

Exploring the Benefits of Outdoor Experiences on Veterans

Report prepared for the
Sierra Club Military Families and Veterans Initiative

by

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EXECUTIVE SUMMARY

Managing physical and mental health issues associated with military service is a considerable challenge for many veterans. Helping veterans cope with these issues has become particularly important in recent years given the extraordinary demands placed on military personnel and their families. In response, a number of outdoor recreation groups such as the Sierra Club Military Families and Veterans Initiative have begun to develop and sponsor group-based nature recreation programs targeting veterans. While both anecdotal and experimental data suggest that exposure to natural environments is beneficial, few studies have examined the impacts of these programs on veterans specifically. Therefore the purpose of this research was to explore the potential benefits of veterans' participation in multi-day group-based outdoor recreation experiences.

Four organizations, offering 12 different programs each lasting 4-7 days, were included in the study. The majority did not include formal, structured psychological counseling or therapy. The emphasis was on the outdoor programs which included activities such as backpacking and canoeing. The 98 veterans comprising the study sample were recruited and surveyed one week before, one week after, and approximately one month after participating in one of these group wilderness recreation experiences. In addition to assessing demographic and background information, survey instruments were used to measure changes in psychological well-being, social functioning, life outlook, and activity engagement over time.

Results of this study indicate that participation in extended group outdoor recreation experiences may be associated with a number of significant benefits. Study participants reported significant improvements in psychological well-being, social functioning, and life outlook one week after the outdoor experience; there was also some indication that these improvements persisted over the next month. As well participants reported that they were much more likely to take part in activities that involved exploration (i.e., learning new things, testing abilities) and listening to and helping others after the outdoor recreation experience. The changes in psychological well-being, social functioning, life outlook, and activity engagement were particularly strong for veterans who had initially reported more severe on-going health issues.

The findings suggest that extended group-based nature recreation experiences can have significant positive impacts on veterans struggling with serious health problems. This approach is especially intriguing since many veterans may find nature recreation programs more appealing than conventional clinical treatments. Engaging in activities outdoors that involve physical challenge, camaraderie, and achievement of an objective may resonate with types of experiences that make military service highly meaningful and rewarding. Although more research is needed and many questions remain, the use of extended group-based outdoor recreation programs to ease veterans' transition back into civilian life seems to be a promising approach.

INTRODUCTION

The transition back to civilian life is difficult for many veterans. In addition to coping with physical injuries, veterans often must deal with mental health issues, including depression, anxiety, and posttraumatic stress disorder (PTSD). These can take several months to manifest and last for extended periods, contributing to interpersonal conflict and substance abuse (Dekel & Monson, 2010; Milliken, Auchterlonie, & Hoge, 2007; Seal et al., 2009). Managing on-going mental health problems can be particularly challenging due to the negative perceptions veterans have about mental health treatment (Hoge et al., 2004) and the uncertain efficacy of many conventional therapies (Kitchiner, Roberts, Wilcox, & Bisson, 2012).

Given this situation it seems useful explore non-traditional approaches that may enhance well-being and help veterans cope with transition. Nature-based recreation is one such alternative currently being proposed by a number of outdoor recreation groups including the Sierra Club Military Families and Veterans Initiative (The Sierra Club, 2013). While few studies have examined the impacts of nature-based recreation on veterans specifically, both anecdotal and experimental data suggest that natural environments can be supportive of well-being. What's more, the unique training and experiences associated with military service may mean that this population would be quite willing to engage in extended wilderness recreation experiences with other veterans. Therefore, the focus of this study is to investigate the benefits associated with exposure to these multi-day group-based outdoor excursions for non-active duty military personnel.

Background

The idea that nature has therapeutic benefits is hardly new. In the latter part of the 19th century, getting out into nature was a standard medical treatment for dealing with issues such as emotional distress and mental exhaustion (Schuster, 2003). However, only in the last several decades have researchers begun to rigorously investigate the impact that contact with nature has on human health and well-being. This effort has resulted in a substantial growth in empirical research with numerous studies documenting the diversity of benefits related to exposure to natural environments. Reviews of this empirical literature are plentiful (Abraham, Sommerhalder, & Abel, 2010; Annerstedt & Wahrborg, 2011; Bowler, Buyung-Ali, Knight, & Pullin, 2010; Bratman, Hamilton, & Daily, 2012; Frumkin, 2001; Maller, Townsend, Pryor, Brown, & St. Leger, 2006; Pretty, 2004; Stigsdotter et al., 2011; Ward Thompson, 2011). Findings from this work suggest that even relatively short exposures to natural environments can have a significant impact on psychological health, leading to improvements in mood (Hull & Michael, 1995), attentional functioning (Berman, Jonides, & Kaplan, 2008; Cimprich & Ronis, 2003; Hartig, Evans, Jamner, Davis, & Garling, 2003; Kuo, 2001; Taylor, Kuo, & Sullivan, 2001; Wells, 2000), coping abilities (Ottosson & Grahn, 2008), and overall well-being (Kaplan, 2001).

A handful of studies have also examined the impact of the more extended group wilderness recreation experiences currently being advocated for by the Sierra Club and other outdoor recreation groups. Research on women who engaged in extended outdoor recreation found that participants reported greater mental clarity, spiritual growth, and a stronger sense of

connection to others after the experience (Fredrickson & Anderson, 1999; Pohl, Borrie, & Patterson, 2000). Similar results have been described by teenagers participating in organized backcountry recreation programs, who reported feeling less confused, more hopeful about the future, increased self-esteem, and a greater sense of “wholeness” (Hobbs & Shelton, 1972; Kaplan & Kaplan, 1989; Walsh & Russel, 2010; Whittington, 2006).

Several studies have also examined the impact of group wilderness experiences on veterans with existing mental health issues. Studies on veterans diagnosed with PTSD, have reported somewhat mixed results, with some studies finding improvements in emotional control and social connectedness, but no discernible reductions in PTSD symptoms (Hyer, Boyd, Scurfield, Smith, & Burke, 1996) and other studies reporting significant improvements in both functioning and symptomatology (Gelkopf, Hasson-Ohayon, Bikman, & Kravetz, 2013). Research on veterans with a wider variety of mental health problems suggests that participation in these programs may have positive impacts on mood, psychological health, and quality of life immediately following the experience (Lundberg, Bennett, & Smith, 2011). The small number of studies, relatively small sample sizes, and great variation in the length and structure of the programs make it difficult to draw conclusions about the impact of these experiences veterans.

Despite the limited research based specifically on veterans, the empirical evidence suggests that group-based nature recreation experiences could be beneficial. The purpose of the present study is to explore the potential benefits of veterans’ participation in multi-day group wilderness experiences with respect to psychological well-being, social functioning, life outlook, and activity engagement. While examining these outcomes immediately following the outdoor experience has logistical advantages and could reduce attrition in response rate, an important goal of this research is to explore whether changes are sustained over time. As a result, this study uses a repeated-measure design to assess participants at three different points – one week prior to the nature recreation experience, one week after the experience, and one month after the experience.

METHODS

Program Description

The Sierra Club's Military Families and Veterans Initiative and four partner organizations (i.e., Higher Ground, Wasatch Adaptive Sports, Wilderness Inquiry, and Women's Wilderness Institute) recruited veterans and their family members to participate in extended group outdoor recreation experiences. In total, these organizations (described in Appendix A) offered 12 different programs at deeply discounted rates or at no charge to veterans. The groups ranged between five and ten participants and consisted mainly of military veterans who did not know one another prior to participating in this experience. Each program, held during spring through early fall of 2012, involved a multi-day (i.e., 4-7 day) wilderness experience. The programs, varying in the outdoor activities they emphasized, included backpacking, canoeing, whitewater rafting, and fly fishing. All of the programs included activities and exercises focused on developing wilderness recreation skills such as backcountry navigation and water safety. While the purpose of these programs was to enhance the health and well-being of veterans, the majority of programs did not include any formal, structured psychological counseling or therapy. According to program debriefing documents, however, at least two of the twelve programs included structured therapeutic activities such as journaling, voluntary large and small group therapy sessions, and structured team-building exercises intended to enhance trust and communication.

Measures

In order to establish a baseline and examine changes over time, participants were asked by the partner organization to complete a pretest survey approximately one-week prior to the outdoor recreation experience, a posttest survey one-week after the experience, and a follow-up survey approximately three to four weeks after the outdoor program. A number of established and validated survey-based instruments were used to investigate changes in areas related to psychological well-being, social functioning, life outlook, and activity engagement. In each case veterans responded by rating the items using a 5-point scale. These measures are described in more detail below and samples of all surveys can be found in Appendix B.

In order to ensure construct validity and identify common themes a factor analysis using principal-axis factoring with Varimax rotation was also conducted on pretest responses to each of the psychological well-being, social functioning, life outlook, and activity engagement measures. Factor structures were based on item loadings of at least .45, Eigenvalues greater than 1.0, and alpha coefficients of at least .55. Items loading on more than one factor were excluded. Results of this factor analysis, including individual item loadings, are detailed in Appendix C.

Psychological Well-Being

Psychological well-being was assessed by examining perceived stress, attentional functioning, and affective experience. Perceived stress was measured using a 4-item version of the Perceived Stress Scale (Cohen & Williamson, 1988), which asks veterans to rate how frequently

they felt unable to cope with general life stress (*never to very often*). Attentional functioning was assessed using a modified version of the Attentional Functioning Index (Cimprich, Visovatti, & Ronis, 2011), which is designed to measure perceived effectiveness in a variety of everyday activities which require self-regulation and executive control (Cimprich, 1992; Tennesen & Cimprich, 1996). Participants were asked to rate how well they felt they had been functioning in 9 of these areas (*not very well to extremely well*). The affective experience measure asked participants to rate the degree to which they experienced each of 22 positive and negative emotions (*never to always*). This measure was largely developed by adapting items from the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988).

Factor analyses of the Perceived Stress Scale and the Attentional Functioning Index confirmed that these two measures were part of distinct and reliable factors related to one's ability to cope with life stress and effectively function. Analysis of the affective experience items yielded three distinct factors. The first, "Positive Affect" consisted of 8 items related to positive feelings and emotions. One item, "alert" failed to load on this factor and was dropped from the Positive Affect measure. The second factor, "Negative Affect" included 10 items related to negative feelings and emotions. Finally, "Tranquility" was composed of 3 items related to feelings of relaxation and contentment. Correlations among the five psychological well-being factors ranged between .57 and .73; given their high internal consistency and focus on different dimensions of well-being, they were kept as separate measures.

Social Functioning & Life Outlook

Social functioning was investigated by measuring veterans' feelings of loneliness and social connectedness. Feelings of loneliness were measured by using a 3-item modified version of the UCLA Loneliness Scale (Hughes, Waite, Hawkley, & Cacioppo, 2004) and social connectedness was assessed by using a 3-item modified version of the Social Connectedness Scale (Lee & Robbins, 1995). Both of these scales asked veterans to rate how often they felt socially isolated and alone (*never to very often*). Since these subscales measured similar constructs and were highly correlated ($r = .76$) they were combined to create one single measure of Social Functioning. Factor analysis confirmed that combining these subscales resulted in a reliable and coherent measure of Social Functioning.

In addition, veterans were asked to rate how much they agreed with a number of statements designed to measure how life was going right now and what they expected for the future (*strongly disagree to strongly agree*). The measure of life outlook was generated by adapting items from the State Hope Scale (Snyder et al., 1996) and the Seeking of Noetic Goals Test (Crumbaugh, 1977). As with the social functioning measure, these items were combined into a single measure of Life Outlook since they assessed very similar constructs and were highly correlated ($r = .73$). Subsequent factor analysis confirmed that this combined measure of Life Outlook represented a reliable and coherent construct.

Activity Engagement

In order to explore the nature of veterans' everyday experiences and examine whether these experiences changed over time as the result of the outdoor recreation experience an activity engagement measure was constructed. This measure asked veterans to rate how frequently (*never to very often*) they engaged in activities that involved 18 different features such as being alone, physical activity, and mental challenge. Factor analysis identified three distinct categories of activity engagement. The first category, "Escape and Solitude" was characterized by activities that involved mental distraction and were done alone. The "Exploration" category represented activities that involved learning new skills, testing one's abilities, and being physically and mentally active. The third category, "Listening and Helping" included activities that involved listening to others and sharing thoughts and feelings about one's experiences.

Demographic and background information

The pretest survey included demographic questions (e.g., age, gender, education, employment) as well as questions about veterans' prior military service, history of physical and mental health conditions, and prior experience with organized group outdoor recreation.

Participants

Ninety-eight veterans completed the pretest survey. These respondents were predominantly male, between 30-49 years of age, and unemployed (see Table 1). The majority of these veterans indicated that it had been 10 years or less since their last active duty assignment and a large portion (44%) indicated that their last active duty assignment had occurred within the last 5 years. More than half (54%) of these veterans reported that they often experienced physical or mental health issues that interfered with their everyday life. In addition, most participants reported having no previous experience with organized group outdoor experiences. Although 98 veterans completed the initial survey it appears that only 73 actually participated in any of the outings. Of this group, 54 veterans completed the posttest (74% return rate) and 31 completed the follow-up (42% return rate).

TABLE 1. Characteristics of participants
based on pre-test survey responses

GENDER (%)	
Female	21.6
Male	78.4
AGE (%)	
20-29	20.7
30-39	27.1
40-49	31.5
50 and over	20.7
EDUCATION (%)	
High school	7.1
Some college	45.9
Two-year degree	11.2
Four-year degree	23.5
Post-graduate degree	12.2
EMPLOYED (%)	
No	52.6
Yes	47.4
TIME SINCE LAST ACTIVE DUTY (%)	
0-5 years	44.1
6-10 years	34.4
>10 years	21.5
Physical disabilities that might interfere with extended outdoor recreation experience (%)	
No	60.2
Yes	39.8
Treated for mental health/substance abuse issues since last deployment (%)	
No	29.6
Yes	70.4
How often physical and mental health issues get in the way of everyday life (%)	
Never or Rarely	27.5
Sometimes	18.4
Often or Very Often	54.1
Previous experience with organized group outdoor recreation (%)	
No	59.8
Yes	40.2

Analysis

Linear mixed models were used to examine changes in psychological well-being, social functioning, life outlook, and activity engagement over time. This method was chosen because it allows for analyzing correlated observations that are measured repeatedly, under different conditions (West, Welch, & Galecki, 2006). The linear mixed model also allows inclusion of missing data, giving this approach a distinct advantage over more traditional longitudinal and repeated-measures analysis methods, which remove individuals who do not have data at all time points (West, et al., 2006).

To account for possible variation between individuals a random coefficient model using a random intercept was used to investigate all survey data. In all cases a top-down model building strategy was used, which involved starting with the fixed effects of all theoretically relevant covariates and interactions and removing non-significant fixed effects until the best overall fit was achieved (West, et al., 2006). As a result, pretest variables related to employment and the presence of physical or mental health issues interfering with everyday life were controlled for in all mixed models. Once an appropriate fit was determined, the mixed model analysis was used to examine changes over time by conducting a series of pairwise comparisons based on estimated marginal means.

RESULTS

Psychological Well-Being

Analyses (using the linear mixed models) of the changes in program participants' responses to the measures of psychological well-being indicate significant improvements (see Table 2 and Figure 1). More specifically, participants' responses at posttest (about a week after returning from the outdoor experience), as compared to the baseline responses, were significantly higher on attentional functioning, positive affect, and tranquility, and significantly lower with respect to negative affect. With respect to perceived stress, by contrast, there was little change over time. This may indicate that veterans' perceptions about their ability to cope with general life stressors are fairly stable and that changing these perceptions may require more specialized and targeted interventions.

Given the relatively brief nature of the outdoor programs, it would be reasonable to expect that the improvements in attentional functioning, positive affect, negative affect, and tranquility would largely disappear at follow-up (i.e., several weeks after the outdoor experience). However, there is some evidence of enduring effects. This pattern appeared to be strongest in terms of positive affect, where participants reported a significant improvement from baseline to follow-up. While not significant, there also seemed to be a trend indicating attentional functioning, negative affect, and tranquility improved from baseline to follow-up.

While these results provide an overall picture of how the extended outdoor recreation experience influenced well-being, the linear mixed model analysis also indicates that the improvements differed depending on participants' physical or mental health issues. To examine these factors, participants were categorized based on their response to the question "How often do you experience physical or mental health issues that get in the way of your everyday life." The "infrequent" category included those responding "never," "rarely," or "sometimes" to the pretest survey question. The "frequent" category consisted of those responding "often" or "very often." It is worth noting that somewhat more than half the sample (54%) falls into the "frequent" category and that this group also reported high rates of unemployment (69%) and treatment for mental health or substance abuse issues (94%). As would be expected, the baseline scores for the two groups are significantly different (Table 3).

Results of the linear mixed model indicate no significant changes in any of the psychological well-being measures for the participants who infrequently experienced everyday health issues although the pattern of change is in the expected direction (see Table 3 and Figure 2). In contrast, participants in the "frequent" category showed significant improvements in attentional functioning, positive affect, negative affect, and tranquility from pretest to posttest. While follow-up results should be interpreted with caution due to the relatively small sample sizes, there is some evidence that the psychological well-being of participants who more frequently experienced everyday health issues continued to improve over the long-term. These participants reported a significant increase in feelings of tranquility and significant declines in both perceived stress and negative affect at follow-up. These results suggest that veterans with

more severe physical or mental health problems may experience positive well-being impacts even one month after participating in an extended group outdoor recreation experience.

Social Functioning and Life Outlook

As shown in Table 4 and Figure 3, participants experienced significant improvements from pretest to posttest on both social functioning and life outlook. This indicates that the extended group outdoor recreation experience was associated with greater feelings of social connectedness, fewer feelings of loneliness and isolation, and a more positive overall assessment of life circumstances. As with psychological well-being, there was a trend indicating that these improvements in social function and life outlook persisted one month later at follow-up.

Once again, the linear mixed model results indicate the importance of considering participants' physical or mental health issues that interfere with daily life. At baseline the two groups were significantly different with respect to both the social functioning and life outlook measures, and the pattern of changes over time closely parallel the psychological well-being results. As shown in Table 5 and Figure 4, for participants who indicate that they infrequently experience everyday health issues, the results show no significant changes in either social functioning or life outlook. On the other hand, participants who frequently experience these issues reported significant improvements in both social functioning and life outlook when pretest and posttest responses were compared. Furthermore, the comparison between baseline levels and follow-up ratings show sustained improvement in social functioning scores, although not for the outlook scores. The small sample size at follow-up again means that one should not overstate these results; however these findings reinforce the possibility that veterans with more serious health issues may find extended group wilderness experiences especially beneficial.

Activity Engagement

Linear mixed models were also used to investigate the degree to which participants engaged in activities that provided opportunities for solitude and escape, exploration, and listening and helping (see Table 6 and Figure 5). Examining this information is useful because it indicates how the extended group outdoor recreation experience may have influenced the types of activities participants engaged in. These results revealed that participants reported engaging in activities that involved solitude and escape at very similar rates on the pretest, posttest, and follow-up surveys. In contrast, participants reported that they engaged in activities that involved exploration as well as listening and helping significantly more often on the posttest survey than at pretest. While participants' engagement in these activities diminished at follow-up, these results indicate that the group wilderness experience may have provided veterans with important opportunities to use existing talents, build new skills, reflect on their life experiences, and share these experiences with other veterans.

As with psychological well-being, social functioning, and life outlook, activity engagement levels were also influenced by the degree to which participants reported experiencing everyday health issues (see Table 7 and Figure 6). Participants who were less likely to suffer from

everyday health issues did not report significant changes in how often they engaged in activities involving solitude and escape, exploration, or listen and helping. Those participants with more severe physical or mental health issues, however, scored significantly higher on involvement in activities that provided opportunities for exploration, and for listening and helping one week after returning from the outdoor recreation program.

TABLE 2. Psychological well-being of participants over time

	Mean psychological well-being						Change in psychological well-being			
	Pre-test		Post-test		Follow-up		Pre-test to Post-test		Pre-test to Follow-up	
	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>Mean Difference</u>	<u>p</u>	<u>Mean Difference</u>	<u>p</u>
Perceived Stress¹	95	2.54 (.07)	50	2.46 (.09)	28	2.41 (.11)	-.09	.917	-.14	.644
Attentional Functioning²	93	2.78 (.08)	50	3.13 (.10)	28	3.04 (.13)	.34	.001	.26	.091
Positive Affect³	93	3.11 (.07)	50	3.47 (.09)	28	3.39 (.11)	.36	.000	.27	.026
Negative Affect³	93	2.71 (.07)	50	2.46 (.09)	28	2.50 (.10)	-.24	.003	-.21	.081
Tranquility	93	3.00 (.08)	50	3.31 (.10)	28	3.29 (.13)	.31	.007	.29	.064

¹Based on the Perceived Stress Scale reported in Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health*. Newbury Park, CA: Sage.

²Based on the Attentional Functioning Index reported in Cimprich, B., Visovatti, M., & Ronis, D. L. (2011). The Attentional Functioning Index -- a self-report cognitive measure. *Psycho-Oncology*, 20(2), 194-202.

³Based on the Positive and Negative Affect Schedule reported in Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scale. *Journal of Personality and Social Psychology*, 54(6), 1063-1070.

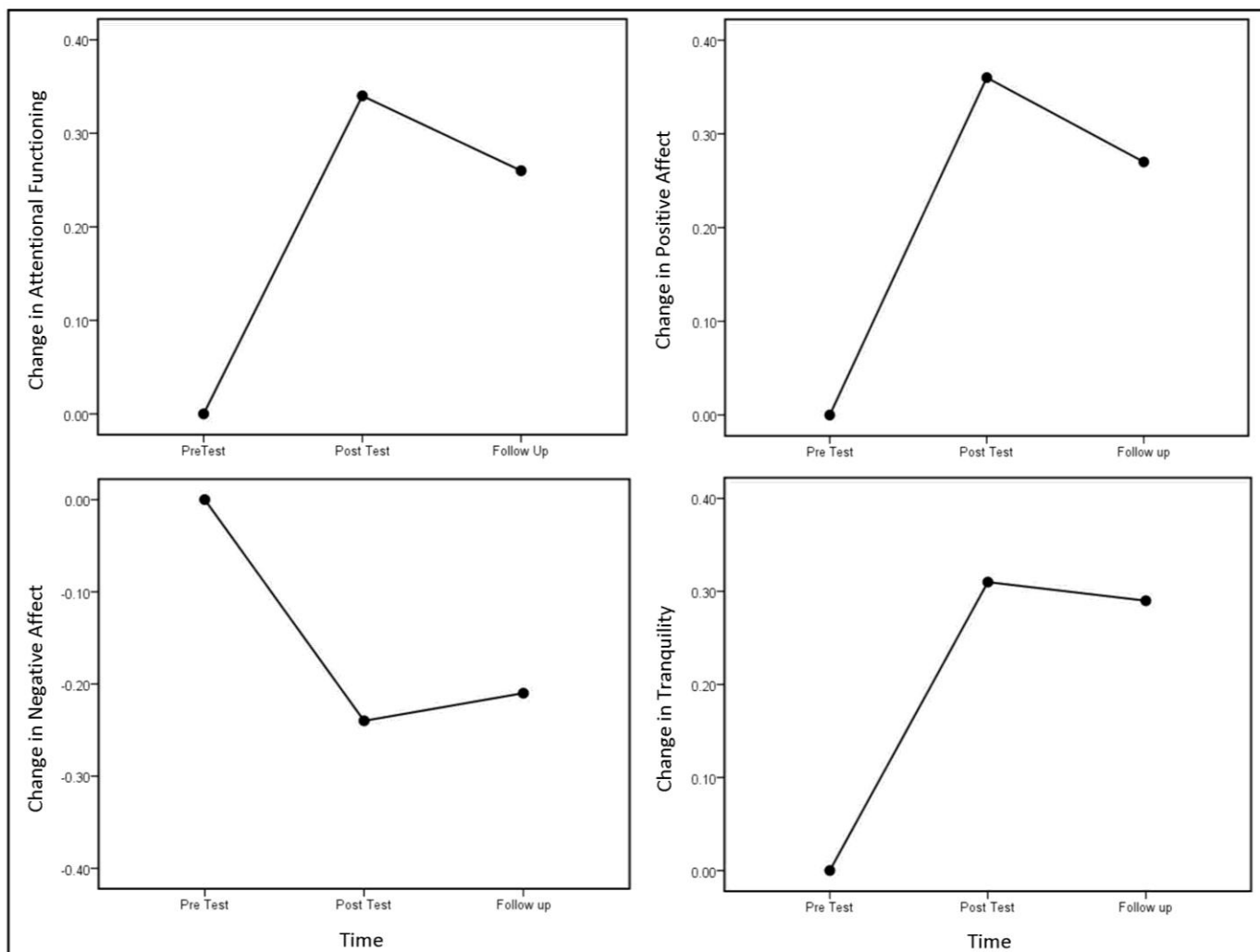


Figure 1. Changes in psychological well-being over time

TABLE 3. Psychological well-being of participants based on frequency of everyday health issues

Mean psychological well-being							Change in psychological well-being			
	<i>n</i>	Pre-test	<i>n</i>	Post-test	<i>n</i>	Follow-up	Pre-test to Post-test		Pre-test to Follow-up	
		Est. Marginal Mean (SE)		Est. Marginal Mean (SE)		Est. Marginal Mean (SE)	Mean Difference	<i>p</i>	Mean Difference	<i>p</i>
Perceived Stress										
Infrequent	43	2.09 (.10)*	26	2.10 (.12)*	15	2.22 (.15)	.01	1.000	.13	1.000
Frequent	52	3.00 (.09)*	24	2.82 (.12)*	13	2.60 (.16)	-.18	.404	-.40	.038
Attentional Functioning										
Infrequent	43	3.15 (.12)*	26	3.41 (.14)*	15	3.32 (.17)*	.26	.125	.18	.806
Frequent	50	2.42 (.11)*	24	2.84 (.14)*	13	2.76 (.18)*	.42	.006	.34	.156
Positive Affect										
Infrequent	41	3.35 (.11)*	26	3.59 (.13)	15	3.56 (.15)	.24	.106	.21	.407
Frequent	52	2.88 (.10)*	24	3.36 (.13)	13	3.22 (.16)	.48	.000	.34	.078
Negative Affect										
Infrequent	41	2.31 (.11)*	26	2.12 (.12)*	15	2.28 (.14)*	-.19	.196	-.03	1.000
Frequent	52	3.11 (.10)*	24	2.81 (.12)*	13	2.73 (.15)*	-.30	.012	-.38	.016
Tranquility										
Infrequent	41	3.36 (.12)*	26	3.62 (.14)*	15	3.49 (.18)	.26	.176	.13	1.000
Frequent	52	2.64 (.11)*	24	2.99 (.15)*	13	3.09 (.19)	.35	.040	.45	.042

Notes: Estimated marginal means sharing an asterisk (*) are different from one another at $p \leq .05$.

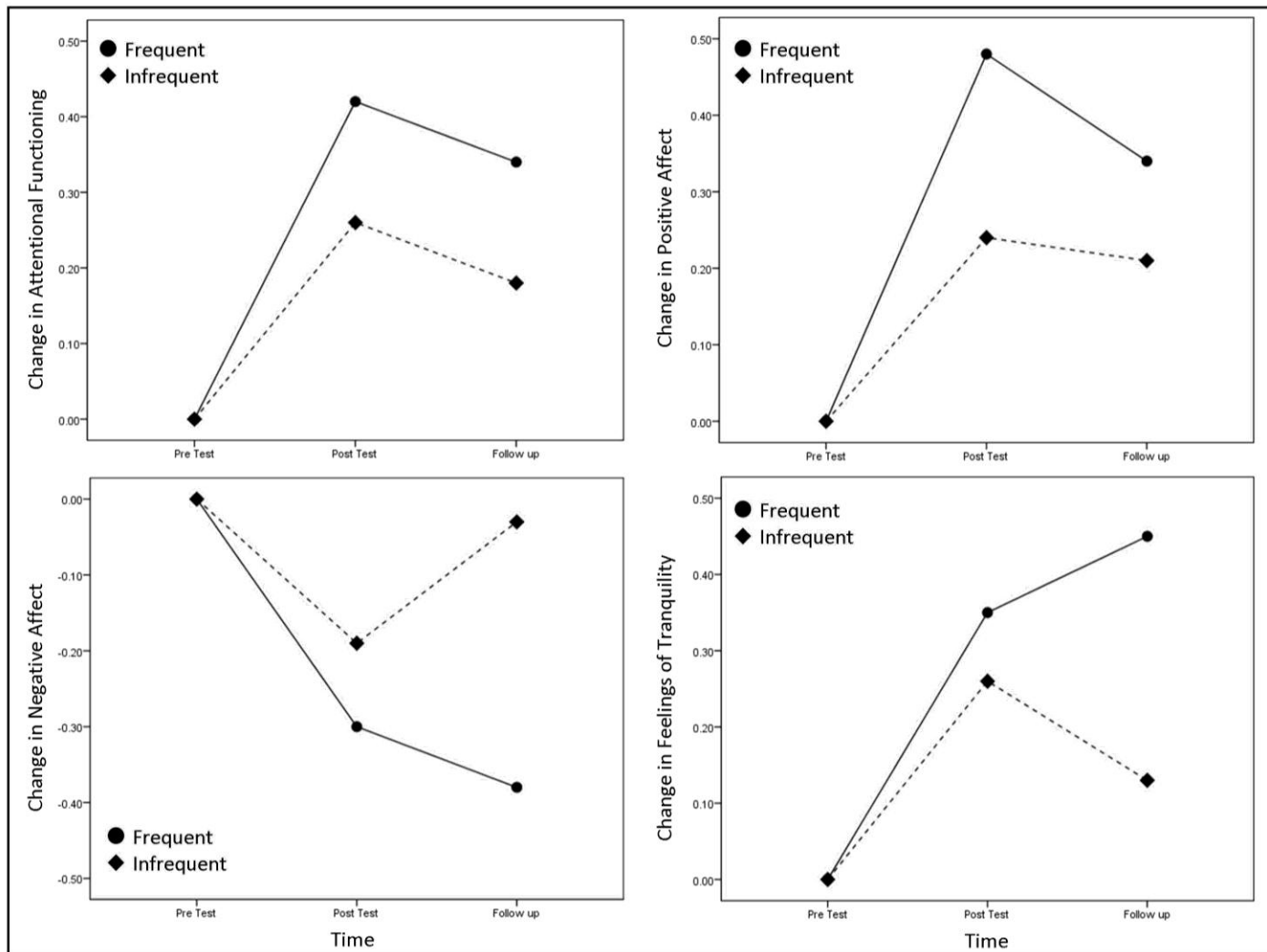


Figure 2. Changes in psychological well-being based on frequency of everyday health issues

TABLE 4. Social functioning and life outlook of participants over time

	Mean social functioning & life outlook						Change in social functioning & life outlook			
	Pre-test		Post-test		Follow-up		Pre-test to Post-test		Pre-test to Follow-up	
	<i>n</i>	<u>Est. Marginal Mean (SE)</u>	<i>n</i>	<u>Est. Marginal Mean (SE)</u>	<i>n</i>	<u>Est. Marginal Mean (SE)</u>	<u>Mean Difference</u>	<i>p</i>	<u>Mean Difference</u>	<i>p</i>
Social Functioning¹	95	3.12 (.09)	50	3.39 (.11)	28	3.41 (.13)	.28	.017	.30	.057
Life Outlook²	94	3.22 (.08)	50	3.47 (.09)	28	3.44 (.11)	.25	.002	.22	.070

¹ Based on the Loneliness and Social Connectedness Scales reported in Hughes, M. E., Waite, L. J., Hawkey, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging*, 26(6), 655-672 and Lee, R. M., & Robbins, S. B. (1995). Measuring belongingness: The Social Connectedness and the Social Assurance Scales. *Journal of Counseling Psychology*, 42, 232-241.

² Based on the Hope Scale and the Seeking Noetic Goals Test reported in Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, 2, 321-335 and Crumbaugh, J. C. (1977). The Seeking of Noetic Goals Test (SONG): A complementary scale to the Purpose In Life Test (PIL). *Journal of Clinical Psychology*, 33(3), 900-907..

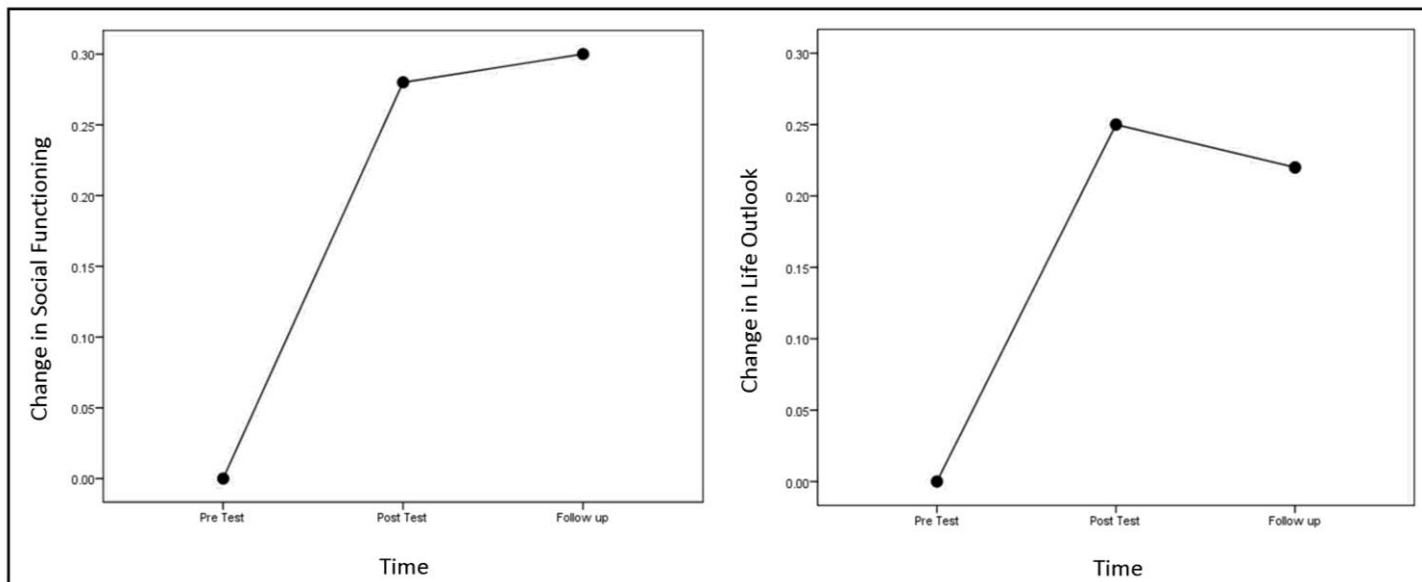


Figure 3. Changes in social functioning and life outlook over time

TABLE 5. Change in social functioning and life outlook based on frequency of everyday health issues

Mean social functioning & life outlook							Change in social functioning & life outlook			
	Pre-test		Post-test		Follow-up		Pre-test to Post-test		Pre-test to Follow-up	
	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>n</u>	<u>Est. Marginal Mean (SE)</u>	<u>Mean Difference</u>	<u>p</u>	<u>Mean Difference</u>	<u>p</u>
Social Functioning										
Infrequent	43	3.57 (.13)*	26	3.76 (.15)*	15	3.60 (.18)	.19	.503	.03	1.000
Frequent	52	2.67 (.12)*	24	3.03 (.15)*	13	3.23 (.19)	.36	.031	.56	.007
Life Outlook										
Infrequent	43	3.55 (.11)*	26	3.73 (.13)*	14	3.75 (.15)*	.19	.181	.20	.350
Frequent	51	2.90 (.11)*	24	3.21 (.13)*	12	3.13 (.16)*	.31	.011	.23	.288

Notes: Estimated marginal means sharing an asterisk (*) are different from one another at $p \leq .05$.

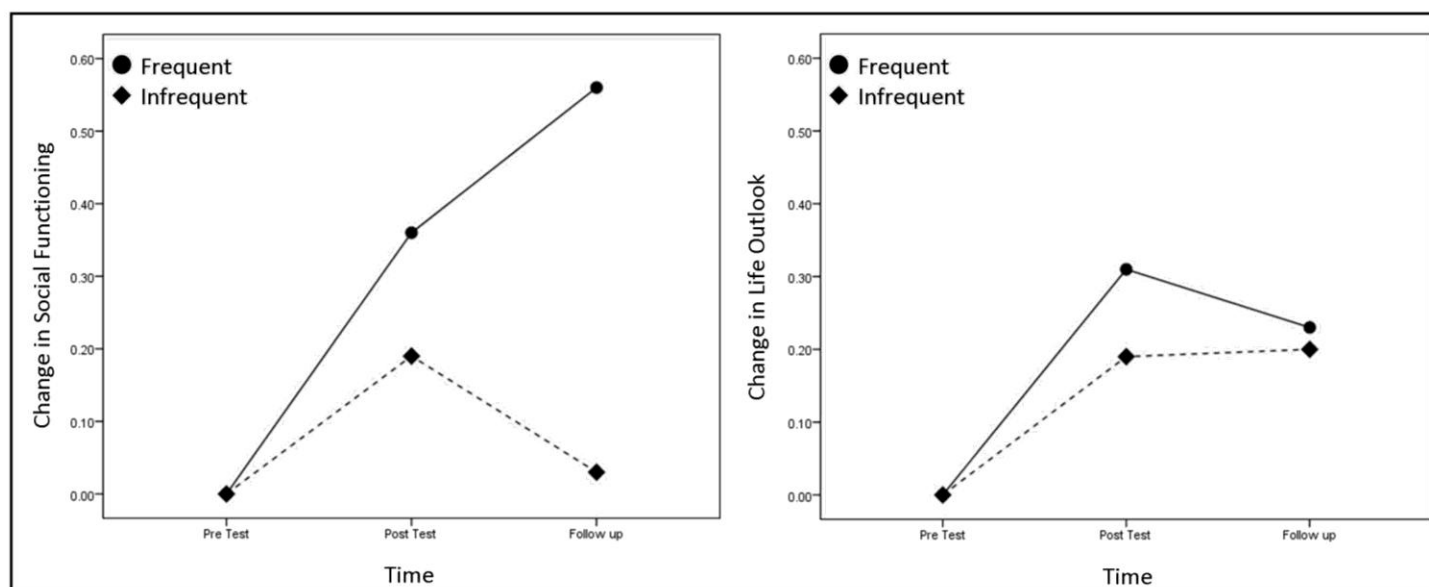


Figure 4. Changes in social functioning and life outlook based on frequency of everyday health issues

TABLE 6. Activity engagement of participants over time

	Mean activity engagement						Change in activity engagement			
	Pre-test		Post-test		Follow-up		Pre-test to Post-test		Pre-test to Follow-up	
	<u><i>n</i></u>	<u>Est. Marginal Mean (SE)</u>	<u><i>n</i></u>	<u>Est. Marginal Mean (SE)</u>	<u><i>n</i></u>	<u>Est. Marginal Mean (SE)</u>	<u>Mean Difference</u>	<u><i>p</i></u>	<u>Mean Difference</u>	<u><i>p</i></u>
Solitude & Escape	95	3.44 (.08)	50	3.46 (.10)	26	3.41 (.14)	.02	1.00	-.03	1.000
Exploration	95	3.12 (.07)	50	3.32 (.08)	26	3.14 (.10)	.20	.016	.02	1.000
Listening & Helping	95	2.96 (.07)	50	3.19 (.08)	26	3.12 (.10)	.23	.004	.17	.218

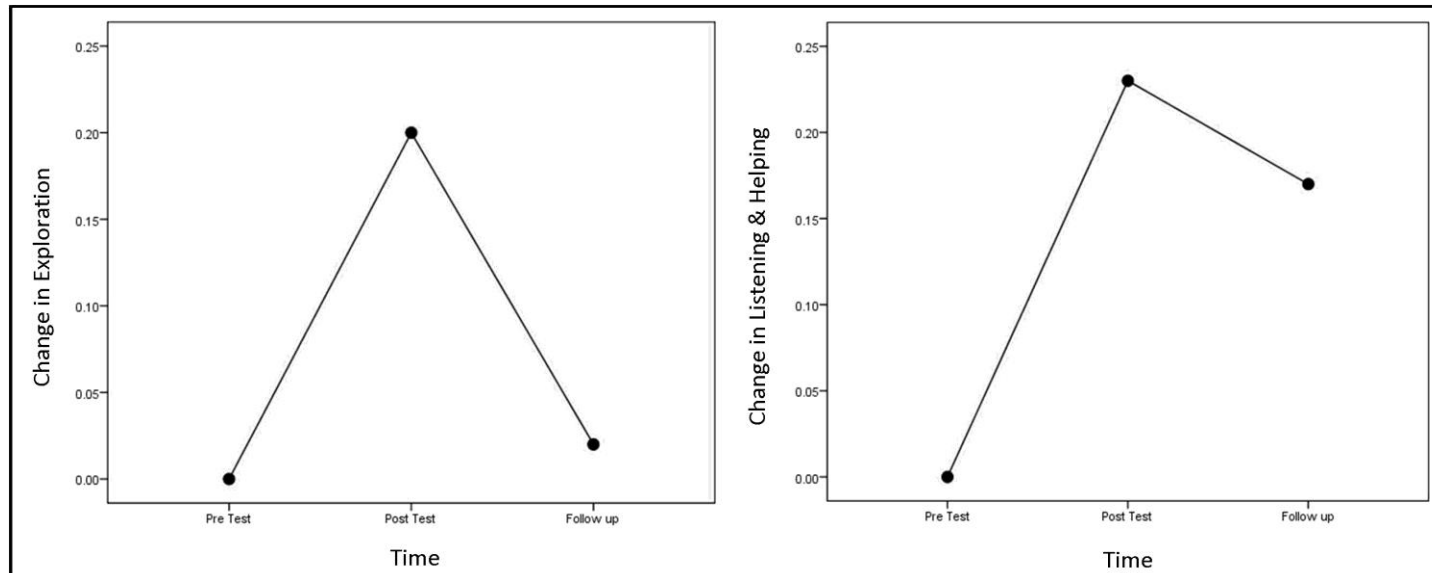


Figure 5. Changes in activity engagement of participants over time

TABLE 7. Change in activity engagement based on frequency of everyday health issues

		Mean activity engagement						Change in activity engagement			
		Pre-test		Post-test		Follow-up		Pre-test to Post-test		Pre-test to Follow-up	
		<u>Est. Marginal</u>		<u>Est. Marginal</u>		<u>Est. Marginal</u>		<u>Mean</u>		<u>Mean</u>	
		<u><i>n</i></u>	<u>Mean (SE)</u>	<u><i>n</i></u>	<u>Mean (SE)</u>	<u><i>n</i></u>	<u>Mean (SE)</u>	<u>Difference</u>	<u><i>p</i></u>	<u>Difference</u>	<u><i>p</i></u>
Solitude & Escape											
Infrequent		43	3.32 (.13)	26	3.23 (.15)*	14	3.17 (.20)	-.09	1.000	-.15	1.000
Frequent		52	3.57 (.12)	24	3.69 (.16)*	12	3.66 (.21)	.12	1.000	.09	1.000
Exploration											
Infrequent		43	3.25 (.10)	26	3.40 (.11)*	14	3.19 (.14)	.14	.443	-.06	1.000
Frequent		52	2.98 (.09)	24	3.24 (.12)*	12	3.09 (.15)	.26	.037	.11	1.000
Listening & Helping											
Infrequent		43	3.11 (.11)	26	3.31 (.12)	14	3.15 (.15)	.20	.113	.04	1.000
Frequent		52	2.81 (.10)	24	3.07 (.12)	12	3.10 (.15)	.26	.031	.29	.093

Notes: Estimated marginal means sharing an asterisk (*) are different from one another at $p \leq .05$.

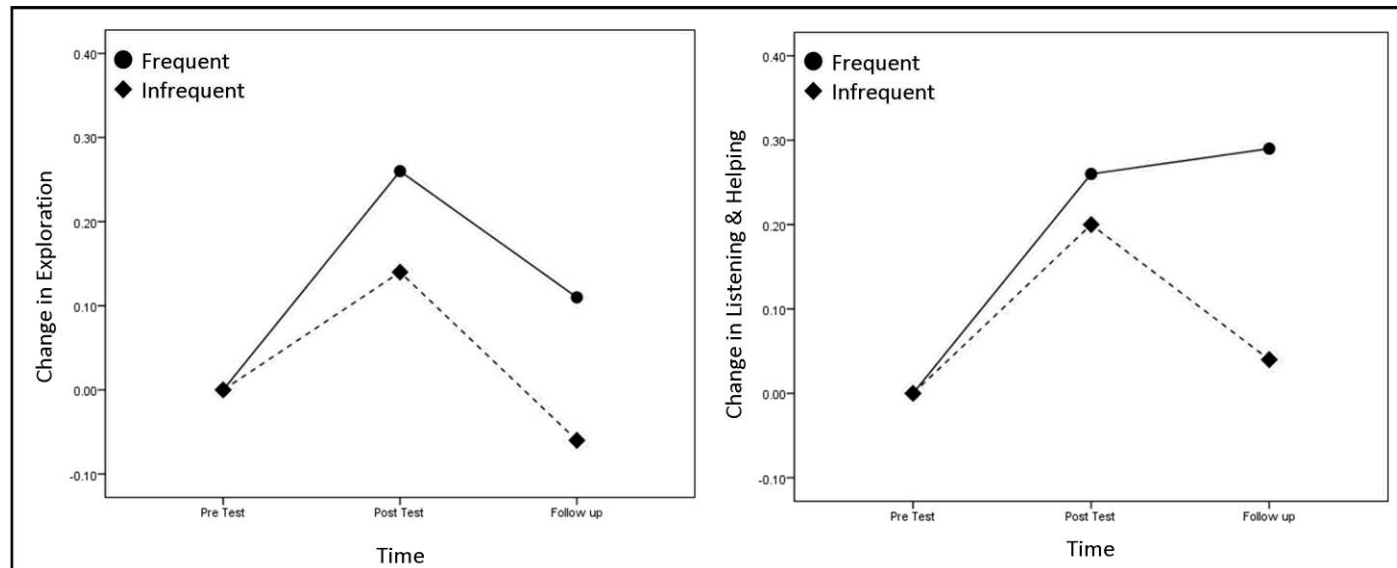


Figure 6. Changes in activity engagement based on frequency of everyday health issues

DISCUSSION

The purpose of this research was to explore the benefits associated with exposure to multi-day group-based outdoor experiences for non-active duty military personnel. Given the serious challenges facing many military veterans there is reason to initially be skeptical about whether engaging in a relatively short non-clinical outdoor recreation program would have a significant impact, even one week after the experience. However, results of this study indicate that veterans who participated in these programs did, in fact, experience a number of important benefits with respect to each of the domains included in the study: psychological well-being, social functioning, and activity engagement.

Study participants reported significant improvements in multiple aspects of psychological well-being one week after the outdoor intervention. The improvements in attentional functioning and emotional tone (increases in positive affect and feelings of tranquility; decreases in negative affect) are consistent with existing research on the restorative impacts of natural environments and are noteworthy given that mental health problems, such as PTSD, have been associated with impairments in executive functioning and an increased risk of depression (Polak, Witteveen, Reitsma, & Olff, 2012; Thomas et al., 2010). While psychological well-being seemed to decline slightly over time, the results suggest that the improvements in well-being were sustained even one month after the outdoor experience, especially with respect to positive affect. Participants also reported significant improvements in both social functioning and life outlook one week after the intervention. Again, there was some indication that these improvements persisted over the long-term. The finding that participation in these group outdoor recreation experiences was associated with greater feelings of social connectedness and more optimistic attitudes about current life circumstances is particularly compelling when one considers that interpersonal conflict and feelings of hopelessness are not uncommon problems among veterans (MacDermott, 2010; Milliken, et al., 2007).

Perhaps more importantly, there was evidence suggesting that these extended group-based nature recreation programs may have a bigger impact on veterans most in need of help. Participants who reported experiencing more severe everyday health problems prior to the intervention were much more likely to report significant improvements in psychological well-being, social functioning, and life outlook one week after the program. In many cases these improvements were substantial, with the magnitude of change often 1.5 times that of participants' reporting less serious health issues. The small sample size at follow-up makes it difficult to know whether the improvements experienced by this group can be sustained over longer periods of time. However the findings with respect to the reduction in perceived stress and negative affect as well as the increases in feelings of tranquility and social functioning suggest such benefits might persist and even continue to increase for several weeks after the intervention.

In addition to the improvements in psychological well-being, social functioning, and life outlook, this research suggests that extended group outdoor recreation experiences may also alter the way veterans interact with the physical and social environment. Comparison of responses prior

to the trip with those a week after their return show that participants were much more likely to take part in activities that involved exploration (i.e., learning new things, testing abilities) and listening to and helping others. This increase was especially strong for veterans reporting more serious on-going health issues. These changes may be due, in part, to the opportunities for personal challenge, growth, and companionship that are built into the outdoor recreation experience and may be lacking in everyday life for many of the participants. The extended, multi-day nature of the program and its focus on veterans may also give participants more chances to share thoughts and feelings with individuals who can relate to their experiences. This experience may encourage participants to seek out more of these opportunities; which may in turn enhance psychological well-being, social functioning, and life outlook.

Limitations and Future Directions

Although these findings are encouraging and suggest that multi-day group-based nature recreation experiences can have significant positive impacts, there are limitations of this study that should be acknowledged and used to inform future research. Clearly, the relatively small sample size, especially at follow-up, also means that the results suggesting that benefits might be sustained over the long-term should be interpreted with some caution. While individuals who responded to the follow-up survey were similar to non-responders in terms of demographic variables, it is possible that follow-up results may not be representative of all participants. A further limitation is related to the very nature of the outdoor recreation programs that are the basis for the intervention. These are necessarily distinct along many dimensions. They vary in program length, type of outdoor recreation, group size, group composition, and many other structural respects. The relatively small number of participants in each outing makes it difficult to know how much the specific program features impact outcomes like well-being or social functioning. While the programs shared many common features, it is possible that different recreational activities lead to different outcomes because they do a better job of promoting reflection or are more supportive of social interaction. Likewise, programs that incorporate more structured therapeutic activities with smaller groups may be particularly effective for veterans with more serious mental health issues. Even with similar programs, however, the dynamics among participants sharing the experience can have strong impacts. Ideally, a more systematic investigation controlling for some of these issues would allow comparison of outcomes associated with participation in different types of programs. Realistically, however, it would take a very large effort to rule out the potential impact of all such variations and even then there is no way to control for many possible influences – for example, in the participants' daily lives when they return from their outdoor experience.

The results also raise questions about the conditions under which benefits are more likely to be sustained over longer time periods. For instance, future studies may examine whether longer interventions lead to more lasting benefits, whether benefits could be sustained more easily if extended group-based wilderness programs were paired with more regular single or half-day group-based nature recreation experiences, and whether there may be advantages to incorporating outdoor recreation experiences into more conventional therapeutic approaches.

CONCLUSION

Taken together, results of this study suggest that extended, group-based nature recreation experiences offered by organizations such as the Sierra Club can have significant positive impacts on veterans. These findings also indicate that veterans with more severe health issues may find these programs especially beneficial. The positive outcomes associated with these programs can partly be attributed to spending time in restorative natural environments, however there are a number of other aspects of this experience that likely play an important role, such as personal challenge and companionship with other veterans. Although more research is clearly needed, using extended group-based outdoor recreation programs to ease veterans' transition back into civilian life seems to be a promising approach.

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APPENDIX A: Information about Partner Organizations

Main Sponsor:	The Sierra Club's Military Families and Veterans Initiative
Contact Information:	50 F Street, NW Washington, DC 20001 http://sierraclub.org/military/
Program Overview:	The Sierra Club's Military Family and Veterans Initiative (MFVI) is a part of Mission Outdoors, the Sierra Club's campaign to ensure that America gets outside. MFVI helps American military service members, veterans, and their families use the land they defended by providing a variety of opportunities for military service members and their families to find adventure, camaraderie, a sense of mission, and relaxation through outdoor experiences. MFVI accomplished this mission by networking with a diverse set of coalition partners to showcase that outdoor experiences are critical in helping heal and empower military veterans and their families.
Partner Organization:	Higher Ground
Contact Information:	120 Second Avenue, Suite 206 P.O. Box 6791 Ketchum, ID 83340 (208) 726-9298 http://www.highergroundsv.org
Program Overview:	Higher Ground (HG) uses therapeutic recreation to facilitate a change in perspective, giving injured service members the physical skills, confidence, and coping strategies necessary for a successful reintegration into their families and home communities. HG is recognized as one of the premier rehabilitation programs in the country by the Department of Defense, military medical centers, and veteran service organizations. HG serves military personnel and veterans with Traumatic Brain Injuries (TBIs), Post Traumatic Stress Disorder (PTSD) and other polytrauma.

Partner Organization: Wasatch Adaptive Sports

Contact Information: Wasatch Adaptive Sports
Snowbird Ski and Summer Resort
Hwy 210 Little Cottonwood Canyon Rd
Snowbird, Utah 84092
(801) 933-2188 (office)

<http://wasatchadaptivesports.org>

Program Overview: The mission of Wasatch Adaptive Sports is to promote healing, health and well-being among combat veterans coping with physical, cognitive and emotional difficulties. War disrupts the most basic beliefs of personal safety, trust, mastery, and sense of control. Creating venues beyond the traditional medical center setting is essential in engaging and promoting healing for some veterans. With the support of the Sierra Club, Wasatch Adaptive Sports and the George E. Wahlen Department of Veteran Affairs Medical Center is fortunate to create outdoor healing opportunities for local veterans.

Partner Organization: Wilderness Inquiry

Contact Information: 808 14th Avenue SE
Minneapolis, MN 55414-1516
(800) 728-0719

www.wildernessinquiry.org/veterans

Program Overview: Wilderness Inquiry (WI) treasures the freedom of exploring America's wild places and is committed to never forgetting those who defend and protect these beautiful lands. We are honored to serve our nation's veterans through special trips and events designed to help veterans, of all abilities and backgrounds, enjoy the great outdoor freedoms they've helped provide for us all. WI provides outdoor adventure training trips designed to build on veterans' leadership experience and promote lifelong outdoor recreation skills. WI also provides outdoor experiences through sponsored veteran exchange trips. Every year WI serves about 800 veterans through various trips and programs.

Partner Organization: Women's Wilderness Institute

Contact Information: 1501 Lee Hill Drive Unit 16
Boulder, CO 80304
(303) 938-9191

<http://www.womenswilderness.org>

Program Overview: Women's Wilderness Institute works with female veterans and women spouses/domestic partners of veterans by offering wilderness-based retreats. These retreats offer US Military service women the opportunity to heal many of the wounds of war, learn life skills and coping strategies, and connect with other women with shared experiences.

APPENDIX B: Survey Instruments

Exploring the Benefits of Outdoor Experience on Veterans: Initial Survey

Thank you for agreeing to participate in this study. The purpose of this research is to help us understand the impact of extended outdoor recreation experiences on veterans. This survey asks about your outlook on life, and how you're dealing with life challenges. Please answer these questions as completely and accurately as possible.

We want to assure you that the privacy of all study participants is of utmost importance to us. There is no way for us to identify you; we do not have names of any study participants. Your answers cannot be traced to you as an individual and will not be reported in any way that violates your complete privacy.

PARTICIPANT ID

Example: Name Date of Birth Participant ID
 John Smith January 1, 1980 JS-01-01-1980

1. Please provide your participant ID (see example above): _____

BACKGROUND

2. Gender: ☐ Male ☐ Female
3. Education: ☐ High School ☐ Two-year degree ☐ Post-graduate degree
 ☐ Some College ☐ Four-year degree
4. Are you currently employed?
☐ No ☐ Yes → If yes, please describe: _____

5. How often do you experience physical or mental health issues that get in the way of your everyday life?
☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Very Often
6. How much time has passed since your last active duty assignment? _____ years
7. Briefly describe your military service history (i.e., branch of the military, specialty, deployment history).

8. Do you have any physical disabilities or health conditions that could make it more challenging to participate in an extended outdoor recreation experience?
☐ No
☐ Yes → If yes, please describe: _____

9. Have you received treatment or counseling for any mental health or substance abuse issues since your last deployment (e.g., depression, PTSD, anxiety, drug/alcohol addiction)?
☐ No
☐ Yes → If yes, please describe: _____

10. Have you participated in any other organized group outdoor expeditions since ending your military service?
☐ No
☐ Yes → If yes, please describe: _____

NEXT PAGE →

LIFE FUNCTIONING & WELL-BEING

1. In the last few weeks, how often have you felt...

1 = never					2 = rarely	3 = sometimes	4 = often	5 = very often
1	2	3	4	5	You were not able to control the important things in your life?			
1	2	3	4	5	Confident about your ability to handle personal problems?			
1	2	3	4	5	Like an outsider?			
1	2	3	4	5	Things were going your way?			
1	2	3	4	5	Difficulties were piling up so high that you could not overcome them?			
1	2	3	4	5	Isolated from others?			
1	2	3	4	5	Like you overreacted to small problems?			
1	2	3	4	5	Like your life had clear goals and purpose?			
1	2	3	4	5	Connected to the people around you?			
1	2	3	4	5	Like you were being treated unfairly?			
1	2	3	4	5	That you lack companionship?			
1	2	3	4	5	Like you have been left out?			
1	2	3	4	5	In tune with the world?			

2. Over the last few weeks, how well have you been doing in each of the following areas?

1 = not at all well					2 = slightly well	3 = moderately well	4 = very well	5 = extremely well
1	2	3	4	5	Getting started on activities (tasks, jobs) you intend to do.			
1	2	3	4	5	Following through on your plans.			
1	2	3	4	5	Doing things that take time and effort.			
1	2	3	4	5	Making your mind up about things.			
1	2	3	4	5	Keeping your mind on what you are doing.			
1	2	3	4	5	Remembering to do all the things you started out to do.			
1	2	3	4	5	Keeping your mind on what others are saying.			
1	2	3	4	5	Keeping yourself from saying or doing things you did not want to say or do.			
1	2	3	4	5	Being patient with others.			

3. In the last few weeks, how often have you had the following feelings?

1 = never					2 = rarely	3 = sometimes	4 = often	5 = very often
1	2	3	4	5	Interested			
1	2	3	4	5	Distressed			
1	2	3	4	5	Excited			
1	2	3	4	5	Upset			
1	2	3	4	5	Strong			
1	2	3	4	5	Guilty			
1	2	3	4	5	Scared			
1	2	3	4	5	Hostile			
1	2	3	4	5	Enthusiastic			
1	2	3	4	5	Afraid			
1	2	3	4	5	Calm			
1	2	3	4	5	Proud			
1	2	3	4	5	Irritable			
1	2	3	4	5	Alert			
1	2	3	4	5	Ashamed			
1	2	3	4	5	Inspired			
1	2	3	4	5	Nervous			
1	2	3	4	5	Determined			
1	2	3	4	5	Jittery			
1	2	3	4	5	Active			
1	2	3	4	5	Peaceful			
1	2	3	4	5	Relaxed			

NEXT PAGE →

4. Please indicate how much you agree with the following statements.

1 = strongly disagree					2 = disagree	3 = not sure	4 = agree	5 = strongly agree
1	2	3	4	5	I feel like I am free to decide for myself how to live my life.			
1	2	3	4	5	I generally feel free to express my ideas and opinions.			
1	2	3	4	5	I feel like I can pretty much be myself in daily situations.			
1	2	3	4	5	People I know tell me I am competent at what I do.			
1	2	3	4	5	Most days I feel a sense of accomplishment from what I do.			
1	2	3	4	5	I often feel very capable.			
1	2	3	4	5	I get along well with people I come into contact with.			
1	2	3	4	5	I consider the people I regularly interact with to be my friends.			
1	2	3	4	5	People in my life care about me.			

5. When confronted with a difficult situation how frequently do you...

1 = never					2 = rarely	3 = sometimes	4 = often	5 = very often
1	2	3	4	5	Make a plan of action and follow it.			
1	2	3	4	5	Try to look on the bright side of things.			
1	2	3	4	5	Hope the problem will take care of itself.			
1	2	3	4	5	Try to put the problem out of your mind.			
1	2	3	4	5	Tackle the problem head on.			
1	2	3	4	5	Step back and put things in perspective.			
1	2	3	4	5	Hope for a miracle.			
1	2	3	4	5	Try not to think about the problem.			

6. Please indicate how much you agree with the following statements.

1 = strongly disagree					2 = disagree	3 = not sure	4 = agree	5 = strongly agree
1	2	3	4	5	I feel my life is going pretty well.			
1	2	3	4	5	It's easy to think of ways to get the things in life that are most important to me.			
1	2	3	4	5	I am doing just as well as other people my age.			
1	2	3	4	5	When I have a problem, I can come up with lots of ways to solve it.			
1	2	3	4	5	I think the things I have done in the past will help me in the future.			
1	2	3	4	5	Even when others want to give up, I feel I can find ways to solve a problem.			
1	2	3	4	5	I feel something I can't quite define is missing from my life.			
1	2	3	4	5	I feel optimistic about the future.			
1	2	3	4	5	My life is in my hands and I am in control of it.			

7. In a typical week, how often do you engage in activities that provide opportunities for...

1 = never					2 = rarely	3 = sometimes	4 = often	5 = very often
1	2	3	4	5	Physical activity			
1	2	3	4	5	Spiritual fulfillment			
1	2	3	4	5	Being alone			
1	2	3	4	5	Helping or caring for others			
1	2	3	4	5	Sharing thoughts or feelings			
1	2	3	4	5	Reflection			
1	2	3	4	5	Listening to others			
1	2	3	4	5	Escape or distraction			
1	2	3	4	5	Sharing your expertise			
1	2	3	4	5	Mental challenge			
1	2	3	4	5	Fun and pleasure			
1	2	3	4	5	Working with others			
1	2	3	4	5	Creativity			
1	2	3	4	5	Time outdoors			
1	2	3	4	5	Laughter or humor			
1	2	3	4	5	Taking risks			
1	2	3	4	5	Testing your abilities			
1	2	3	4	5	Learning new things			

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8. If the need or opportunity arose, how confident would you be in your ability to do the following...

1 = not at all					2 = a little	3 = somewhat	4 = very much	5 = extremely
1	2	3	4	5	Locate resources or services available to veterans and their families.			
1	2	3	4	5	Contact organizations that offer resources or services to veterans and their families.			
1	2	3	4	5	Take advantage of the resources or services available to veterans and their families.			
1	2	3	4	5	Seek a new job.			
1	2	3	4	5	Learn about educational or training programs.			

9. Please indicate how satisfied you are with the following areas of your life right now.

1 = not at all satisfied							10 = extremely satisfied			
1	2	3	4	5	6	7	8	9	10	Life as a whole
1	2	3	4	5	6	7	8	9	10	Education
1	2	3	4	5	6	7	8	9	10	Present job or work
1	2	3	4	5	6	7	8	9	10	Spiritual or religious beliefs
1	2	3	4	5	6	7	8	9	10	Housing
1	2	3	4	5	6	7	8	9	10	Family life
1	2	3	4	5	6	7	8	9	10	Health
1	2	3	4	5	6	7	8	9	10	Friends and social life
1	2	3	4	5	6	7	8	9	10	Neighborhood overall
1	2	3	4	5	6	7	8	9	10	Ability to help others
1	2	3	4	5	6	7	8	9	10	Achievement of goals
1	2	3	4	5	6	7	8	9	10	Leisure
1	2	3	4	5	6	7	8	9	10	Physical safety
1	2	3	4	5	6	7	8	9	10	Energy level

10. The transition to civilian life can be difficult for many veterans. What advice would you give to other veterans who are facing this transition?

THANK YOU.

Exploring the Benefits of Outdoor Experience on Veterans: Post Expedition Survey

Thank you for agreeing to participate in this study. The purpose of this research is to help us understand the impact of an extended outdoor recreation experience on veterans. The following survey asks about you have been doing since returning from your outdoor recreation expedition. Please answer these questions as completely and accurately as possible.

We want to assure you that the privacy of all study participants is of utmost importance to us. There is no way for us to identify you; we do not have names of any study participants. Your answers cannot be traced to you as an individual and will not be reported in any way that violates your complete privacy.

PARTICIPANT ID

Example: Name Date of Birth Participant ID
 John Smith January 1, 1980 JS-01-01-1980

1. Please provide your participant ID (see example above): _____

LIFE FUNCTIONING & WELL-BEING

2. In the last week, how often have you felt...

1 = never					2 = rarely	3 = sometimes	4 = often	5 = very often
1	2	3	4	5	You were not able to control the important things in your life?			
1	2	3	4	5	Confident about your ability to handle personal problems?			
1	2	3	4	5	Like an outsider?			
1	2	3	4	5	Things were going your way?			
1	2	3	4	5	Difficulties were piling up so high that you could not overcome them?			
1	2	3	4	5	Isolated from others?			
1	2	3	4	5	Like you overreacted to small problems?			
1	2	3	4	5	Like your life had clear goals and purpose?			
1	2	3	4	5	Connected to the people around you?			
1	2	3	4	5	Like you were being treated unfairly?			
1	2	3	4	5	That you lack companionship?			
1	2	3	4	5	Like you have been left out?			
1	2	3	4	5	In tune with the world?			

3. Over the last week, how well have you been doing in each of the following areas?

1 = not at all well					2 = slightly well	3 = moderately well	4 = very well	5 = extremely well
1	2	3	4	5	Getting started on activities (tasks, jobs) you intend to do.			
1	2	3	4	5	Following through on your plans.			
1	2	3	4	5	Doing things that take time and effort.			
1	2	3	4	5	Making your mind up about things.			
1	2	3	4	5	Keeping your mind on what you are doing.			
1	2	3	4	5	Remembering to do all the things you started out to do.			
1	2	3	4	5	Keeping your mind on what others are saying.			
1	2	3	4	5	Keeping yourself from saying or doing things you did not want to say or do.			
1	2	3	4	5	Being patient with others.			

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4. In the last week, how often have you had the following feelings?

1 = never					2 = rarely					3 = sometimes					4 = often					5 = very often				
1	2	3	4	5	Interested	1	2	3	4	5	Proud													
1	2	3	4	5	Distressed	1	2	3	4	5	Irritable													
1	2	3	4	5	Excited	1	2	3	4	5	Alert													
1	2	3	4	5	Upset	1	2	3	4	5	Ashamed													
1	2	3	4	5	Strong	1	2	3	4	5	Inspired													
1	2	3	4	5	Guilty	1	2	3	4	5	Nervous													
1	2	3	4	5	Scared	1	2	3	4	5	Determined													
1	2	3	4	5	Hostile	1	2	3	4	5	Jittery													
1	2	3	4	5	Enthusiastic	1	2	3	4	5	Active													
1	2	3	4	5	Afraid	1	2	3	4	5	Peaceful													
1	2	3	4	5	Calm	1	2	3	4	5	Relaxed													

5. Please indicate how much you agree with the following statements.

1 = strongly disagree					2 = disagree					3 = not sure					4 = agree					5 = strongly agree				
1	2	3	4	5	I feel my life is going pretty well.																			
1	2	3	4	5	It's easy to think of ways to get the things in life that are most important to me.																			
1	2	3	4	5	I am doing just as well as other people my age.																			
1	2	3	4	5	When I have a problem, I can come up with lots of ways to solve it.																			
1	2	3	4	5	I think the things I have done in the past will help me in the future.																			
1	2	3	4	5	Even when others want to give up, I feel I can find ways to solve a problem.																			
1	2	3	4	5	I feel something I can't quite define is missing from my life.																			
1	2	3	4	5	I feel optimistic about the future.																			
1	2	3	4	5	My life is in my hands and I am in control of it.																			

6. In the last week, how often have you engaged in activities that provided opportunities for...

1 = never					2 = rarely					3 = sometimes					4 = often					5 = very often				
1	2	3	4	5	Physical activity	1	2	3	4	5	Mental challenge													
1	2	3	4	5	Spiritual fulfillment	1	2	3	4	5	Fun and pleasure													
1	2	3	4	5	Being alone	1	2	3	4	5	Working with others													
1	2	3	4	5	Helping or caring for others	1	2	3	4	5	Creativity													
1	2	3	4	5	Sharing thoughts or feelings	1	2	3	4	5	Time outdoors													
1	2	3	4	5	Reflection	1	2	3	4	5	Laughter or humor													
1	2	3	4	5	Listening to others	1	2	3	4	5	Taking risks													
1	2	3	4	5	Escape or distraction	1	2	3	4	5	Testing your abilities													
1	2	3	4	5	Sharing your expertise	1	2	3	4	5	Learning new things													

7. If the need or opportunity arose, how confident would you be in your ability to do the following...

1 = not at all					2 = a little					3 = somewhat					4 = very much					5 = extremely				
1	2	3	4	5	Locate resources or services available to veterans and their families.																			
1	2	3	4	5	Contact organizations that offer resources or services to veterans and their families.																			
1	2	3	4	5	Take advantage of the resources or services available to veterans and their families.																			
1	2	3	4	5	Seek a new job.																			
1	2	3	4	5	Learn about educational or training programs.																			

THANK YOU.

Exploring the Benefits of Outdoor Experience on Veterans: Follow-Up Survey

Thank you for agreeing to participate in this study. The purpose of this research is to help us understand the impact of an extended outdoor recreation experience on veterans. This survey asks about your outlook on life, and how you are dealing with life challenges. Please answer these questions as completely and accurately as possible.

We want to assure you that the privacy of all study participants is of utmost importance to us. There is no way for us to identify you; we do not have names of any study participants. Your answers cannot be traced to you as an individual and will not be reported in any way that violates your complete privacy.

PARTICIPANT ID

Example: Name Date of Birth Participant ID
 John Smith January 1, 1980 JS-01-01-1980

1. Please provide your participant ID (see example above): _____

LIFE FUNCTIONING & WELL-BEING

2. In the last few weeks, how often have you felt...

1 = never 2 = rarely 3 = sometimes 4 = often 5 = very often					
1	2	3	4	5	You were not able to control the important things in your life?
1	2	3	4	5	Confident about your ability to handle personal problems?
1	2	3	4	5	Like an outsider?
1	2	3	4	5	Things were going your way?
1	2	3	4	5	Difficulties were piling up so high that you could not overcome them?
1	2	3	4	5	Isolated from others?
1	2	3	4	5	Like you overreacted to small problems?
1	2	3	4	5	Like your life had clear goals and purpose?
1	2	3	4	5	Connected to the people around you?
1	2	3	4	5	Like you were being treated unfairly?
1	2	3	4	5	That you lack companionship?
1	2	3	4	5	Like you have been left out?
1	2	3	4	5	In tune with the world?

3. In the last few weeks, how often have you had the following feelings?

1 = never 2 = rarely 3 = sometimes 4 = often 5 = very often					
1	2	3	4	5	Interested
1	2	3	4	5	Distressed
1	2	3	4	5	Excited
1	2	3	4	5	Upset
1	2	3	4	5	Strong
1	2	3	4	5	Guilty
1	2	3	4	5	Scared
1	2	3	4	5	Hostile
1	2	3	4	5	Enthusiastic
1	2	3	4	5	Afraid
1	2	3	4	5	Calm
1	2	3	4	5	Proud
1	2	3	4	5	Irritable
1	2	3	4	5	Alert
1	2	3	4	5	Ashamed
1	2	3	4	5	Inspired
1	2	3	4	5	Nervous
1	2	3	4	5	Determined
1	2	3	4	5	Jittery
1	2	3	4	5	Active
1	2	3	4	5	Peaceful
1	2	3	4	5	Relaxed

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4. Over the last few weeks, how well have you been doing in each of the following areas?

1 = not at all well 2 = slightly well 3 = moderately well 4 = very well 5 = extremely well					
1	2	3	4	5	Getting started on activities (tasks, jobs) you intend to do.
1	2	3	4	5	Following through on your plans.
1	2	3	4	5	Doing things that take time and effort.
1	2	3	4	5	Making your mind up about things.
1	2	3	4	5	Keeping your mind on what you are doing.
1	2	3	4	5	Remembering to do all the things you started out to do.
1	2	3	4	5	Keeping your mind on what others are saying.
1	2	3	4	5	Keeping yourself from saying or doing things you did not want to say or do.
1	2	3	4	5	Being patient with others.

5. Please indicate how much you agree with the following statements.

1 = strongly disagree 2 = disagree 3 = not sure 4 = agree 5 = strongly agree					
1	2	3	4	5	I feel like I am free to decide for myself how to live my life.
1	2	3	4	5	I generally feel free to express my ideas and opinions.
1	2	3	4	5	I feel like I can pretty much be myself in daily situations.
1	2	3	4	5	People I know tell me I am competent at what I do.
1	2	3	4	5	Most days I feel a sense of accomplishment from what I do.
1	2	3	4	5	I often feel very capable.
1	2	3	4	5	I get along well with people I come into contact with.
1	2	3	4	5	I consider the people I regularly interact with to be my friends.
1	2	3	4	5	People in my life care about me.

6. When confronted with a difficult situation how frequently do you...

1 = never 2 = rarely 3 = sometimes 4 = often 5 = very often					
1	2	3	4	5	Make a plan of action and follow it.
1	2	3	4	5	Try to look on the bright side of things.
1	2	3	4	5	Hope the problem will take care of itself.
1	2	3	4	5	Try to put the problem out of your mind.
1	2	3	4	5	Tackle the problem head on.
1	2	3	4	5	Step back and put things in perspective.
1	2	3	4	5	Hope for a miracle.
1	2	3	4	5	Try not to think about the problem.

7. Please indicate how much you agree with the following statements.

1 = strongly disagree 2 = disagree 3 = not sure 4 = agree 5 = strongly agree					
1	2	3	4	5	I feel my life is going pretty well.
1	2	3	4	5	It's easy to think of ways to get the things in life that are most important to me.
1	2	3	4	5	I am doing just as well as other people my age.
1	2	3	4	5	When I have a problem, I can come up with lots of ways to solve it.
1	2	3	4	5	I think the things I have done in the past will help me in the future.
1	2	3	4	5	Even when others want to give up, I feel I can find ways to solve a problem.
1	2	3	4	5	I feel something I can't quite define is missing from my life.
1	2	3	4	5	I feel optimistic about the future.
1	2	3	4	5	My life is in my hands and I am in control of it.

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APPENDIX C: Factor Analysis Results

TABLE 1. Psychological Well-Being Categories

Category name and items included		Mean	S.D.	Alpha
PERCEIVED STRESS		2.60	.79	.79
<i>Items</i>	<i>Loadings</i>			
Things were going your way? (Rev)	.74			
You were not able to control the important things in your life?	.72			
Difficulties were piling up so high that you could not overcome them?	.71			
Confident about your ability to handle personal problems? (Rev)	.60			
ATTENTIONAL FUNCTIONING		2.73	.82	.93
<i>Items</i>	<i>Loadings</i>			
Keeping your mind on what you are doing.	.85			
Remembering to do all the things you started out to do.	.84			
Doing things that take time and effort.	.83			
Getting started on activities (tasks, jobs) you intend to do.	.83			
Making your mind up about things.	.82			
Following through on your plans.	.81			
Keeping your mind on what others are saying.	.77			
Keeping yourself from saying/doing things you did not want to say or do.	.66			
Being patient with others.	.61			
POSITIVE AFFECT		3.15	.66	.89
<i>Items</i>	<i>Loadings</i>			
Enthusiastic	.86			
Strong	.78			
Interested	.77			
Active	.73			
Determined	.72			
Inspired	.72			
Excited	.58			
Proud	.55			
NEGATIVE AFFECT		2.77	.79	.92
<i>Items</i>	<i>Loadings</i>			
Upset	.79			
Distressed	.77			
Afraid	.77			
Scared	.77			
Ashamed	.76			
Nervous	.75			
Guilty	.75			
Jittery	.74			
Irritable	.70			
Hostile	.57			
TRANQUILITY		2.93	.84	.86
<i>Items</i>	<i>Loadings</i>			
Relaxed	.89			
Peaceful	.83			
Calm	.74			

TABLE 2. Social Functioning & Life Outlook Categories

Category name and items included		Mean	S.D.	Alpha
SOCIAL FUNCTIONING		3.06	.95	.89
<i>Items</i>	<i>Loadings</i>			
Isolated from others? (Rev)	.88			
Like an outsider? (Rev)	.85			
Like you have been left out? (Rev)	.84			
Connected to the people around you?	.75			
That you lack companionship? (Rev)	.70			
In tune with the world?	.56			
LIFE OUTLOOK		3.19	.78	.90
<i>Items</i>	<i>Loadings</i>			
I feel my life is going pretty well.	.83			
It's easy to think of ways to get the things in life that are most important.	.81			
I think the things I have done in the past will help me in the future.	.76			
I feel optimistic about the future.	.76			
When I have a problem, I can come up with lots of ways to solve it.	.75			
I am doing just as well as other people my age.	.70			
Even when others want to give up, I feel I can find ways to solve a problem.	.68			
My life is in my hands and I am in control of it.	.60			
I feel something I can't quite define is missing from my life. (Rev)	.48			

TABLE 3. Activity Engagement Categories

Category name and items included		Mean	S.D.	Alpha
SOLITUDE & ESCAPE		3.47	.84	.57
<i>Items</i>	<i>Loadings</i>			
Being alone.	.56			
Escape or distraction.	.50			
EXPLORATION		3.11	.63	.84
<i>Items</i>	<i>Loadings</i>			
Testing your abilities.	.78			
Physical activity.	.66			
Learning new things.	.64			
Fun and pleasure.	.62			
Laughter or humor.	.59			
Creativity.	.52			
Time outdoors.	.52			
Taking risks.	.47			
LISTENING & HELPING		2.95	.71	.83
<i>Items</i>	<i>Loadings</i>			
Listening to others.	.73			
Helping or caring for others.	.69			
Sharing thoughts or feelings.	.62			
Sharing your experience.	.58			
Mental challenge.	.52			
Reflection.	.52			
Spiritual fulfillment.	.50			