

A Theoretical Model to Measure the Appraisal and Coping Response to Hassles in Outdoor Recreation Settings

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Confirmatory factor analysis was used to assess measurement models for the stress/coping process experienced in outdoor recreation settings. Three separate measurement models were evaluated: (1) experience use history and social support, (2) secondary appraisal, and (3) ways of coping scales. This research documents the development of models that can be improved upon by future researchers and promote stress/coping theory building in outdoor recreation research. Social support performed well, and experience use history was reduced to a single dimension measure. The secondary appraisal factor was problematic; the four variables may not be functioning as a unidimensional measure. A model consisting of two, second-order factors and four error covariances was identified for the ways of coping scales. An acceptable fit was achieved for all three models, statistical and theoretical justification is provided for modifications made to the models, and explanations of problems are offered.

Keywords stress, coping, hassles, experience use history, social support, confirmatory factor analysis

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Introduction

The purpose of this article is to evaluate the factor structures, through confirmatory factor analysis (CFA), of constructs (experience use history, social support, appraisals, and ways of coping) that can be used to understand the stress/coping process associated with conflict situations experienced in outdoor recreation settings. This research documents the development of a model that can be adapted by future researchers interested in understanding recreationists' coping responses in stressful situations. Thus, the value or importance of this research lies in the dissemination of information in an attempt to foster the development of improved models. Anderson and Gerbing (1988) posit the importance of the CFA step in the research process: "Confirmatory methods provide researchers with a comprehensive means for assessing and modifying theoretical models. As such, they offer great potential for furthering theory development" (p. 411). The constructs associated with the stress/coping model proposed in this CFA are posited upon established theory and research. A good fitting measurement model is evidence for construct validity of the latent variables. This provides evidence "that you really are studying the hypothetical constructs of interest . . . this is important, because many studies published in the social sciences offer no evidence concerning the construct validity of their variables" (Hatcher, 1998, p. 258). Specifically, the confirmatory measurement model provides an assessment of convergent and discriminant validity. When developed into a structural equation model, the combined steps of the process provide an overall assessment of construct validity (Anderson & Gerbing, 1988).

The model was designed using the stress/coping theory (Lazarus & Folkman, 1984) that has been used to understand recreationist response to conflict-related stress in outdoor recreation settings. Schneider (1995) and Schneider and Hammitt (1995) proposed the original conceptual model, based on the work of Lazarus and Folkman (1984). Using this model, conflict was believed to be the result of situations appraised as stressful with a coping process ensuing after the appraisal. The model presumed that outdoor recreation conflict incidents are stressful or produce stress-related situations and response to conflict likely mirrors the response to stress. Miller (1997), expanding on Schneider (1995), studied visitors' response to stress-related conflict at Glacier National Park, Montana, and provided a second application of the Lazarus and Folkman (1984) model in a recreation conflict setting. In outdoor recreation conflict research, the stress/coping model was proposed to help understand recreationists' appraisal of and response to situations and how the stress/coping process affects the recreation experience. This conceptualization of stress/coping theory is different than that used in leisure-health stress coping research (Coleman & Iso-Ahola, 1993; Iso-Ahola & Park, 1996; Iwasaki & Mannell, 2000) which uses stress/coping theory to investigate how leisure is used as a coping mechanism in response to stress from other aspects of life. While both avenues of research fall under the rubric of stress/coping theory, they are distinctly different.

A defining factor between this study and other stress-conflict research in outdoor recreation was the conceptualization of stress as hassles in recreation settings. Hassles were defined as the irritating and frustrating demands or situations that occur during recreation experiences; they can range from minor annoyances to fairly major pressures, problems, or difficulties. This definition was adapted from Kanner, Coyne, Schaefer, and Lazarus (1981). Seminal work in developing the daily hassles construct is illustrated by DeLongis (1985), DeLongis, Folkman, and Lazarus (1988), Kanner et al. (1981), and Lazarus, DeLongis, Folkman, and Gruen (1985). "The hassles scales were predicated on the view that the impact of major changes lies in what they do to the daily patterns of stress and coping and that much stress is predicated not on change but rather on daily demands, resources, and constraints operating in chronic or recurrent person-environment relationships" (Lazarus,

1990, p. 8). Development of the daily hassle concept embodied the notion that the common or daily demands on a person have a greater effect than larger life events (e.g., death of a loved one or divorce). Life events are believed to affect the individual by establishing the conditions for additional daily hassles to occur.

Psychological Stress Appraisal and Coping

Lazarus and Folkman (1984) suggested that stress be treated as an organizing concept for understanding a wide range of phenomena; stress is not a single variable, but a rubric that includes many other variables. The stress process is dependent on the relationship between the stress stimulus, the individual's response, and reaction. The process is constantly changing as the individual appraises the situation and copes if necessary. Lazarus and Folkman (1984) defined psychological stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well being" (p. 19). Thus, recreation hassles were addressed as situations that cause stress, and hassles are a form of stress.

The stress process is hypothesized as follows: certain stressful conditions exist within the individual and in the situation, there is interactivity of the mediating appraisal process, and the interactive process has an effect on the ways of coping and response to the stress. The transactional model developed by Lazarus and Folkman (1984) includes influencing factors, appraisals, coping and outcomes (refer to Figure 1). The first set of influencing factors (personal factors) has an effect on how the individual perceives a person-environment relationship. A second set of influencing factors, situation factors, includes novelty, predictability, duration, and imminence. Perceptions based on these influencing factors and environmental factors form the foundation for the cognitive appraisal of the situation as being stressful or not.

Two separate appraisal processes determine if a situation is stressful or not. First, the primary appraisal determines if the situation is considered stressful. A secondary appraisal is initiated if a situation is deemed stressful. The appraisal process is a complex evaluative process that takes into account which coping options are available, the likelihood that a given coping option will accomplish what it is supposed to, and that the individual can apply the strategy effectively (Lazarus & Folkman, 1984).

Coping is the process through which the person manages the demands of the person-environment relationship that are appraised as stressful, taxing, or exceeding the resources

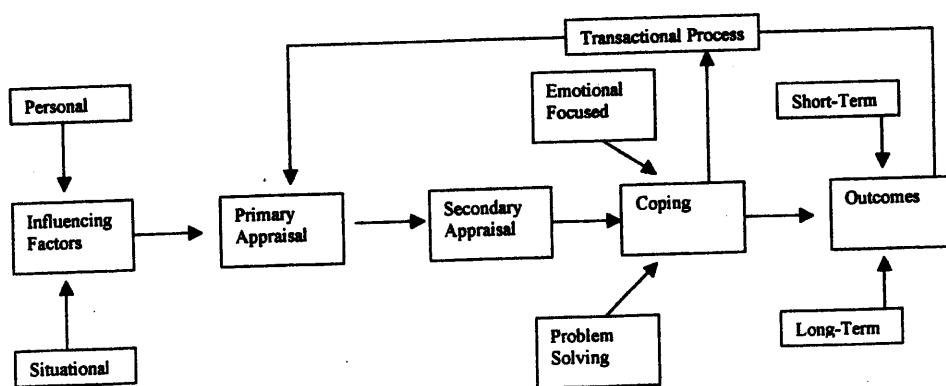


FIGURE 1 Transactional stress/coping model based on the theory developed by Lazarus and Folkman (1984).

of the individual (Decker & Borgen, 1993; Lazarus & Folkman, 1984; Taylor & Schneider, 1989). As coping strategies are initiated, and the person-environment relationship changes, the individual reappraises the situation. This process continues until the condition is deemed not stressful or at least tolerable.

Coping research has identified two major groups of coping strategies (Lazarus & Folkman, 1984; Taylor & Schneider, 1989). Emotion-focused coping occurs when there has been an appraisal that nothing can be done to modify harmful, threatening, or challenging person-environment transactions. This strategy is directed toward lessening emotional distress through avoidance, distancing, selective attention, positive comparisons and finding positive value in negative events. Problem-focused coping, on the other hand, can be employed when the situation is appraised as changeable. These coping methods are directed at defining the problem, generating alternative solutions, weighing the alternatives in terms of their costs and benefits, choosing among them, and acting. Finally, outcomes are produced as a result of the process. Lazarus and Folkman (1984) describe short-term outcomes as positive and negative feelings and long-term outcomes as social functioning and morale. The exact short-term and long-term outcomes are determined by the coping option chosen and may vary depending on setting. The research discussed herein addresses short-term outcomes and did not measure long-term outcomes.

Stress Model Measures

The Lazarus and Folkman (1984) model discussed above has provided overriding guidance in stress/coping research since its inception. However, the context specific nature of the stress process often necessitates the adaptation of the appraisal and coping measures. Following is a discussion of the components comprising the stress/coping model and their operationalization and follow the order illustrated in Figure 1: influencing factors (experience use history and social support), secondary appraisal, and ways of coping. A checklist of 21 possible stress sources was used as a primary appraisal measure; the category 'other' with an option to handwrite a source was also included. The items were not mutually exclusive and did not form a scale. Thus, primary appraisal was not included in the CFA procedure.

Experience Use History

Experience use history (EUH) is rooted in cognitive development and information processing theories. These theories posit that the more experienced user, who has accumulated a large information bank, can organize experiences in a more elaborate way. The information gained through experience helps guide the individual's appraisals and behaviors (Kaplan & Kaplan, 1982). Williams, Schreyer, and Knopf (1990) used cognitive development theory to support the construct of experience use history. "Research based in developmental theory... clearly demonstrates that the content and structure of cognitions evolve with development, leading to greater differentiation, complexity, abstraction, and integration of cognitions" (p. 39). EUH can affect the stress/coping process in outdoor recreation settings. Research has identified differences in conflict situation perceptions between novice and experienced recreationists (Schreyer & Lime, 1984); experienced users have been found more likely to appraise situations as conflicting than novices. Specifically, Schreyer and Lime's (1984) findings suggest that differences in appraisals exist based on level of experience and that individuals with more experience are more likely to engage in more problem-focused coping strategies (displacement, avoidance, and political and legal actions).

Williams et al. (1990) used exploratory factor analysis to investigate the EUH construct associated with river floaters' motives for participation in river recreation activities. The sample was segmented into three levels of experience (novices, visitors, and veterans) based on the EUH variables. Factor analyses were performed for each group to determine if the motivational-factor structures differed among groups. The factor structures for novices and beginners were similar to each other. However, the motivational-factor structure for veterans was different from the other groups. Veterans made a distinction between the factors escape stress and escape people; novices and visitors combined these into one factor. This suggests a more differentiated view of the escape domain by veterans. Veterans linked self-awareness, autonomy, and challenge, which the authors suggest is an indicator of integration and greater cognitive complexity. The authors assert, "In terms of developmental theory, the quantitative analysis of factor loading vectors demonstrates that important conceptual distinctions are made [concerning the recreation experience] with increasing experience" (Williams et al., 1990, p. 51).

Exploratory factor analysis and principal component analysis were also used by Watson and Niccolucci (1992) to investigate if EUH is a multi-dimensional construct. Six questions were asked of Cohutta Wilderness visitors in the Southern Appalachian Mountains. Separate analyses were performed for data collected at each site. The first analysis retained three principal components that explained a total of 85.5% of the variance. However, defining the three components was difficult; "It is not apparent what the relationship is between those variables receiving high eigenvector values within a principal component. For instance, it appears that a mixture of site-specific and general experience items is very influential in the first principal component" (Watson & Niccolucci, 1992, p. 96). The varimax rotated, principal factor solution in the second analysis produced two distinct factors with loadings greater than 0.7 and explaining 74% of the total variance. Factor one was labeled "past experience to the specific site" and was represented by the items: number of previous visits to the site, years since first visit, and typical number of visits per year. The second factor was labeled "general wilderness experience" and was represented by the items: total number of other wilderness areas visited, years since first visited a wilderness, and typical number of visits to any wilderness. Watson and Niccolucci state that elements from these two factors are often combined to create a single index despite evidence of two distinct factors. Additional analysis is necessary to investigate if these dimensions appear consistently. "This would be an example of an opportunity for theory building about consistency in experience patterns across visitors to wilderness areas across different regions of the country" (p. 100).

A third study used principal factor analysis with varimax rotation to identify two similar factors of EUH for visitors to Canadian Wilderness areas (McFarlane, Boxall, & Watson, 1998). Results of the factor analysis identified two distinct factors with loadings greater than 0.4 and accounting for 95% of the total variance. The first factor represented experience at the specific wilderness and consisted of the items: years of experience at the site, number of trips to the site in the past ten years, number of trips to the site in the past three years, and years of experience in eastern Manitoba. The second factor represented general wilderness experience and consisted of the items: number of trips to other parks in the region in past ten years, average number of trips to other parks in the past three years, and number of other wilderness parks visited in the regions in the past ten years.

Two of the studies discussed above found EUH to be a multidimensional construct (McFarlane et al., 1998; Watson & Niccolucci, 1992). The scale used herein was designed based on the concept that EUH is a multidimensional construct. EUH was one influencing factor of the stress process investigated in conjunction with a second influencing factor of social support. The first model tested consisted of EUH and social support.

Social Support

One motivation for participation in leisure activities is to establish new friendships or strengthen existing relationships. In leisure and recreation related research, Coleman and Iso-Ahola (1993) theorized that as companionships are founded and fortified while participating in leisure activities, an individual's perception of available social support increases. This rationale is used to explain that participation in leisure activities may produce friendships and contacts that lead a person to perceive that they will receive social support when necessary. "Companionships and friendships developed and fostered through leisure engagement help people cope with excessive life stress and thereby help maintain or improve health" (Coleman & Iso-Ahola, 1993, p. 116).

Dunkel-Schetter, Folkman and Lazarus (1987) posit that social support is strongly correlated with the stress and coping process. Specifically, social support is considered a moderator in the stress process. Moderators are "the variety of appraisals, coping strategies, resistance factors, and vulnerabilities that modify how stress is experienced and what its effects may be" (Taylor & Aspinwall, 1996, p. 72). Moderators are believed to reduce the appraisal of stress when functioning in a positive manner. By reducing the appraisal it indirectly facilitates the coping process.

In general, social support refers to the resources that are provided to one person by another person or group (Cohen & Syme, 1985). Social support is segmented into two categories. Objective support is the amount of support that is actually provided to the individual. Subjective support is the extent to which an individual believes that social support will be provided in the event that it is necessary. Additional clarification is added to the concept by Cohen and Wills (1985), and Cohen, Mermelstein, Kamarck, and Hoberman (1985) who discuss social support as four separate support resources: esteem (that one is accepted by others and belongs), appraisal (information to help appraise situations), social companionship (spending time with others), and instrumental (provision of tangible services).

Cohen et al. (1985) developed and tested the Interpersonal Support Evaluation List (ISEL) consisting of 40 statements, which measure a respondent's perceived availability of social support. Ten statements measured each of the four components listed above. "Items were developed on theoretical grounds to cover the domain of supportive social resources that could potentially facilitate coping with stressful events" (p. 75).

Data were from 12 different studies conducted collaboratively by six universities using student and general population versions of the scales. Test-retest reliability was established through replication. The group titled "CMU I" took the test twice with a four-week interval; the correlation between tests was .87 for the entire scale and .87 for the appraisal sub scale. The "Oregon IV" group had a two-day interval between tests; the correlation between tests was .87 for the entire scale and .84 for the appraisal sub scale. The smoking sample, which consisted of non-college students, had entire scale and appraisal sub-scale correlations of .70 and .63, respectively, with an interval of six weeks and correlations of .74 and .60 with an interval of six months. A portion of the Oregon II group, which consisted of college students, retested after six months with correlations of .72 and .45 for the scale and appraisal sub scales. The reliability as estimated by coefficient alpha ranged from a low of .77 to a high of .92 for all replications.

The correlation for the Oregon II student group decreased on the six-month test in comparison to the smoking sample. The drop in the student group correlation was attributed to the fact that the initial test was conducted on freshman during their first six months of college. During this time their social ties with friends and family at home were still strong. After six months they were experiencing a transition where old relationships weaken and

new relationships were just forming. This is evidence that appraised social support is "not just a proxy for some underlying personality factor but in fact reflect changes in available support" (Cohen et al., 1985, p. 79). The difference in correlations within and between the general population group and the student group indicate that social support changes over time and that the stability of social support differs across populations.

Cohen et al. state that the issue of choosing a social support measure for any study is complex and controversial. They also emphasize that the instrument must provide specific information necessary to answer the question being posed. The current study used an adapted version of the appraisal support sub-scale. Specifically, the appraisal subscale was designed to measure an individual's perception that he/she have someone to talk to about problems experienced while recreating in the wilderness environment. The notion that a person's perception that support is available is more effective in reducing stress than actually receiving support is posited by Coleman and Iso-Ahola (1993) and Wethington and Kessler (1986). In addition, the appraisal scale represents a similar construct to leisure friendship measured in previous recreation research (Coleman & Iso-Ahola, 1993; Iso-Ahola & Park, 1996).

EUH and social support were hypothesized to covary in the tested model based on previous research. First, "a generalized beneficial effect of social support could occur because large social networks provide persons with regular positive experiences and a set of stable, socially rewarded roles in the community" (Cohen & Wills, 1985, p. 311). Specifically, support can be dependent on regularized social interaction or embeddedness in social roles. EUH associated with a location and activity may provide an indirect measure of regularized social interaction with other recreationists at the site or in the larger community of recreationists, and embeddedness in a recreation social network. Second, Cobb (1976) discusses that as life progresses and one gains life experience, support is derived increasingly from other members of the family, peers, and professionals in the applicable field. Cobb asserts that acquisition and use of a social support network is a dynamic process that is associated with life stage progression and experience. Finally, while discussing the effects of leisure-related social support on health, Coleman (1993) identified that the level of stress buffering was dependent on the level of participation in the leisure activity. More participation in leisure activities resulted in stronger social support and increased stress buffering. Thus, there appears to be a relationship between social support and EUH, although a direct-causal relationship was not hypothesized.

Secondary Appraisal

The secondary appraisal measure was originally designed to describe possible coping options. "According to appraisal theory, in a threatening or harmful situation that is appraised as holding few possibilities for beneficial change, the person will employ emotion-focused modes of coping. On the other hand, when a situation is appraised as having the potential for amelioration by action, the person will use problem-focused coping" (Lazarus & Folkman, 1984, p. 231). The secondary appraisal measure posited by Lazarus and Launier (1978) consisted of four items designed to determine perception of control of a situation. The items were originally operationalized by Folkman and Lazarus (1980) and measured using a dichotomous yes/no format. Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen (1986) operationalized the items using a five-point scale to determine the extent to which the situation was one "that you change or do something about," "that you had to accept," in which you 'needed to know more before you could act,' and 'in which you had to hold yourself back from doing what you wanted to do.' Both Schneider (1995) and Miller (1997) used the four-item, five-point measure. However, both studies operationalized secondary

appraisal items as individual measures rather than a scale. This study used the four-item, five-point items as a scale.

Ways of Coping

Individuals' responses to stressful situations have been measured using a ways of coping checklist. "The 'Ways of Coping' is a checklist of 68 items describing a broad range of behavioral and cognitive coping strategies that an individual might use in a specific stressful episode" (Folkman & Lazarus, 1980, p. 224). Lazarus (1966) and Lazarus and Launier (1978) provided the primary foundation for the checklist. The original checklist consisted of items grouped in the broad categories of emotion and problem-focused coping (Folkman & Lazarus, 1980). Later research, using principal factor analysis, identified the eight coping scales: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal (Folkman et al., 1986). The two broad categories of coping mechanisms still existed (emotion and problem-focused coping), but the more specific scales were used to measure coping responses as sub-scales within each. In addition to creating more specific coping sub-scales, a ways of coping checklist is usually designed with the specific stressful situation in mind. For example, a study of coping responses of veterinary medicine students (Brown, 1994) used 30 context specific coping items. A principal components analysis identified five factors: problem solving, social/emotional support seeking, wishful thinking, acquiescence, and reactive openness to experience. The author posited that the results of the study "lend support to the view that there are relatively stable underlying coping structures across samples of groups within specified coping situations" (Brown, 1994, p. 313).

Schneider (1995) used 14 items to create four ways of coping scales: confrontive coping, distancing, self-control, and planful problem solving. These scales were a combination of variables unique to the recreation setting and variables from the original scales (Lazarus & Folkman, 1984). Miller (1997) created 22 coping items to identify 6 unique ways of coping scales. Using principal components analysis the six identified scales were: resource substitution, temporal substitution, absolute displacement, cognitive adjustment, environmental change, and reflective substitution. Schneider made minor modifications to the original ways of coping items to adapt them to a recreation context. However, factor analysis was not used. Miller's scales departed from the original ways of coping items and created questions specifically to suit the constructs of recreation substitution and displacement. While Miller did employ principal components analysis, the specific items were different than the questions used herein, resulting in conceptually different constructs. The current study followed more closely to Schneider's work and used coping scales that resemble the original items. The former discussion concerning this topic did not include specific results from subsequent statistical analysis due to the inconsistent treatment of the coping scales. Additional detail concerning the origin of the measurement instruments used, the data collection, and treatment of missing data is provided in the following section.

Method

Measurement Instruments

A 21-item Wilderness-Hassles Checklist was developed based on previous daily hassles research conducted by DeLongis (1985) and DeLongis et al. (1988). Respondents indicated if a hassle occurred while on-site; this measure functioned as the primary appraisal. If a hassle was experienced the respondent was directed to complete the remaining instrument components.

TABLE 1 Descriptive Statistics for Variables Used in the EUH Scale

Question $\Omega = .92^a$	Mean	Median	SD	Standardized parameter coefficient ^b	Error term
Number of years recreating in the buffer zone	8.1	5.0	8.5	0.90	0.45
Number of different trails hiked in the wilderness and buffer zone	7.8	6.0	7.9	0.37	0.93
Number of years recreating in the designated wilderness boundaries	6.9	4.0	7.6	0.93	0.36
Was this your first trip to the Shining Rock Area?	First trip, $n = 104$ Previous experience, $n = 282$			0.37	0.93

^aWeighted Omega reliability coefficient calculated with variables used in the final scale.

^bAll parameter coefficients significant at the .05 level.

Seven variables were chosen as EUH indicators (refer to Table 1) based on previous outdoor recreation research (Hammitt, Knauf, & Noe, 1989; Hammitt & McDonald, 1983; Schreyer & Beaulieu, 1986; Schreyer & Lime, 1984; Watson, Roggenbuck, & Williams, 1991; Williams et al., 1990). Questions were adapted from the previous studies to fit the current research setting. For example, the question "number of days per/year recreating in the Cohutta Wilderness" was changed to "number of days per/year recreating in the Shining Rock Wilderness." The scale was designed to measure experience within the Wilderness, in the surrounding area, and one question measured general wilderness experience. To assist in answering experience questions concerning specific locations in the Wilderness Area and buffer zone, the survey allowed for unsure individuals to respond by providing an "I don't know" response. In addition, the inside cover of the survey included a map of the Shining Rock Area illustrating the designated Wilderness boundary. The scale was designed to distinguish between experience within and outside of the Wilderness boundary to investigate if perception of stress sources was different in the two locations.

The social support measure assessed an individual's perception that they have someone to talk to about their problems (Cohen et al., 1985) and was adapted for use in an outdoor recreation context (refer to Table 2). Secondary appraisal was measured using four indicators developed by Lazarus and Folkman (1984) (refer to Table 3). The ways of coping scales were adapted from the work of Lazarus and Folkman (1984) and modeled after the scales used by Schneider (1995). Emotion-focused coping consisted of the two sub-scales, distancing and self-control (refer to Table 4). Problem-focused coping consisted of the three sub-scales action/behavior, confrontive coping, and planful problem solving (refer to Table 4).

Data Collection and Missing Data

A mail survey of visitors to the Shining Rock Wilderness Area (North Carolina, U.S.) and surrounding buffer zone was conducted from July to November 1999. A modified Total Design Method (Dillman, 2000) involving four mailings was used. A total of 713 surveys were mailed, and 486 surveys were completed and returned for an adjusted response rate of 68%. The data cleaning process involved using regression imputation on

TABLE 2 Means and Standard Deviations for the Individual Variables Used to Measure Social Support of Visitors

Question $\Omega = .94$	Mean ^a	SD	Standardized parameter coefficient ^b	Error term
My friends and family support my intention to hike and camp (or berry pick).	4.58	0.72	0.38	0.93
I discuss my hiking and camping (or berry picking) experiences with friends.	4.56	0.75	0.52	0.86
There are people I can trust to give me good advice about places to hike and camp (or berry pick).	4.24	0.96	.78	.63
There is at least one person whose advice about how to hike and camp (or berry pick) that I really trust.	4.09	1.12	0.69	0.72
There are people I can trust to give me good advice about difficult situations while hiking, camping, or berry picking.	3.83	1.16	0.87	0.49
If a crisis arose while hiking and camping (or berry picking) my friends would be able to give me good advice about handling it.	3.75	1.14	0.85	0.53
There is someone who I feel comfortable going to for advice about stress resulting from hiking and camping trips (or berry picking).	3.48	1.34	0.72	0.69
There is someone I could turn to for advice about how to change hiking and camping trips (or berry picking trips) while they are in progress.	3.46	1.26	0.80	0.60
There is someone I can turn to for advice about handling hassles over responsibilities concerning hiking and camping trips (or berry picking trips).	3.06	1.22	0.82	0.57

^aBased on five-point scale, 1 = strongly disagree to 5 = strongly agree, N = 388.

^bAll parameter coefficients significant at the .05 level.

variables with less than 10% missing data; variables with greater than 10% missing data were dropped from the analysis. Imputation was not conducted if a minimum r^2 of 0.5 was not achieved for the regression model. Cases with missing data on variables that could not be imputed were dropped. This procedure resulted in the final screened sample of 388 used for analysis.

This research used a single measure of a transactional stress process. Lazarus addresses this issue in his paper *Theory Based Stress Management* (Lazarus, 1990). While a process approach is preferable, the inherent difficulty forces most researchers to use a structural approach (single measure). The structural analysis assumes that the single assessment is representative of the person in the stressful environment or is representative of the type of stressful environment. The hassle checklist approach used herein represents an aggregation

TABLE 3 Means for the Individual Secondary Appraisal Measures for On-Site Hassles at the Greater Shining Rock Area

Secondary appraisal measures $\Omega = .99$	Mean ^a	SD	N	Standardized parameter coefficient	Error term
I had to accept it as it was.	3.73	1.37	388	0.49 ^b	0.87
I could change it or do something about it.	2.60	1.44	388	1.0 ^b	0.00
I needed to know more about it before I could act.	2.24	1.39	367	0.1	1.0
I had to hold myself back from doing something about it.	1.98	1.29	375	0.4	0.99

^aBased on five-point scale, 1 = strongly disagree to 5 = strongly agree, N = 388.

^bSignificant at the .05 level.

of appraisals and coping responses over a given period of time. The aggregation is presumed to be a main outcome of the stress process. Using this approach, "a subjective calculus is made by the subject, which sums up what has happened during that period of time. The person is asked to tell us how it is going in general, over a broad slice of time or a short period such as yesterday, and either for specific encounters or for many" (Lazarus, p. 6).

Analysis

CFA was employed as opposed to exploratory factor analysis (EFA). A major advantage of CFA over EFA is that CFA is hypothesis driven. EFA is data driven, and the number of factors and pattern of factor loadings are determined by the data; common factors are not specified a priori and the patterns of relations between the common factors and measured variables are relatively unrestricted (Fabrigar, Wegener, MacCallum, & Strahan, 1999). When using CFA, a specific number of factors and pattern of zero and nonzero loadings are specified for variables and common factors. The *a priori* approach makes it less likely that significant findings will be the result of capitalizing on chance characteristics of the data.

Three separate measurement models were evaluated using CFA procedures in EQS version 5.7b. The decision to use three distinct models was based on theory and practical application of CFA and structural equation modeling. The three models were separated based on the components of the stress/coping model (illustrated in Figure 1) and whether components were hypothesized to covary. One analysis was performed on the influencing factors (EUH and social support variables), the second was carried out on the secondary appraisal variables, and the third model consisted of the ways of coping scales (Figure 2). The CFA procedure is designed to assess variance within each individual component of the overall stress/coping model. For example, the ways of coping model assesses only variance among the ways of coping items and modifications are made to that model as necessary to identify the best fitting model. The structural equation modeling procedure addresses variance among all of the components of the stress/coping model. For example, variance between influencing factors and ways of coping is assessed during the structural equation modeling procedure.

Robust maximum likelihood estimation was used with a covariance matrix developed from raw data. CFA fit indices include no single statistical test of significance that identifies a correct model. The χ^2 (chi-square) goodness-of-fit and its associated statistical test of

TABLE 4 Means for Coping Mechanisms Employed by Respondents at the Greater Shining Rock Area for On-Site Hassles

ID	Ways of coping items	Mean	SD
Emotion focused coping			
Self-control coping mechanisms ^a $\Omega = .63$			
18	Followed established trail etiquette	2.65	1.21
19 ^c	Thought about why the incident happened ^c	1.32	1.18
20	Tried not to damage future opportunities to be in Wilderness Areas with my actions	1.26	1.31
21	Tried to keep my feelings to myself	1.09	1.05
22	Kept others from knowing how bad things were	0.55	0.83
Psychological-distancing coping mechanisms ^a $\Omega = .85$			
23 ^c	Wished the situation would go away ^d	1.68	1.20
24	Didn't let it get to me	1.59	1.06
25	Refused to get too serious about it	1.51	1.06
26	Went on as if nothing had happened	1.24	1.10
27	Decided it was not as bad as I thought	1.11	1.05
28	Tried to forget the whole thing	1.10	1.02
Problem solving coping			
Action/behavior coping mechanisms ^a $\Omega = .81$			
29	Change your hiking schedule to avoid similar situations	0.73	0.89
30	Change your usual behavior	0.68	0.83
31	Alter your intended plans	0.65	0.84
32	Leave that part of the Wilderness Area	0.49	0.83
33	Plan to avoid the area on your next visit	0.44	0.72
34	Talk to U.S. Forest Service staff	0.30	0.65
Confrontive coping mechanisms ^a $\Omega = .75$			
35	Stood my ground and fought for what I wanted	0.45	0.89
36	Tried to get the person responsible to change their mind	0.26	0.64
37	Expressed anger to the person(s) or thing which caused the incident	0.36	0.72
Planful-problem-solving coping mechanisms ^a $\Omega = .87$			
38	Made a plan of action and followed it	1.10	1.22
39	I knew what had to be done so I doubled my efforts to make things work	0.94	1.12
40	Came up with a couple of different solutions	0.82	1.03

^aBased on four-point scale, 0 = did not use/not applicable, 1 = used somewhat, 2 = used quite a bit, 3 = used a great deal, N = 388 unless indicated.

^bBased on four-point scale, 0 = never, 1 = occasionally, 2 = frequently, 3 = every time, n = 388.

^cn = 371 for item.

^dn = 373 for item.

^eRemoved from model due to high residual correlations.

significance are often reported. However, this test is sensitive to sample size; as sample size increases (generally above 200) the χ^2 test has an increasing tendency to produce significant results, implying the model does not fit the data. Multiple fit indices are recommended to determine model fit (Hatcher, 1998; Hu & Bentler, 1998; Schumacker & Lomax, 1996).

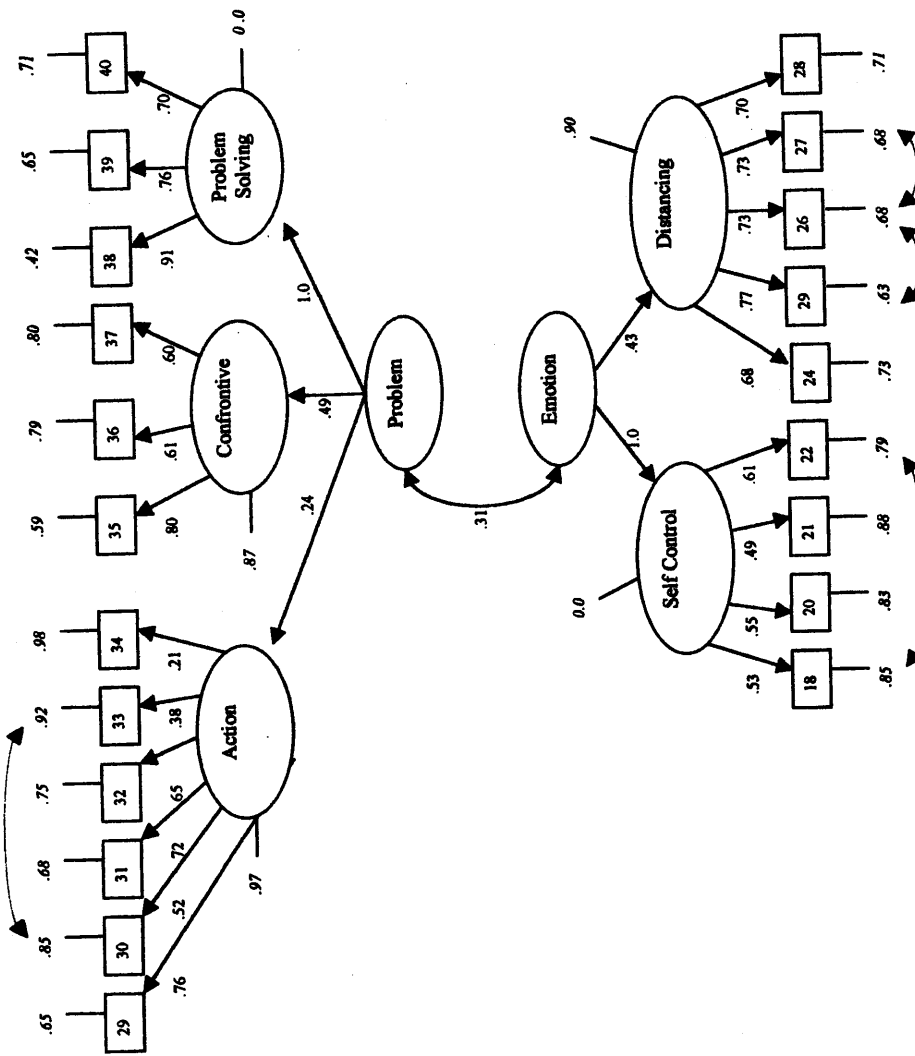


FIGURE 2 Measurement model illustrating final scales after the Ways of Coping CFA procedures. Standardized factor loadings and covariances are in roman text, error and disturbance terms are in italic. Residual correlations shown as curved arrow between error terms. All factor loadings are significant at the .05 level.

Hu and Bentler (1998) recommend the use of two additional fit indices. The comparative fit index (CFI) and standardized root mean square residual (SRMR) range from zero (0) to one (1.0). A CFI value of 0.90 represents an acceptable fit (Hatcher, 1998; Hu & Bentler, 1998; Schumacker & Lomax, 1996), and a value of 0.95 or higher is considered an excellent fit to the data (Hu & Bentler, 1998). In contrast, a small SRMR is desired; Hu and Bentler (1998) assert that an SRMR of 0.10 or higher represents a poor fit, 0.1 to 0.05 indicates an acceptable fit to the data, and 0.05 or less indicates an excellent fit to the data.

A specification search using the multivariate Lagrange Multiplier and Wald Tests can identify possible model-modifications to identify a better fit to the data or a more parsimonious model. Specifically, model misspecification may result from errors due to omission of relevant parameters or inclusion of irrelevant parameters. Modifications to the model should be both statistically significant and theoretically justified. "If a parameter has no substantive meaning . . . then it should never be included in the model . . . substantive interest must be the guiding force in a specification search; otherwise, the resultant model will not have practical value or importance" (Schumacker & Lomax, 1996, p. 106).

Reliability coefficients were estimated using weighted omega (Ω) as demonstrated in Werts, Linn, and Joreskog (1974), Bacon, Sauer, and Young (1995), and DeShon (1998), as opposed to Cronbach's reliability estimate, coefficient alpha (Cronbach, 1951). "Coefficient alpha has become a mainstay for many researchers, but is neither accurate nor a useful decision aid in the structural equation context" (Bacon et al., 1995, p. 403). Alpha assumes that all items in a scale have equal true-scores (tau-equivalence). However, unequal factor loadings indicate that this assumption is usually violated. The CFA (and structural equation modeling) procedure forms latent variables (factors) by partitioning variance into that shared by indicators (common variance) and variance not shared (unique/error variance). In a structural model, a latent variable is defined by that which its indicators have in common (MacCallum & Austin, 2000), and parameter estimates are made using common variance. Each variable's contribution to the latent variable is weighted; the factor loading represents the individual contribution. Alpha was designed to measure reliability when items are equally weighted. For example, equal weighting of items occurs when scores are simply summed or averaged to form an overall index or scale. An equally weighted scale contains both true scores and error variance. Unequal weights are accommodated in structural equation models. Individual contributions must be accounted for because the items may not equally influence the estimation of the construct they reflect (Bacon et al., 1995). Weighted omega allows departure from tau-equivalence and estimates reliability based on items' weighted true score variance.

Error variance is not used in estimation of parameters representing hypothesized causal relationships in structural equation models. However, error variances are estimated as individual parameters and can be correlated between indicators (residual correlations). Residual correlations suggest that there is common variance among some indicators that is not associated with the variance accounted for by the latent variable. Another assumption necessary for alpha is that all errors are independent. In the presence of non-independent error, alpha will yield inaccurate results (Werts et al., 1974). Weighted omega allows for appropriate pairs of errors to be correlated yielding accurate results. In light of the above discussion, the use of alpha in conjunction with structural equation modeling can lead to bias in reliability estimation and committing Type I Errors. For example, a biased reliability estimate may suggest rejecting an item for use in a scale, or rejecting a scale for use in a model, when it should be retained.

Results and Discussion of CFA Procedures

Descriptive Statistics

Respondent females comprised 28% of the sample. The three most frequently engaged-in activities at the area were weekend backpacking, day hiking, and backpacking trips longer than one night. Most of the respondents recreated with friends (53%); recreating with a spouse or partner (40%) was also common. Thirteen percent (13%) of the sample were with their children and 9% visited the area alone (social group categories were not mutually exclusive). Ages ranged from 18 to 80 years. Approximately 17% of respondents earned less than \$19,999, and 28% had a \$20,000 to \$39,999 annual income. About 55% earned \$40,000 or more.

About one-fourth of respondents (27%) were on a first visit to the Shining Rock Area (refer to Table 1). Seventy-two percent (72%) indicated the majority of the activities took place within the designated Wilderness boundaries, 25% indicated that their recreation activities took place outside of the designated boundaries, and 2% did not know if activities took place in, or out, of the Wilderness.

CFA for Experience Use History and Social Support

The EUH and social support factors were hypothesized to covary. The first hypothesized model was tested and not supported (refer to Table 5). The standardized residual correlation report indicated correlation of .60 between EUH variables "how many days a year do you enter Shining Rock's designated Wilderness boundary" and "how many days a year do you visit the area surrounding Shining Rock." A multivariate Lagrange test indicated that the variable "how many days a year do you enter Shining Rock's designated Wilderness boundary" had five significant residual correlations with other variables and "how many days a year do you visit the area surrounding Shining Rock" had six. In addition, the multivariate Lagrange test indicated that cross-loading "how many days a year do you visit the area surrounding Shining Rock" with the social support factor would produce a significant change in chi-square. The cross-load was not theoretically or conceptually sound. Both variables significantly contributed to the model ("how many days a year do you enter Shining Rock's designated Wilderness boundary," $t = 3.0$ standardized parameter estimate = 0.13, $r^2 = 0.02$ and "how many days a year do you visit the area surrounding Shining Rock," $t = 3.6$ standardized parameter estimate = 0.12, $r^2 = 0.04$). However, they were identified as problem variables and removed based on error covariances between these two variables, multiple error covariance with other variables, and the suggested cross loading provided by the multivariate Lagrange Multiplier test. The contribution of the variable "on

TABLE 5 Fit Indices for All Models Tested

Model	χ^2	df	p	Robust CFI	SRMR
Social Support & EUH (1st model)	656.70	103	<.001	.85	.10
Social support & EUH (accepted model)	281.81	64	<.001	.93	.06
Secondary appraisal	5.22	2	<.073	.99	.04
Ways of coping (1st model)	639.56	220	<.001	.83	.08
Ways of coping (2nd model)	474.96	179	<.001	.87	.07
Ways of coping (3rd model)	399.57	175	<.001	.91	.07
Ways of coping (second-order factors)	434.64	179	<.001	.90	.08

this trip, did the majority of your activities take place within Shining Rock's designated boundaries" was not significant at the .05 level ($t = .02$, $r^2 = 0.00$). This variable was also removed from the model. The second hypothesized model was tested without these variables. Support was found for the revised model containing four indicator variables. Standardized parameter coefficients and error terms for the accepted model are listed in Table 1. The scale was designed to measure both on-site and general wilderness experience. However, by removing three of the four variables, the scale seemed to represent the single dimension of on-site experience and not a multidimensional measure of EUH.

Poor performance of these variables might have been due to the respondents' lack of knowledge concerning the actual position of the Wilderness Boundary. Discussions with Forest Service managers at the site indicated that visitors often seem unaware of the boundary between the Wilderness Area and the buffer zone. While the survey instrument provided to the subjects included a map of the area, the lack of Wilderness boundary awareness might have contributed to inaccuracy or bias in responses. Boundary distinctions should be made more explicit if this question is used in the future. The EUH scale could not be used to investigate difference in perception of stress within the wilderness boundary and in the buffer zone since the factor was reduced to a single dimension that measured on-site experience including both areas.

There were no indications of poor model fit resulting from the social support variables and this factor did not require respecification. Standardized parameter coefficients and error terms for the social support model are listed in Table 2. Similar to the research conducted by Cohen et al. (1985) acceptable reliability coefficients were achieved. Thus, the CFA procedure for the EUH and social support factors produced an acceptable model.

CFA for Secondary Appraisal Variables

A one-factor model was hypothesized for secondary appraisal. The hypothesized model was tested and supported. This model represented a good fit of the data. The standardized parameter coefficients and error terms for the secondary appraisal model are listed in Table 3. However, the unstandardized coefficients indicated that variables "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" were not significantly contributing to the factor ($t = 0.11$, $r^2 = 0.000$ and $t = 0.79$, $r^2 = 0.002$, respectively). The error associated with "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" was not completely random, a multivariate Lagrange Multiplier test indicated a significant residual correlation ($p < .05$, $r^2 = .12$). The residual correlation was not included in the model since an acceptable fit was achieved. Based on the factor loadings, "I could change it or do something about it" ($r^2 = 1.0$) was the strongest contributor to the factor with "I had to accept it as it was" ($r^2 = 0.24$) second. The relative strength of the parameter estimates in the model is a reflection of the stronger correlation between the two primary contributing variables (Table 6). Specifically, the negative relationship indicates that the

TABLE 6 Correlations Among Secondary Appraisal Variables

Secondary appraisal measures		1	2	3	4
1	I had to accept it as it was.				
2	I could change it or do something about it.	-0.49			
3	I needed to know more about it before I could act.	0.02	0.01		
4	I had to hold myself back from doing something about it.	0.00	0.04	0.12	

more an individual perceived the ability to change a situation the less she or he felt the need to accept it as it was (the converse is also true). The weaker relationship between "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" was also reflected in the model as weak parameter estimates.

The secondary appraisal items are a general measure of controllability of the situation. The items "I had to accept it as it was" and "I could change it or do something about it" had a moderate to strong negative relationship. The need to accept the situation increased the more an individual perceived the inability to change it. There was a weak-positive correlation between "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it." When an individual did not feel that he/she had enough information the need to hold back was also present. The former correlation, the correlation reflected by the significant parameter estimates in the model, appears to represent the desire to act upon the stressful situation. The latter correlation appears to represent a dimension in which the individual is less driven to take action toward the stress source.

Retention of "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" was considered acceptable at this point in the modeling process, despite the fact that they did not share much common variance and contributed relatively less to the factor. The parameter estimates may be indicating that the four items are not functioning well as a uni-dimensional measure of the secondary appraisal construct. However, the discussion below will illustrate that the structural equating modeling (SEM) process can allow for the contribution of each variable to be assessed individually while maintaining a more parsimonious model by combining the four variables in one factor (rather than treating each item as individual indicators). In addition, a theoretical justification for retention of the variables is offered.

The results indicated that the variables in the secondary appraisal are not tau-equivalent. "I had to accept it as it was" and "I could change it or do something about it" share variance and are reliable indicators of the construct. "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" do not contribute much common variance to the construct. Since the variables are not tau-equivalent, it is not appropriate to create a scale by averaging or an index by summing responses to all four questions. All the variance (common and error) is combined and retained within the measurement instrument when averaging or summing responses; resulting in subsequent relationships being estimated with error variance. As indicated by the factor loadings, averaging or summing "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" would contribute error to the scale and damage the reliability and accuracy of the instrument.

The SEM procedure can account for unreliability and allow for the retention of variables that are not tau-equivalent. First, the factor loading (coefficient) is an indication of the contribution of each indicator variable; weak and/or problem variables can be identified. For example, "I could change or do something about it" was the strongest contributor to secondary appraisal, and "I needed to know more about it before I could act" provided almost no contribution. Second, the SEM process accounts for different types of variance; since the latent secondary appraisal factor is composed of only the common variance among the indicator variables, and not the error variance, the weak contributors can be retained without causing damage. Subsequent structural relationships involving the latent variable will be estimated using shared variance and not error variance. Thus, any indicator variable with a non-zero loading, significant or not, will contribute to increased reliability of the scale.

These models will be used in an SEM process that also provides parameter estimates that identify the relative contribution of each manifest variable to the respective latent

variable. Weak or non-significant manifest variables will be recognized as not contributing to the factor and/or model. However, the effect of adding causal relationships between manifest and latent variables in the structural model is unknown. There is a possibility that the secondary appraisal variables "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" will become more substantial contributors to the factor during the SEM process. Discarding these variables that have weak parameter estimates at this time would be imprudent since retention will not harm the model and parameter estimates may change in the structural model.

Another argument of the retention of non-significant variables is that SEM makes a mathematical correction for unreliability. Attenuation occurs when the correlation between two variables is biased toward zero due to either variable being measured with error (DeShon, 1998). The disattenuation process adjusts the biased correlation based on the reliability of the indicators used to create the latent variable. Thus, estimates of latent variables' (LV) casual effects on other variables in the model are based on the more reliable LV and not on a less perfect measure such as a sum or sum after standardization.

Finally, the purpose of this CFA procedure was not construction and validation of new measurement instruments. Rather, the purpose was to identify a model that can be used to create and test the structural relationships among the components of the existing stress/coping model. With this purpose, when making modifications to a model, there is "need for guidance provided by a theoretical model and the researcher's expertise. Researchers should use the indices as 'potential indicators' of misfit rather than 'givens' for respecifying or modifying a model" (Schumacker & Lomax, 1996, p. 130). Previous recreation-stress research (Miller, 1997; Schneider, 1995) treated the four secondary appraisal variables individually. Retaining "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" for subsequent analysis also provides consistency among studies. The stress/coping model has a long and rigorous literature spanning many fields of research. The indicator variables used in the measurement models were developed, tested, and used in previous research. Thus, there is substantial theoretical evidence supporting retention of all four indicators in the secondary appraisal factor.

CFA for the Ways of Coping

Originally, a five-factor model was hypothesized; all of the factors were hypothesized to covary. The hypothesized model was tested and not supported. A standardized residual correlation of 0.24 was indicated between the variables "thought about why the incident happened" and "wished the situation would go away." The multivariate Lagrange Multiplier test indicated that "thought about why the incident happened" had five significant residual correlations with other variables and "wished the situation would go away" had six. These variables were removed to create the second hypothesized model. The second hypothesized model was tested and not supported. The model improved slightly from the previous model, but was still not acceptable. Four error covariances contributing significant improvements to the model χ^2 were suggested by the multivariate Lagrange Multiplier test (Table 7).

The error covariances were added based on the theoretical plausibility of the items sharing variance other than the variance shared within the model. Thus, the correlations represent plausible combinations of coping responses. Established trail etiquette may have dictated that an individual should not express their discontent to either the person causing stress or others in his or her party (variables 18 and 22). An individual may have changed a usual behavior by planning to hike in a different area during his or her next trip (variables 30 and 33). A hiker may have decided that the situation was not as bad as it seemed and simply continued as if nothing occurred (variables 26 and 27). Finally, the hiker might refuse

TABLE 7 Suggested Error Covariance Parameter Additions Based on the Lagrange Multiplier Test for the Ways of Coping Scales

Suggested parameter additions (ID) ^a	Change in χ^2	<i>p</i> value
Followed established trail etiquette (18)	21.3	.000
Kept others from knowing how bad things were (22)	18.4	.000
Change your usual behavior (30)	15.5	.000
Plan to avoid the area on your next visit (33)	14.8	.000
Went on as if nothing happened (26)		
Decided it was not as bad as I thought (27)		
Refused to get too serious about it (25)		
Went on as if nothing happened (26)		

^aBased on multivariate Lagrange Multiplier, phi error-to-error.

to get seriously upset and continue as if no stressful transaction occurred (variables 25 and 26).

A third CFA was performed that included the four error covariances. The third hypothesized model was tested and supported. The model improved from the previous model and was an acceptable fit of the data. A Wald test determined that parameters could not be removed from the model without significantly increasing the χ^2 .

Stress/coping theory provides support for hypothesizing multiple structural relationships among the influencing factors, secondary appraisal components of the model, and the coping factors. In an attempt to create a more parsimonious measurement model (subsequently resulting in a more parsimonious structural model) two second-order latent factors were created, one for the emotion-focused coping scales and another for the problem-solving coping scales (Figure 2). The three scales action/behavior, confrontive coping, and planful-problem-solving served as indicators, or first-order factors, of the second-order (latent factor) problem-solving coping. Similarly, the scales self-control and psychological distancing served as indicators of the second-order factor emotion-focused coping. The latent factors were hypothesized to covary and all error covariances added in the previous model were included. The hypothesized model was tested and statistically supported. The goodness of fit decreased slightly from the previous model. However, it was an acceptable fit of the data and represented a more parsimonious model for use in subsequent analysis. The Wald test indicated that none of the parameters could be removed without significantly reducing the fit of the model.

Residual correlations indicate shared variance among the manifest variables not accounted for by the factor. Residual correlations can result from multi-dimensional factors being specified as unidimensional. Often in this case, the variables indicating the alternative dimensions are correlated and a pattern among the residual correlations can be used to identify the second factor. A second cause for the need to identify residual correlations in a model is simply that there is random measurement error or bias that is correlated; in this case, there is no pattern. While there was some repetition in the correlations, no clear pattern identifying a new factor was evident. One possible cause of the residual correlations was multiple hassle sources. The research design used a subjective measure of stress in which the respondent determined when stress was encountered and the intensity of the situation. The primary appraisal of stress was a 21-item hassle checklist; by design the checklist was not mutually exclusive. Respondents may have encountered more than one hassle while on-site and/or a plethora of combinations of hassles resulting in the use of multiple coping responses.

In addition, sampling was conducted over a five-month period. Combinations of coping mechanisms employed, and shared variance, in response to a specific hassle at one point in time may have been different than those employed in response to a different hassle at another point in time. Thus, residual correlations may be the result of different combinations of coping mechanisms employed in response to a variety of hassle sources occurring over the course of five months. The coping checklist is also an aggregate measure of the stressful experience. As stated previously, the respondent makes a subjective calculus, which sums up what has happened during the given period of time (Lazarus, 1990). Again, error variance may be the result of the respondent aggregating sources and responses.

Conclusion

In conclusion, three acceptably fitting measurement models have been identified in this CFA procedure. In combination, the three components represent a single model that can be used to investigate the stress/coping process in outdoor recreation settings. The model contains theoretical components as described by Lazarus and Folkman (1984). In addition, it builds on previous stress/coping theory applied in outdoor recreation research (Miller, 1997; Schneider, 1995). Given the callowness of the stress/coping model in the outdoor recreation—few projects have used the model to understand the stress/coping process associated with conflict situations experienced in outdoor recreation settings—consistency in methods has not been established. A direct comparison among the results of this study and the Schneider and Miller projects is difficult. This research is an attempt to work toward consistency in researching and understanding the stress/coping process in outdoor recreation and provide additional foundation for researchers to improve upon.

A specific result of the CFA process is insight into the dimensionality of the EUH construct. Seven variables were chosen as EUH indicators. The scale was originally designed to measure experience within the wilderness, in the surrounding area, and one question measured general wilderness experience. Three variables were removed from the analysis; the four remaining variables represent a unidimensional measure of EUH. Specifically, it appears to be measuring on-site experience. These findings do not support results of previous studies that found EUH to be multidimensional (McFarlane et al., 1998; Watson & Niccolucci, 1992).

An acceptable fit was achieved for the secondary appraisal model. However, there appears to be cause for concern associated with the factor. Two of the four secondary appraisal variables were primary contributors to the factor and two were non-significant. It appears that that four variables were not functioning as a unidimensional construct. The two primary contributing variables, "I could change it or do something about it" and "I had to accept it as it was," appeared to be measuring perceived ability to act upon or control the situation. "I needed to know more about it before I could act" and "I had to hold myself back from doing something about it" appeared to be measuring a dimension in which the individual perceived less control or desire to act upon the situation. The parameter estimates were not tau-equivalent and indicated less than desirable internal consistency. In contrast, the fit indices indicate an acceptable fitting model. At this point in the modeling process the determination was made to retain the factors in subsequent analysis. The secondary appraisal factor was also retained as opposed to treating the four variables as single item indicators. The single factor will contribute to a more parsimonious model. The SEM process will also allow for individual analysis of each item's contribution to the factor. Attention should be paid to the performance of secondary appraisal in subsequent analysis.

An acceptable fitting model consisting of two second-order factors was identified for the ways of coping scales. However, the model contained four estimated error covariances.

Residual correlations indicate shared variance among the manifest variables not accounted for by the factor. Likely causes of residual correlations were that the primary appraisal asked the respondent to assess multiple stress sources at one time, the hassle checklist was not mutually exclusive, and the long sampling period may result in responses to hassles at one point in time being different than responses at a second point in time. Thus, the issues of error variance in coping responses may be linked to primary appraisal. The issues associated with using an aggregate measure of stress over time are common in stress research. But, limitations in research methods force us to continue to use single measures of the transactional process.

Modifying the hassles checklist and creating hassles scales may provide additional ability to account for variance in the model. The original hassle scales consisted of 7 or 8 domains (depending on factor analysis) and 117 items (DeLongis, 1985). An individual stress intensity measure was provided for each item in the hassle scale. Factor analysis can be used to identify domains of stress. For example, in a backpacking context stress domains might include the natural environment, other people, personal issues, group issues, and equipment problems. Each of these domains would contain multiple indicator variables, each with an individual intensity measure. The single time measure still asks the respondent to recall stress during a specific time period (Kohn, 1995), but it allows the primary stress sources to be identified and directly associated with the coping process. Future researchers should consider using a hassle scale as opposed to a hassle check list as the primary appraisal measure in order to more accurately identify stress sources and account for variance in coping methods.

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