

## COPING, CROWDING AND SATISFACTION: A STUDY OF ADIRONDACK WILDERNESS HIKERS

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**Abstract:** Hikers in the wilderness areas of New York's Adirondack Park use a combination of physical and cognitive coping behaviors to maintain satisfaction with their wilderness experience. A total of 102 hikers in 16 Adirondack wilderness areas were interviewed and asked to complete a single-page survey. The in-depth interviews and surveys of hikers' importance and satisfaction ratings for a set of wilderness characteristics and conditions were used to measure and describe Adirondack wilderness hikers' employment of the four coping behaviors of spatial displacement, temporal displacement, product shift and rationalization. Results indicate users were employing coping behaviors across four wilderness area use intensity categories, often in combination and with few differences in their overall satisfaction.

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### Introduction

Since explorers Verplanck Colvin, George Washington Sears and Bob Marshall tramped its woods and waters, and fought for their protection, New York's Adirondack Park has become a popular recreation destination. Of its 6.5 million acres, essentially half are in the public domain, open for various forms of recreational use, and protected by the landmark 'forever wild' clause of the state Constitution. The 1972 Adirondack Park State Land Master Plan (APSLMP) and its subsequent revisions, have established a system of designated wilderness in the Park that parallels that of the federal Wilderness Preservation System (NYS APA, 1987). New York now has 17 wilderness areas within the Adirondack Park, each with distinct natural and social conditions and characteristics and visitor use patterns.

As visitor use of some of these wilderness areas has increased, the ability of a wilderness hiker to have unconfined recreational experiences and to experience solitude may be disappearing in some areas while thriving in others. Hikers who are confronted with wilderness conditions that challenge their ability to have a satisfying recreational experience may rectify this dissonance through one or more of four coping behaviors.

The coping behaviors used by visitors came under study by recreation researchers as a potential explanation for the

consistently high satisfaction levels reported by recreationists despite concurrent reports of crowding (Cole et al., 1995). If wilderness visitors are able to alter their recreational experience, their expectations from it, or their perspectives of it, they may be able to maintain their satisfaction despite encountering conditions, such as crowding, that they saw as dissatisfying. Coping behavior theory is divided into two types of behaviors: physical and cognitive, both of which were adapted for recreation research from studies of stress coping and crowding done by urban sociologists (Graefe et al., 1984; Manning, 1999).

Physical coping, or displacement, occurs when a hiker changes their use pattern, removing themselves from the wilderness environment in which they felt, or expected to feel conflict. The hiker may be *displaced spatially* to a substitute wilderness environment that meets their needs, if one is available, or they may also be *displaced temporally* by altering the time at which they visit the wilderness to avoid conflict. Past research often defined displacement as a visitor movement away from conditions of user-user crowding (Heberlein & Shelby, 1977; Kuentzel & Heberlein, 1992; Shelby et al., 1988). Recent research indicates that this is perhaps too narrow a definition as hikers may be displaced by a number of factors that could cause dissatisfaction or conflict, including management actions (Hall & Cole, 2000).

Cognitive coping can take two forms: product shift and rationalization. *Product shift* is the process by which a hiker alters their expectations or perspectives of the wilderness opportunity to be in line with the conditions they encounter or expect to encounter (Shelby et al., 1988; Hammitt & Patterson, 1991; Shindler & Shelby, 1995). For example, a hiker may come to accept wilderness as a place in which they may encounter large numbers of other hikers and trailside and campsite litter. *Rationalization* is a revaluing of the wilderness experience that occurs when a user weighs their investment in the wilderness opportunity against any dissatisfying conditions encountered (Manning & Ciali, 1980; Stewart, 1992; Manning, 1999). Rather than view the trip as a waste of time or money, for example, the user will devalue dissatisfiers and place a higher value on positive aspects of the experience to rectify cognitive dissonance.

Past research has predominantly sought empirical evidence of user coping behaviors and also sought to determine their cause. While some success has been made documenting shifting patterns of use (Becker, 1981; Anderson & Brown, 1984; Shelby et al., 1988; Kuentzel & Heberlein, 1992), there has been limited success in establishing causal connections between user coping and crowded conditions and other wilderness experience dissatisfiers. Hall and Cole's (2000) recent paper is a decided change in this trend as they were able to document user displacement caused by user dissatisfaction with management actions.

The limited success of many past studies of user coping response is somewhat related to the research methods employed to attempt to measure coping behavior. Most past research has employed self-reporting mail surveys and

other off-site and impersonal methods, which have been unable to capture the complexity and opportunistic nature of user coping responses and satisfactions. This study makes use of a hybrid design, combining in-depth interviews conducted in the field, with field-administered surveys. The field interviews and survey attempted to measure and explain the employment and effectiveness of physical and cognitive coping behaviors by Adirondack wilderness hikers to avoid perceived dissatisfiers.

## Methods

This study was exploratory in its design, as it attempted not only to measure the extent to which Adirondack wilderness hikers were employing physical or cognitive coping behaviors, but also to measure their effectiveness. Departing from past studies of coping, this study made use of qualitative in-depth interviews in an attempt to document and describe the complex nature of coping, a distinct advantage of the probing and adaptive qualitative interview method. To better understand the attributes of wilderness that hikers find important and factor in their satisfaction, a brief survey and Importance-Performance analysis of wilderness characteristics and conditions were used. This data was also used to measure the effectiveness of the four coping behaviors.

Both the interviews and surveys were administered in the field so that wilderness hikers could be questioned during the course of their recreational activity. The advantage to this technique is that the interviewer is able to probe hikers responses to questions, leaving less chance for misinterpretation, and encouraging the hiker to respond based on their current or actual experience. This technique attempts to avoid the concern that hikers surveyed through the mail weeks or even months after their wilderness experience may respond to questions either hypothetically, or with unrealistically positive memories of past trips. Individuals may tend to distance themselves from negative experiences and may more often remember the positive aspects of an experience.

The Adirondack Park serves as an excellent location to study coping behaviors as its 17 wilderness areas, that total over 1.02 million acres, provide a range of opportunities, contained in the Wilderness Opportunity Spectrum (Hendee et al., 1990). These areas have a range of visitor use intensity levels from a few hundred per year in the Pepperbox Wilderness to 140,000 in the High Peaks Wilderness Complex, all in relatively close proximity to each other and to major urban settings. One wilderness, the William C. Whitney Wilderness, was removed from the sample, because of its divergent visitor use pattern of canoeing and boating rather than hiking, and the remaining 16 areas were organized into four use level categories based on New York State Department of Environmental Conservation visitor data. Data collection was stratified between each of four Adirondack wilderness use level categories, which were set as: "Intensive Use," for the Eastern Zone of the High Peaks, with its estimated 123,000 user trips a year, with the remaining areas divided among "Heavy Use," "Moderate Use," and "Light Use." As

wilderness use densities are known to fluctuate between weekdays, weekends, and holidays (Dawson et al., 2001), sampling was stratified not only among the use level categories but also between weekdays, and weekends and holidays.

After encountering a hiker along the trail, asking for their cooperation in an interview, and obtaining permission to tape record the interview, each hiker was asked a set of 12 general questions. Opening questions in the interviews served to establish rapport with the hiker, and document their residency and past wilderness hiking experience. Hikers were then asked a series of questions that established whether or not they had coped with dissatisfying conditions in wilderness. Further questions were asked to probe hikers responses and to encourage them to elicit stories of their responses to dissatisfying or unexpected and undesirable conditions in wilderness. For example, hikers were asked if they had ever felt crowded in an Adirondack wilderness area, or encountered dissatisfying social conditions. If they responded that they had, follow-up questions were asked to determine if these dissatisfying experiences had caused them to be displaced from a preferred location, for example. Interviews took place at popular wilderness destinations like mountain peaks and ponds, in campsites, and also along trails wherever hikers were encountered.

After the interviews, which lasted from 15 minutes to an hour in length, each hiker was asked to fill out a single-page survey. The survey was comprised of a set of eight statements of wilderness characteristics and four statements of wilderness conditions. Hikers scored each statement on a six-point importance scale (0 to 5) and a five-point satisfaction scale (-2 to 2). The interview and survey sought similar information using different approaches to attempt to complement each other and capture a clearer understanding of the phenomenon of coping and displacement. The interviews asked hikers to relate stories of their experiences and use patterns of Adirondack wilderness in their own words, while the survey simply asked them to rate certain characteristics and conditions of wilderness.

At the end of the field season, interviews and interviewers comments and observations were transcribed and analyzed, in the qualitative thematic coding tradition, using *The Ethnograph* software package. Interview transcripts were read and analyzed in detail and selections of text were marked or coded as pertaining to a coping strategy or other important thematic elements. Data from the single-page surveys was entered and analyzed using the Statistical Package for the Social Sciences software (SPSS version 10.0 for Windows). Statistical tests included: chi-square statistics to test patterns of coping among the four use levels and independent sample t-tests of importance and satisfaction scores among coping or non-coping groups.

Importance-Performance analysis (I/P analysis) is an effective way to visually assess the relative significance of specific attributes on the overall satisfaction of a recreationist (Hammit et al., 1996; Smith & Tarrant, 1999).

In I/P analysis means of importance and performance – in this case, satisfaction – scores are plotted on the y and x-axis, respectively. Four quadrants are assigned the following labels and represent whether management attention is needed for various attributes: “Keep up the good work” (high satisfaction, high importance), “Possible Overkill” (high satisfaction, low importance), “Low Priority” (low satisfaction, low importance), and “Concentrate Here” (low satisfaction, high importance).

## Results and Discussion

A total of 102 wilderness hikers were interviewed between Memorial Day and Labor Day of the summer of 2000, after spending 51 days and 36 nights interviewing on the trail, hiking approximately 390 miles in 16 wilderness areas and driving 5,941 miles between trailheads and home. On only one occasion did hikers decline to be interviewed – both were training for the Ironman Triathlon in Lake Placid and wouldn't stop running.

Of the 102 hikers interviewed, 66 were male and 36 female, ranging in age from 12 to 74 with a mean age of about 35 years. A majority of the sample was overnight hikers, with 72 camping out at least one night. The remaining 30 were day hikers, not spending a night in the wilderness. Most were residents of New York State, with 69 hikers reporting they lived in the state, while 23 were from other states and 10 resided in Canada.

A series of questions was asked to determine whether or not the individual had made use of any coping strategy. For example, one question asked of every hiker was: “Have you ever felt crowded in an Adirondack wilderness area and if so, what did you do about it?” As this series of questions was open ended and responses often the subject of probing following questions, qualitative analysis was used to make determinations regarding the employment of coping behaviors.

Of the 102 people interviewed, 54 had used one or more forms of coping behavior, while 48 had not. Physical coping behaviors were the most prevalent with 35 hikers employing temporal displacement, and 28 hikers employing spatial displacement. Cognitive coping behaviors were used to varying degrees, with 33 hikers using product shift, and 8 hikers using rationalization. What follows are examples of each of the four coping behaviors as reported by hikers in the sample.

### Temporal Displacement

Qualitative determinations indicated that the 35 hikers employing temporal displacement were distributed across the spectrum of wilderness use intensity categories and were using the physical coping behavior in two ways. Hikers using temporal displacement were either shifting their time of wilderness use from weekends to weekdays, or from the summer season to either spring or fall. These hikers reasoned that the times they preferred, weekdays and the spring and fall, were times of lower use intensity in their preferred wilderness.

In the course of interviewing a 40-year-old Rochester, New York man in the Five Ponds Wilderness, he explained that

he had felt crowded by other users at various times hiking in the High Peaks Wilderness Complex (HPWC). Still wanting to hike in the HPWC, this man and his wife described their strategy of avoiding dissatisfying situations of crowding this way:

Yeah, like Johns Brook, we [are] going to do towards the end of this month and we're not going to start until Monday. Just because I know going up to Johns Brook Pass there will be a lot of weekend warriors and I hope to let them clear out if they are [hiking] on a weekend. And then, on a non-holiday setting for the week, I'm hoping that [it] is going to cut down on traffic. So, we are going to come in from the Garden [Trailhead] on a weekday just for that reason.

This hiker and his wife were making use of temporal displacement to maintain their satisfaction with the HPWC, avoiding the Johns Brook Valley corridor on a weekend as in the past they had felt crowded by the number of other users there. This man and his wife were not alone in their attempts to avoid feeling crowded by “weekend warriors,” among many other potential dissatisfiers.

### Spatial Displacement

A total of 28 hikers interviewed reported changes in the use of Adirondack wilderness areas that indicated they were spatially displaced. Like those hikers temporally displaced, the spatially displaced hikers were using the behavior in two ways. These hikers were either being displaced from one wilderness area to another (inter-wilderness displacement) or from one location in a wilderness area to another (intra-wilderness displacement).

Crowding in the Eastern Zone of the HPWC has spatially displaced one 24-year-old woman, from Warner, New Hampshire, interviewed at the Uphill Brook Lean-to, in the HPWC, a few miles from Lake Colden. She reported feeling crowded and was dissatisfied with litter and waste she saw when hiking past Marcy Dam and Lake Colden.

I am just like, whoa, I can't imagine wanting to stay at either of those places. It is just, it is not really a wilderness experience when you have that many people out there and they're noisy.

She reported she had been displaced to lesser-used parts of the HPWC, indicating she was using intra-wilderness displacement. Though she said she would never camp at Marcy Dam or Lake Colden, she said she would consider hiking through those areas if there was a specific wilderness destination she wanted to access that required passing through there. This is evidence of cognitive coping behavior use as well.

### Product Shift

This cognitive coping behavior was the second most commonly used coping behavior among hikers in this study, as indicated by their responses to interview questions. A total of 33 hikers reported cognitive changes

in their expectations or perspectives of a wilderness experience to accommodate conditions they encountered.

For example, one 48-year-old male hiker from Rochester, New York, interviewed in the Siamese Ponds Wilderness placed a high value on solitude and preferred to hike in wilderness areas with a low use intensity level. However, he also liked hiking with a group of friends, who sometimes hiked in the HPWC for the high peaks experience. As a result, he made use of product shift to maintain his satisfaction in the face of dissatisfying crowding on a HPWC peak:

If the other guys all wanted to do one, I would do it. But, I know what to expect and wouldn't be disappointed.

This hiker, based on previous experience with crowding in the HPWC had redefined that wilderness experience and now expected to encounter crowding when hiking there. Product shift was allowing this hiker to join his friends on a HPWC trip and be satisfied overall with that trip despite not being able to experience the solitude he valued. While had redefined the HPWC experience, some hikers used rationalization to revalue the wilderness experience.

#### Rationalization

For some hikers their investment in the wilderness experience, in time and money for example, is of more value than dissatisfying conditions like crowding, and they are rationalize satisfaction from their trip. This cognitive behavior adaptation proved difficult to measure, perhaps as it likely occurs subconsciously, with only eight hikers in the sample determined to be using it.

A 26-year-old Canadian hiker interviewed on Mount Marcy in the HPWC said the trail erosion, human impacts and large numbers of other hikers he had encountered were "just part of the deal," and would not dissuade him from hiking in the High Peaks because "they are close, they are very accessible, and of course free." Unable to invest the time and money necessary to hike in the wild expanses of northern and western Canada, this Ottawa man chose the HPWC and reported being satisfied overall with his experience there.

Coping behaviors were clearly being used by these Adirondack hikers to maintain their satisfaction with their wilderness experience. Chi-square tests yielded no statistically significant differences between the four wilderness area use intensity categories for those using no coping behaviors and those making use of coping behaviors (Table 1) (Chi-square = 4.3; df = 3; p = 0.24). Theoretically, coping behavior employment should have some relation to wilderness use intensity. Hikers making use of spatial displacement would likely be found in areas with a lower use intensity level, while hikers coping cognitively would likely be found in areas with a higher use intensity level. The equal distribution of physical and cognitive coping behavior use across wilderness area use intensity categories is likely due to a balancing effect of spatially displaced hikers in lesser-used areas while hikers coping cognitively were found in high use intensity areas.

**Table 1. Comparisons of Sample Size and Percentage between Coping Behavior Usage and Wilderness Area Use Intensity Category in 16 Adirondack Wilderness Areas in 2000**

| Wilderness Area Use Intensity | N | No Coping Behavior Use | Coping Behavior Use |
|-------------------------------|---|------------------------|---------------------|
| Light                         | N | 8                      | 5                   |
| Moderate                      | N | 16                     | 28                  |
| Heavy                         | N | 16                     | 12                  |
| Intensive                     | N | 8                      | 9                   |
| Total                         | N | 48                     | 54                  |

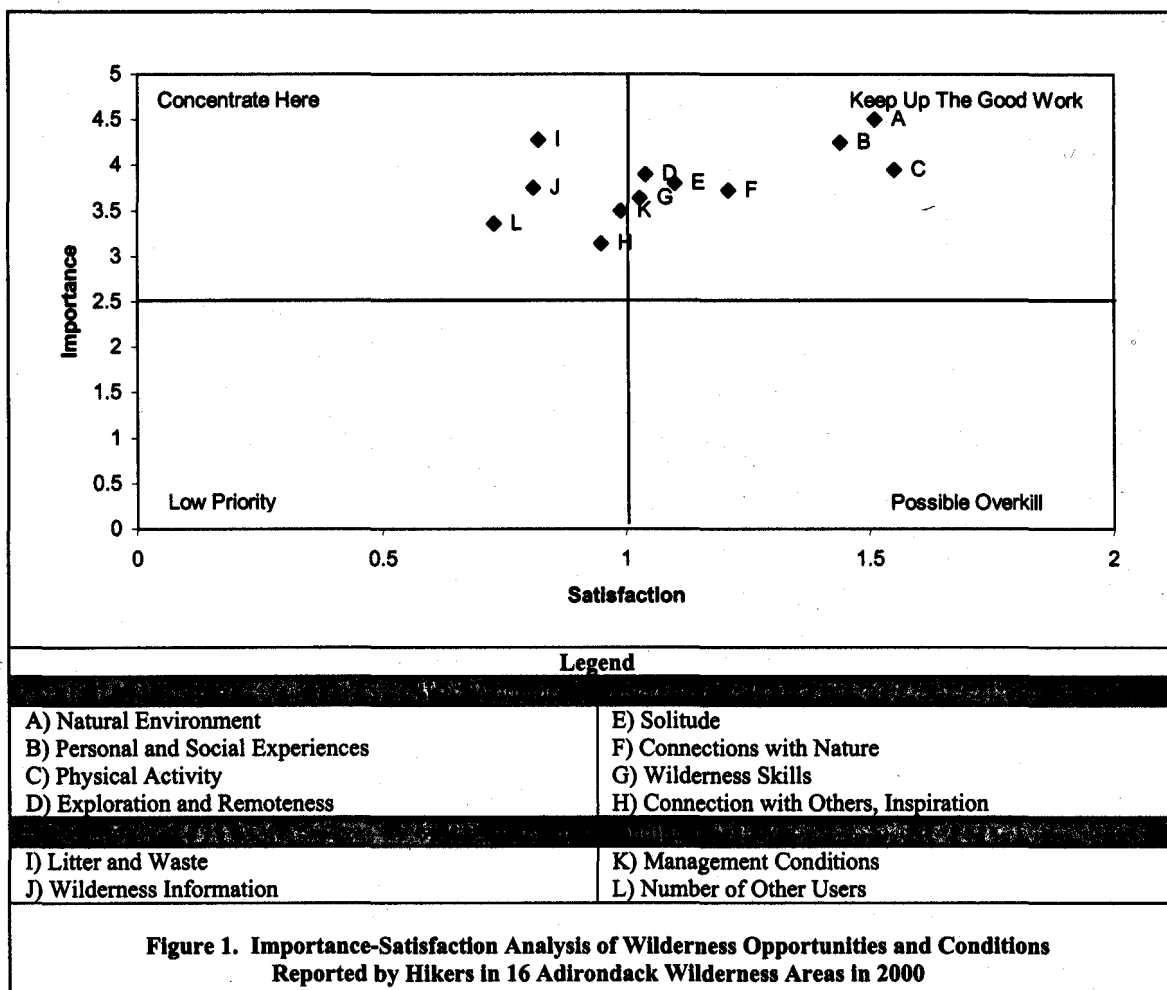
Importance and satisfaction scores from the entire sample indicate that Adirondack wilderness managers are, in general, providing the quality of experience that these Adirondack wilderness users were seeking. Importance and satisfaction means for each of the 12 wilderness characteristics and conditions were high (Table 2). In addition, these high mean scores indicate wilderness visitors are using coping behaviors to maintain their satisfaction.

**Table 2. Mean Importance and Satisfaction Scores with 12 Wilderness Characteristics and Conditions for 102 Adirondack Wilderness Hikers Interviewed in 2000**

| Attribute                           | Importance        | Satisfaction      |
|-------------------------------------|-------------------|-------------------|
| Natural Environment                 | 4.50 <sup>a</sup> | 1.51              |
| Personal & Social Experiences       | 4.25              | 1.44              |
| Physical Activity                   | 3.95 <sup>a</sup> | 1.55              |
| Exploration & Remoteness            | 3.90              | 1.04 <sup>a</sup> |
| Solitude                            | 3.80              | 1.10              |
| Connections with Nature             | 3.72              | 1.21              |
| Wilderness Skills                   | 3.64 <sup>a</sup> | 1.03              |
| Connection with Others, Inspiration | 3.14              | 0.95              |
| Litter and Waste                    | 4.28              | 0.82 <sup>a</sup> |
| Wilderness Information              | 3.75              | 0.81              |
| Management Conditions               | 3.50              | 0.99              |
| Number of Other Users               | 3.36              | 0.73 <sup>a</sup> |

<sup>a</sup> Statistically significant t-test differences (alpha = 0.05) between the mean scores of those using and those not using coping behaviors.

Due to the high importance and satisfaction means for every attribute, the quadrant lines, based on the grand mean of means, were not included in Figure 1, as is traditional in I/P analysis. The reasoning for this change is the very high level of importance ratings for all 12 variables. Rather than drawing quadrant lines on the grand mean of means, the figure was divided on middle of the importance scale at 2.5, and on the upper quarter of the satisfaction scale at 1 (satisfied).



Highest importance and satisfaction were placed on the quality of the natural environment (attribute A), personal and social experiences in wilderness (attribute B) and with the physical activity component of the wilderness experience (attribute C). Hikers were also highly satisfied, but placed a slightly lower importance on their ability to make connections with nature (attribute F).

Interestingly what is considered a hallmark of any wilderness experience, solitude (attribute E) fell almost exactly on the grand mean of means for both importance and satisfaction. Attributes for all four wilderness conditions, such as litter and waste (attribute I), had lower satisfaction ratings in relation to their high importance ratings, indicating each condition should be of some concern to wilderness managers.

The importance and satisfaction survey data was further analyzed in conjunction with the qualitative determinations of whether a hiker was using a coping behavior. The importance and satisfaction scores of those who had made use of any of the four coping behaviors were separated from those who used no coping behavior. Mean scores for each group were compared using independent sample t-tests with a significance level set at  $\alpha = 0.05$ .

Of the 12 importance attributes, three showed statistically significant differences between those making use of some coping behavior and those not using any (Table 2). Those hikers who had not used a coping behavior in Adirondack wilderness placed a higher importance on the physical challenge of their wilderness experience, improving their wilderness travel skills, and their enjoyment of the natural wilderness environment than those using coping behaviors.

Differences were found for three of the 12 satisfaction attributes, where three were found to have statistically significant differences between those using a coping behavior and those not (Table 2). However, the three statistically significant importance attributes were not the same as the three statistically significant satisfaction attributes. Those using coping behaviors were less satisfied with the amount of litter, number of other users encountered on a wilderness trip, and exploration and remoteness in wilderness than those not using coping behaviors.

#### Study Implications

High overall satisfaction levels with few significant differences between those who have made use of coping behaviors and those who have not, coupled with the fact

that both groups were evenly distributed across the spectrum of wilderness use level categories, indicates a greater complexity and interaction of coping behavior employment than was previously expected. So, while the hikers in this group who have and have not made use of coping behaviors may have been standing on the same mountain peak or beside the same pond, they were looking at the wilderness around them with different eyes, seeing a different place, and having different experiences.

There were hikers in the sample that were indeed seeking solitude and wildness and were using coping behaviors to ensure that they found those conditions. However, there were also those who, regardless of parking difficulties, frequent contact with other users, eroded trail conditions, and noisy campsites, said they will keep returning to the highly used Eastern Zone of the High Peaks Wilderness Complex, or to the crowded summit of Giant Mountain on a holiday weekend as these things simply do not reduce their satisfaction. Maybe it is a physical challenge and mountain views they are seeking and as long as their ability to feel the burn in their legs and lungs on the way to a summit view is not impeded by social or managerial conditions, their satisfaction remains high.

So while these Adirondack wilderness hikers may, at times, perceive crowding from other wilderness visitors, coping behaviors are working to allow them to maintain high satisfaction levels. Those making use of coping behaviors were less satisfied with the amount of litter, number of encounters with other hikers, and the sense of exploration and remoteness (in other words, the wildness of wilderness) and considered the physical challenge, improvement of wilderness skills, and the natural wilderness environment to be less important than those not using any coping behaviors.

Wilderness managers and recreation researchers should note that results of this study lend empirical evidence to what researchers have long expected about coping behavior employment – that hikers were using coping behaviors to maintain their satisfaction with certain wilderness characteristics and conditions.

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