of scores devised by Nunnally (1978), as cited in Cutrona and Russell (1987). The instrument shows strong concurrent and discriminant validity (Cutrona & Russell, 1987), even when adapted for populations including athletes and single mothers (Ryska & Yin, 2000). In addition, Cutrona and Russell (1987) reported the internal consistency of the scale at 0.89, with reliabilities of the four item subscales ranging from 0.65 to 0.77.

The General Self-Efficacy Scale.
The General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) was created to measure an individual's sense of self-efficacy with a goal to predict how well people cope with daily hassles and adapt to stressful life events (Kimbrough, 2007). The GSE scale has been employed in numerous research projects, where it typically yielded internal consistencies between alpha = 0.75 and 0.91. In a study of 246 cardiac surgery patients in Germany who completed the questionnaire before surgery and again half a year later, the GSE had a retest-reliability of $r = 0.67$ (Schröder, Schwarzer, & Konertz, 1998).

Scherbaum, Cohen-Charash, and Kern (2006) noted that Scholz et al. (2002) reported the internal consistency for a variety of samples and countries ranging from 0.75 to 0.91. This range shows that some researchers are reporting internal consistency below the generally accepted cutoff for basic research (Henson, 2001; Nunnally & Bernstein, 1994). Longitudinal studies yielded variable stability coefficients (i.e., ranging from 0.47 to 0.75; Scholz et al., 2002).

The Qualitative Items.
Qualitative items were developed by the lead investigator. As a complement to the quantitative surveys, we wished to learn about the participants' perspectives on which elements of the experience contributed to any changes in their stress level, sense of social support, and self-efficacy. Other qualitative items were composed to inform the staff and guides on how to improve future cadet women backpacking trips. Qualitative data resulted from participant's responses to the six items below:

What did you like most about this experience?

1. Which aspects of the experiences would you rate as most highly related to any changes in your sense of self-efficacy (your sense of competence

to cope with adversity in a broad range of stressful or challenging situations)?
2. Which aspects of the experiences would you rate as most highly related to any changes in your stress level?
3. Which aspects of the experiences would you rate as most highly related to any increases to your sense of social support (what we receive from our relationships with other people)?
4. What changes would you suggest for future leadership retreats?
5. If desired, please make any additional comments.

Procedure

The preparatory workshops and backpacking trip occurred in the 2014 and 2015 fall semesters. For the fall 2014 experience, backpacking equipment was provided by the college, guides, and participants who had their own backpacking gear. Campus intramurals staff purchased gear for the fall 2015 trip. The staffing for the events, five guides, consisted of two men and three women. The male guides included the associate director of intramurals and an associate professor at the institution, who is also the lead investigator. The women guides consisted of an adjunct instructor at the institution with backpacking leadership experience, a local environmental scientist who is an avid outdoor athlete, and a local marine biologist and backcountry guide who served as the wilderness first responder for the excursion. Both men, who served in a supportive role to the three women guides, were also experienced in outdoor recreation leadership.

The associate director for intramurals recruited participants by contacting the institution's women cadets via email, inviting them to attend the four-part workshop series followed by a Friday through Sunday backpacking trip. The students indicated interest via reply email. During the four weekly workshops preceding the backpacking trip, the guides covered the following topics: essential gear, food, water, and cooking, safety, comfort, and troubleshooting, and logistics and final preparations. The backpacking trip required a four-and-a-half-hour drive by van to a section of the South Carolina (SC) Foothills Trail which traverses from northwestern SC into western North Carolina (NC).

For the first year of the study, instruments were administered via paper to 12 participants on three occasions including at the start of the first of the four workshops, before boarding the van for the backpacking trip, and after the backpacking trip in the van on the way back to campus. The first day of the trip involved hiking six miles to the designated campsite. The

group intended to cover eight miles but stopped early due to discomfort among some participants. Day two included eight miles of hiking. Day three comprised a five-mile hike.

For the second year of the study, five students attended and returned to the same backpacking location as the prior year. The first day of the trip involved hiking the intended eight miles to the designated campsite. Day two included six miles of hiking. Day three involved a five-mile hike to the van. The instruments were administered via paper on three occasions including at the start of the first of the four workshops, before boarding the van for the backpacking trip, and after the backpacking trip. In year two, one important change in procedure was to offer the final survey during the campfire discussion on the last night, instead of during the van ride back to campus the final day of the trip. The rationale was that the researchers learned anecdotally that cadet undergraduates report feelings of dread as they approach campus after a weekend away.

Results

Quantitative Results

We used a simple bootstrapped paired *t*-test to explore a difference between the Pre-test (pre-workshop) and Pre-trip GSE, PSS, and SPS scores. We used the same approach to test if there were differences between Pre-trip and Post-trip GSE, PSS, and SPS scores. Table 1 shows the data from the 17 participants. Bootstrapped confidence intervals (95%) were computed using IBM SPSS Version 23 standard paired t-test variance estimation using bootstrapping. Bootstrapping was used to generate a more robust confidence interval estimate of the differences in paired means. This bootstrapping computation provided a better variation estimation given that the sample was small and somewhat variable (i.e., may not be fully normally distributed).

For the Pre-test–Pre-trip difference in means, the only statistically significant difference in means was in perceived stress, PSS1-PSS2= −2.13 (p = 0.036) (Table 1). For the Pre-trip–Post-trip difference in means, the only statistically significant difference in means was in self-efficacy, GSE1-GSE2= −1.647 (p = 0.002) (Table 2). Analyses for both paired differences show a significant reduction in scores indicating an average improvement in perceived stress (PSS) and self-efficacy (GSE) over the time between when the cadets signed-up for the trip (pre-test) and completed their pre-trip training (pre-trip). When we assessed for differences between each of the measures at time 1 (pre-test) versus time 3 (post-test) there were no statistically significant differences found.

Table 1 Bootstrap for Paired Samples Test for Pre-Workshop (time 1) and Pre-trip (time 2) Surveys

	Bootstrap Paired Means[a]					
					95% Confidence Interval	
	Mean	*Bias*	*Std. Error*	*p (2-tailed)*	*Lower*	*Upper*
GSE 1 - GSE 2	1.867	−.050	1.028	.175	.133	4.133
PSS 1 - PSS 2	−2.133	−.012	.873	.036	−3.867	−.533
SPS 1 - SPS 2	1.000	.000	.743	.208	−.400	2.533

a. Bootstrap results are based on 1000 bootstrap samples

Participants showed improvements in perceived stress scores from the pre-test to pre-trip, which included the workshop portion of the study (M =−1.87, SD =3.50), $t(14)$ = −2.36, p = 0.036, d = .87 Bootstrapped 95% CI [−3.87, −0.533].

Table 2 Bootstrap for Paired Samples Test for Pre-Trip (time 2) and Post-Trip (time 3) Surveys

	Bootstrap Paired Means[a]					
					95% Confidence Interval	
	Mean	*Bias*	*Std. Error*	*p (2-tailed)*	*Lower*	*Upper*
GSE 1 - GSE 2	1.867	−.050	1.028	.175	.133	4.133
GSE 2 - GSE 3	−1.647	−.006	.374	.002	−2.412	−1.000
PSS 2 - PSS 3	−.118	.076	.975	.899	−2.116	1.706
SPS 2 - SPS 3	−.588	.049	.750	.463	−2.000	1.000

a. Bootstrap results are based on 1000 bootstrap samples

Self-efficacy improved from pre-trip to post-trip, during the backpacking portion of the experience (M = −1.65, SD =1.66), $t(16)$ = −4.10, p = 0.002, d = 0.37 Bootstrapped 95% CI [−2.41, −1.00].

As shown in Table 1, the preparatory workshop series was associated with decreases in participants' levels of perceived stress (p = 0.036). The backpacking trip (See Table 2) was associated with increases in self-efficacy (p = 0.002). No significant changes were noted for social support.

Qualitative Results

The qualitative data were derived from participants' responses to three survey questions posed at the end of the backpacking trip. The three self-report items concerned aspects of the trip that participants attributed to improvements in the self-efficacy, social support, and stress-coping. We collected the qualitative data to afford triangulation with the quantitative data, merging the two sets of data into a more comprehensive interpretation (Creswell & Plano Clark, 2007).

Consistent with grounded theory methods, qualitative responses were transcribed and authors employed open-coding strategies as suggested by Strauss and Corbin (1990) to examine the data, apply labels to phenomena, and appoint salient categories to the coded phenomena. Constant comparative methods were utilized, revisiting responses to all three qualitative items to establish saturation, exhausting all possibilities for the labels and categories (Glaser, 1978). Throughout the process the researchers observed the emergence of similar labels and categories across responses to the three qualitative items.

The coding process began with authors placing the qualitative responses into an electronic spreadsheet, with tables consisting of responses to the corresponding survey items. Then, authors began a recursive process of collaboratively coding the data. After the first round of labeling the data, the authors discussed, refined, and altered the coding. After four rounds of refining the labels to the authors' satisfaction, authors began a repetitive process of refining the names of the categories for the labeled experiences. Eventually, new categories were added and refined so that all the labeled phenomena fit within the new categories. As an example of the grounded theory coding process, responses to the open-ended survey items on social support were transcribed, reviewed, and revisited (Charmaz, 2006). One such response was "I feel just walking along with the girls and hanging out at campsites was a great way to get to know each other. Also, since we were all experiencing similar situations it gave us something to bond over." These comments were labeled as Social and Mutuality. Through constant comparison, the emergence of these labels led to assigning the substantively coded phenomena of Social and Mutuality to the theoretical category of Interpersonal/Intrapersonal.

Self-efficacy

Students were asked to remark on aspects of the experience that were most related to their sense of self-efficacy. As shown in Table 3, the students'

Table 3 Factors Most Related to Changes in Sense of Self-Efficacy

Categories	*Labels for comments*
Interpersonal/Intrapersonal	Social (41%)
	Leading (18%)
	Teamwork (12%)
	Reflection (6%)
	Available help (6%)
Wilderness/Backpacking	Physical Challenge (24%)
	Skill Acquisition (18%)
Attending to Basic Needs	Adequate Sleep (6%)
	Nutrition (6%)
	Hydration (6%)

comments were categorized as follows: (a) Interpersonal/Intrapersonal; (b) Wilderness/Backpacking; (c) Attending to Their Basic Needs. Concerning self-efficacy, comments in the Interpersonal/Intrapersonal categories included references to the social aspects of the experience: "I felt like I could relate more to the other girls and therefore felt more comfortable being myself. This made problem solving easier." Other students noted the opportunities to lead the group as significant: "When I was at the head of the group I proved to myself that I was not a problem for others around me and that I could hold my own." Some students remarked on the teamwork that occurred "having the ability to help people, even in a small way, like filtering water for someone, or carrying extra weight." Students also indicated, "I would rate the fireside talks as the most related," a comment which we labeled as reflection.

Having help available from guides and peers was also listed as bolstering self-efficacy: "One event that would help me in the future is when I became unable to carry my pack the group showed me that there are people for me to fall back on when I need help. So in the future when I'm having problems I can realize that there are people there to help me."

Another category of comments pertaining to self-efficacy was Wilderness/Backpacking. Students asserted that physical challenge was significant, making comments such as, "I was reminded about how much I CAN handle and depend on myself, freshmen seem to forget that they are still competent people." Other comments related to the specific skills that the students had to acquire and develop in order to cope with the three-day wilderness experience.

The final category of comments of factors related to changes in self-efficacy was Attending to Basic Needs. For some students, their ability to

attend to their basic needs (eating well, achieving adequate hours of sleep, and remaining hydrated) during the trip was in contrast to their military college environment. For example, "When hydrated, good fulfilling exercise, feeling safe, and sleeping well I can remember things better and tend to be more positive overall," was penned by one participant.

Stress

Students remarked that elements of the experience that were most highly related to changes in their stress levels were categorized as Wilderness/Backpacking, Leaving Campus, and Interpersonal/Intrapersonal (Table 4). Wilderness/Backpacking comments earned the labels Nature, Adventure, Skill Acquisition, and Critical Thinking. A comment pertaining to Skill Acquisition was, "knowing that I can survive outdoors and manage to stay comfortable and warm." Other comments on Wilderness/Backpacking aspects of the trip as a stress buffer follow: "being able to silently take in my surroundings and stay focused on hiking up difficult inclines relieved stress later on in the day." And, "Different people have different places that feel safe and relaxing, or adventurous and fulfilling. For me, the outdoors is that place. I get stressed out and feel trapped if I stay in a city too long. I have an overwhelming work load at school right now, but I felt far away and safe."

Leaving campus was the second most popular category of responses related to reduced stress. Participants remarked, "Getting away from technology helped me forget about school for a while. (*College*) is very stressful sometimes." Also, "My stress level was reduced throughout the trip. Simply being out of (*my college)* environment with new people helped greatly." And, "not being surrounded by the 4th class system (*referring to a strict class rank, e.g., freshman, sophomores, etc.*)." Additionally, students stated, "Being away from school has the largest impact on stress levels," "being away with safe people for the weekend," "I felt a lot less stress than I normally do. Being away from all the distractions was good for my stress level."

Comments in the Interpersonal/Intrapersonal category were labeled as Social and Reflection. Comments about the stress reducing components of the trip pertained to opportunity for Reflection. One student cited, "The amount of time we had to reflect on the daily occurrences we go through," relating to her decrease in stress. In addition, a participant wrote concerning the whole experience, "I'm so much less stressed coming out (*of the woods*) its crazy! I feel relaxed and like I can do anything."

Table 4 Factors Most Related to Changes in Stress Level

Categories	*Comment labels*
Wilderness/Backpacking	Nature (53%)
	Adventure (41%)
	Skill Acquisition (6%)
	Critical Thinking (6%)
Leaving Campus	No 4th Class System (41%)
	Relaxation (29%)
	Feeling Safe (18%)
	No academic work (12%)
	Leaving Technology (12%)
Interpersonal/Intrapersonal	Social (18%)
	Reflection (6%)
	Available Help (6%)

*Note: *4th Class System* refers to the military college's strict, hierarchical system of advancement and privilege, starting freshman year (4th class cadets) and continuing through senior year (1st class cadets).

Social Support

The participants' responses about elements of the trip most related to changes in their sense of social support were coded into one category, Interpersonal/Intrapersonal, with four labels (Table 5): Social, Mutuality, Helping Others, and Reflection. The Social comments included the following: "campfire talks; Just getting to hear who people really are in a rough environment is cool. The talks on the trail were nice too in getting to know people's stories." Also: "I feel just walking along with the girls and hanging out at campsites was a great way to get to know each other." Concerning Mutuality, the sense of a mutual quality about the group, or the sense of "we" that was established, students reported the following: "Since we were all experiencing similar situations it gave us something to bond over," and "I feel like I have a lot more of a relationship with the other females and

Table 5 Factors Rated Most Related to Changes in Sense of Social Support.

Categories	*Comment labels*
Interpersonal/Intrapersonal	Social (76%)
	Mutuality (35%)
	Reflection (18%)
	Helping others (6%)

that if something happened I could rely on them for help," "In general, I realized we have a lot in common." Additional comments labeled as Mutuality included: "I realized I have a lot of support from the people around me, and that I need to trust and believe, everything is OK." As for Reflection, one wrote: "The fireside talks again!" As for Helping, "Everyone helped each other, working as a caring group of people, not just everyone working to help themselves."

What Students Liked Most

The final survey posed an open-ended question about what students liked most about the experience. Most students referred to their enjoyment of the whole experience. The social aspect of the trip was acknowledged by several comments, such as "I enjoyed being part of a caring, selfless group and feeling like I could actually be myself around them," "I got a chance to know the other girls better. I feel like this was a great opportunity to do that because it can be difficult on campus, especially between the classes (*referring to a strict class rank, e.g., freshman, sophomores, etc.*)" and "getting to know these new amazing people."

Other common remarks about what students liked most included references to the three days of backpacking: "being able to say I've been backpacking," "feeling independent," "the satisfaction at the end of the day" and "getting away from the world and my problems." One student's remarks seemed to summarize participants' comments with her statement about the "friendships that were made, rigor of the course, and having to rely on others in a tough situation." A comment that the guides appreciated in particular was, "being able to acquire more self-independence and focus on nature and my own physical well-being was very helpful. Not many opportunities come like that at (*college*)."

Additional Comments

In responses to the survey item requesting additional comments, the participants' comments pertained mostly to gratitude towards the guides. "Thank you for the positive reinforcement" and "Thanks for helping me with my injury" were among the expressions of gratitude. Attendees also remarked on their interpersonal/intrapersonal experiences. One student asserted, "I was reminded of who I am." Another student said, "This is definitely my favorite thing I've done at (*college*). I felt at home, and I actually acted like myself for the first time since August." Others relayed that they were happy to have a chance to lead the group. The final category for additional com-

ments pertained to fun. A sophomore offered that the trip was her "best experience since coming to college."

Discussion

The present study included a three-day wilderness experience for cadet women, with female guides. The preparatory workshop series and three-day backpacking trip were associated with reductions in perceived stress and increases in self-efficacy. The participants reported reductions in stress following the preparatory workshop series; gains in self-efficacy followed participation in the backpacking trip.

The qualitative data revealed that the women cadets attributed gains in self-efficacy to the following: (a) Interpersonal/Intrapersonal factors including positive social interactions, leading, teamwork, reflection, and knowing they had support available, (b) Backpacking components such as physical challenge, skill acquisition, and (c) Feeling capable of attending to basic needs in the wilderness. Decreases in stress were attributed to (a) Interpersonal/Intrapersonal factors such as positive social interactions, (b) Preparing for and entering wilderness for three days of backpacking, and (c) Leaving campus.

In debriefing sessions, guides proposed that the aspects of the experience most beneficial to students were the supportive learning environment of the preparatory workshops, informal and positive interaction with the guides, socializing with new peers and guides during the road trip, exposure to non-military approaches to leadership, non-hierarchical fellowship among fellow participants, campfire talks designed to elicit participants' awareness of self-efficacy, stress, and social support.

The findings from this study reinforce findings in existing research. Similar gains in self-efficacy were found in outdoor education studies in which the majority of participants were female (Frauman & Waryold, 2009; O'Shea, 2009; Passarelli, Hall, & Anderson, 2010). Outcomes for stress-coping were corroborated by the researchers who found decreased stress and increased stress-coping among outdoor recreation participants who were female veterans (Lundberg, Taniguchi, McGovern, & Smith 2016) and adolescents where females comprised the majority (Dolgin, 2014).

For the final variable, social support, the quantitative findings did not substantiate other studies showing significant increases for female participants in outdoor programs. For example, improved social connectedness was found among college students, most of whom were female, in an outdoor-based college orientation program (Wolfe & Kay, 2011). Also,

strong social bonding was reported for female veterans following a five-day all-female outdoor sports and recreation program (Lundberg, Taniguchi, McGovern, & Smith, 2016).

While the number of cadet women at US military colleges grows, a knowledge gap exists about the interpersonal and intrapersonal experiences of these women students. The existing literature is rich with the effects of wilderness programs for college students (Andre, Williams, Schwartz, & Bullard, 2017), but it does not appear that women cadets have taken part in published accounts of single-gender backpacking excursions. This study contributes to the body of knowledge concerning women cadets. Findings from the present study also offer a rare published account of ways military colleges can bolter self-efficacy and social support among female students. This study has also provided justification and motivation for military colleges to provide single-gender backpacking activities for women cadets.

The applicability of this exploratory study is limited by the small number of participants. A larger sample size would bolster the claim that the workshop series and backpacking excursion led to increases in self-efficacy and decreases in perceived stress for the women cadets and may lead to more statistical power to find differences in quantitative outcomes. The employment of a control group may have also strengthened the study. For the guides and researchers, a question remains about the value of the 9-hour road trip to and from the backpacking venue and the rich fellowship that was observed among the women. Collecting the participant observations about the road trip may have provided valuable insights about the three-day event. Additional randomized studies comparing the outcomes among groups that receive only portions of this program may be needed to discover what portions of the program has the most effect.

The guides and researchers for this study also remain curious about the effects of trip duration. Specific knowledge of dose-effects for backpacking and other outdoor adventure would inform university-based recreation programs concerning budgetary decisions, program planning, and staffing needs. On many campuses including ours, multi-day excursions raise concerns about funding and the availability of campus recreation staff. Current data concerning event length for outdoor education programs shows programs being one day or 5–11 days (Andre, Williams, Schwartz, & Bullard, 2017; Barton, Bragg, Pretty, Roberts, & Wood, 2016). Concerning outcomes from one-day nature events, one study demonstrated that the sharpest gains in mental health benefits occurred immediately, within the first five minutes. The effects decreased thereafter but were again elevated as participants persisted throughout the entire day. Effects were similar for females

and males (Barton & Pretty, 2010). As for the multi-day events, males and females had similar increases in self-esteem regardless of excursion length (Barton, Bragg, Pretty, Roberts, & Wood, 2016). Additional outcome data on optimal durations for events will guide campuses in allocating resources for day trips, weekend trips, and multi-day wilderness outings.

An implication for practice is for military colleges to create opportunities for women cadets to have single-gender (in contrast to their male dominated campuses), multi-day, experiences in wilderness. The argument for single-gender backpacking trips is bolstered by a study of 237 NOLS students (35% female, 65% male) between the ages of 16–19. During their mixed-gender backpacking excursions, females experienced a lower social status among their peers compared to their male counterparts (Richmond, Sibthorp, Jostad, & Gookin, 2016).

As done in this study, we suggest preparatory workshops to ensure safety and dispense adequate information about the wilderness excursion. We assert that employing women wilderness guides is an important aspect of facilitating a meaningful backpacking trip for cadet women. However, women are severely underrepresented in outdoor education, especially in leadership positions (Gray, 2016). Women cadets in US military colleges are in the minority on their campuses. Women role models among military college staff are often in short supply. Future researchers should seek greater numbers of participants and test for a variety of constructs important to women cadets at military colleges. We hope to see future research connecting sustained wilderness experience and cadet women's subjective well-being, leadership skills, and emotional intelligence.

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