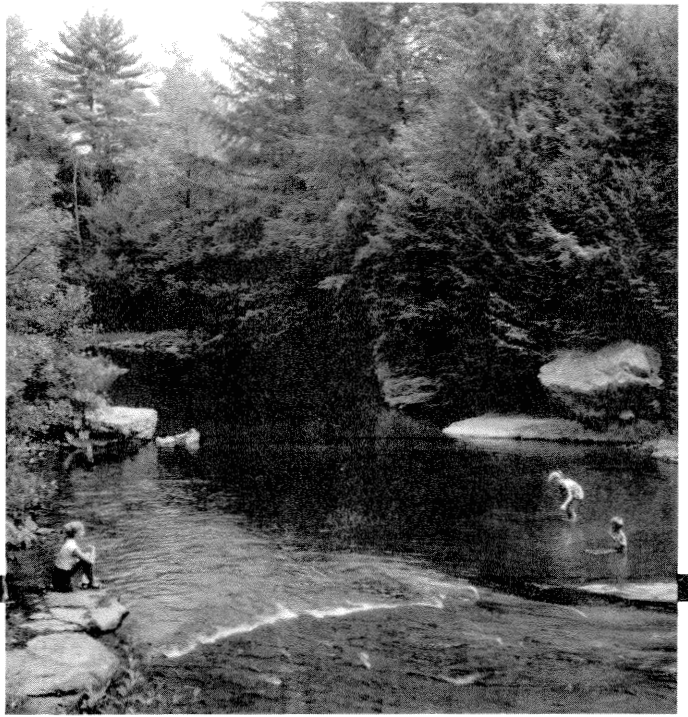




Emotional Responses to Recreation Environments

by Thomas A. More

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Abstract

Recreation visits to natural areas are often supposed to result in a variety of unique emotional benefits for urban people. To test this, data on the moods of visitors to state parks, golf courses and museums were compared. The results indicated that (1) visitors arrived at all of the areas with moderate levels of positive moods and low levels of negative moods; (2) the levels of both positive and negative moods tended to decline during the experience; (3) while there were differences in moods between individual areas, it is not possible to attribute these differences solely to the type of recreation environment. Instead, there may be a process of anticipation and consummation that pervades recreation experiences and tends to outweigh differences between environments.

INTRODUCTION

URBAN FORESTS occupy a special place in the thinking of many people interested in conservation—both professionals and lay persons alike. However, advocates of these areas are often hard pressed to find arguments for preserving them in the face of changing land uses. Perhaps the most commonly cited argument is that recreation in natural areas near cities offers urban residents a variety of emotional and spiritual rewards to help them cope with the problems of modern urban life. Documentation of this is sparse, and nonbelievers are understandably skeptical.

What is the value of a walk in the woods or a family picnic in a natural area on a Sunday afternoon? How can it be measured? Might an alternative activity be substituted effectively? A number of approaches have evolved to deal with these questions (Driver et al. 1978), with varying degrees of success. One promising approach is measuring the emotional impact of recreational activities in terms of people's moods; different activities and environments might be expected to produce different kinds of feelings in people, providing a basis for the evaluation of recreation benefits.

As a construct, mood is defined as a class of feelings or emotions that are temporary and of relatively short duration, but fairly stable within that time period. Thus, a general feeling such as happiness, sadness, anxiety, affection, or anger may last for only a few minutes, several hours, or perhaps at most, a day or two. The very transience of a mood, however, makes it a good indicator of recreation quality—a high-quality experience should put people in a "good" mood, while the reverse should be true for a disappointing experience. However, the way in which this works is not quite so apparent. In a previous project, More and Payne (1978) found that visitors to day-use natural areas near cities arrived at the areas with moderately high levels of positive moods (surgency, elation, vigor,

and social affection) and low levels of negative moods (aggression, anxiety, sadness, skepticism, and egotism). It was expected that during participation, the level of negative moods would decline, while the positive moods would rise. In actuality, however, the levels of both kinds of moods declined. To account for the decline in positive feelings, More and Payne postulated that once a decision to participate has been made, people look forward to participating and the levels of positive moods rise until they arrive at the site and begin participating. During participation, they consume the recreational activity until they reach a point where they tire of it and prefer to do something else. This satiation is accompanied by a decline in the level of positive moods.

This interpretation leaves a number of questions unanswered; perhaps chief among these is whether or not recreation in natural environments is unique in terms of its emotional impact on people. Rephrased in a broader context, the question might be: Do different recreation environments (ranging from outdoor to indoor) have different emotional effects or is the process just described a general one pervading all forms of recreation and overriding any differences? This question led to the formation of three general hypotheses for this study:

1. Participants in all the types of recreation studied were expected to begin participation with low levels of negative moods and moderate levels of positive moods.
2. The levels of both positive and negative moods would decline significantly during participation.
3. In spite of the volume of popular literature attributing special effects to outdoor recreation environments (McNamara 1971), there would be little difference between the moods of visitors participating in outdoor forest recreation activities, outdoor nonforest recreation activities, and indoor recreation activities.

METHODS

To test these hypotheses, visitors to four Massachusetts State Parks and Forests, two public golf courses, and two museums were interviewed during the summer of 1972. The four state forests and parks—Savoy State Forest, Mount Greylock State Reservation, Skinner State Park, and Hampton Ponds State Park—are located near cities in Western Massachusetts. Mount Greylock and Skinner offer picnicking and scenic vistas from mountain summits, while Savoy and Hampton Ponds offer swimming and picnicking. Although overnight camping is available at two of the areas, interviews were conducted only with day users. The two golf courses, Martin and Ponkapoag, are state operated and in Eastern Massachusetts; the museums—the Museum of Science and the New England Aquarium—are both in Boston.

At each area, a team of interviewers set up a checkpoint that enabled them to approach arriving visitors, asking them to participate in a survey. Those who agreed were given a self-administering questionnaire containing the Mood Adjective Checklist (MACL) developed by Nowlis (1965). The MACL uses 33 adjectives to measure 11 moods including aggression, anxiety, sadness, skepticism, egotism, surgency (cheerfulness), elation, vigor, social affection, fatigue, and concentration. Scores on each mood could range from 3 (very low) to 12 (very high).

As an instrument, the MACL—developed from a series of factor analytic studies—provides a gross but comprehensive index of a person's mood (Nowlis 1965). It seems to have good test-retest reliability when used in similar situations (Borgatta 1961, McNair and Lohr 1964). Although the adjectives differ in ratings of social desirability, these differences have little apparent effect on the actual responses given (Lazarus et al. 1972). In addition, the adjectives were probably equally socially desirable across the groups in this study so that between-group comparisons are not hampered. Finally, Handlon (1962) correlated one version of the MACL with physiological measures, but there are few other studies of this type.

As the respondents completed the MACL, the interviewer recorded sex, number in party, time, date, and weather conditions. Respondents were asked to initial the form so that their first interview could be matched with their second, and urged to return for a second interview when leaving. The second interview consisted of the MACL plus several socioeconomic questions. The interviewers again recorded time and weather.

This research design has three possible major sources of bias: bias introduced by a specific interviewer, bias created by the study design, and bias due to nonresponse. Interviewer bias was examined by using *t*-tests to compare mood scores across interviewers. The differences were not significant.

Survey design represented a potential bias in that taking the "before" interview might somehow subtly influence scores on the "after" interview. For instance, the first interview was surprising to people, but they were forewarned of the second. To test this possibility, I collected 56 after-only interviews at the Hampton Ponds area and compared these mood scores with the after scores of people who had completed both interviews at the area. The Mann-Whitney means test expanded for large sample sizes found no significant differences, indicating that taking the first test did not influence mood scores on the after interview.

Nonresponse constitutes the most serious source of bias. When a person refused to participate, the interviewer recorded the area, date, time, weather conditions, sex, and estimated age of the nonrespondent. Although subsequent chi-square tests revealed no differences between respondents and nonrespondents for these dimensions, it seems reasonable to assume that nonrespondents did differ significantly from respondents in some aspects of mood. Consequently, the ability to generalize from these data to the entire population of users at a specific area is impaired. On the other hand, the problems created by nonrespondents may be somewhat less important when comparisons of different activities are involved, because these comparisons include only people who were willing to participate.

Seven hundred and ninety-nine useable questionnaires were obtained: 120 from Skinner, 98 from Savoy, 59 from Hampton Ponds, 106 from Greylock, 98 from the Museum of Science, 97 from the New England Aquarium, 107 from the Martin Golf Course, and 114 from the Ponkapoag Golf Course. Only those respondents who completed both interviews were included in the analysis.

To compare the moods of visitors as they arrived at the area, a multivariate analysis of variance (MANOVA) was used. To identify the moods that differed significantly across the areas on the before interview, individual analyses of variance (ANOVA) were conducted after a correlation analysis had indicated that the moods could be treated independently. Finally, to assess which moods were most responsible for any overall mood differences between areas, a stepwise discriminant analysis treated moods as independent variables, using people's mood scores to predict the area they were in. When a mood was identified as significantly discriminating between the individual areas, it was subjected to multiple range tests to see if different levels of the mood were associated with the different recreation environments (i.e., forest, outdoor nonforest, and indoor).

To assess changes in mood, a change score was computed by subtracting scores on the after interview from scores on the before interview. To see if moods changed differently at different areas, a MANOVA was conducted on the change scores. Another stepwise discriminant analysis identified the moods that were most responsible for differences in mood score between areas, and the range tests were repeated. Individual ANOVAs conducted for each mood indicated if that mood had changed significantly during the recreation experience.

Finally, the results of the discriminant analyses were cross-checked by repeating MANOVAs on the subgroups of areas they identified, and the effects of the independent variables (socioeconomic and demographic variables, time, weather, etc.) were assessed by using MANOVA to compare mood and mood change scores across their different levels.

RESULTS

Moods of visitors arriving at the sites

The mean scores on each mood at every area are presented in Table 1 for both before and after interviews. Recall that the scores could range from 3 (very low) to 12 (very high). On this basis, the general pattern of mood scores across all the areas (and activities) appears similar—most people entered with low levels of negative moods and moderate levels of positive moods. Levels of concentration tended to be moderate, while fatigue levels were low. When the areas were compared, however, the MANOVA revealed that visitors did differ significantly ($p < 0.001$) in mood scores across areas. The ANOVAs conducted separately on each mood indicated that the area scores differed significantly in aggression, elation, vigor, social affection, and concentration ($p < 0.05$). These same moods also were significant ($p < 0.005$) in the discriminant analysis.

In this analysis, the moods most responsible for differences between areas were (in decreasing order of importance) social affection, vigor, elation, aggression, and concentration, with 19.5 percent of all individuals classified correctly by area. The discriminant analysis also identified subgroups of similar areas by plotting canonical variables evaluated at group means. This portion of the analysis identified the three major subgroups, separating visitors to state parks, golf courses, and museums correctly.

In sum, then, the first hypothesis—that people would enter all areas with low levels of negative moods and moderate levels of positive moods—appears generally true. However, the third hypothesis that there would be little difference in moods across the different areas—cannot be confirmed. While the general pattern of moods appears similar, it may be that anticipating a particular kind of recreation experience produces subtle shadings or gradations in people's feelings that are sufficient to differentiate between individual areas.

Table 1.—Mean mood scores before (B) and after (A) visits across areas

Mood ^a		State park			Golf course			Museum		All areas (N = 799)
		Skinner (N = 120)	Savoy (N = 98)	Hampton Ponds (N = 59)	Greylock (N = 106)	Martin (N = 107)	Ponkapoag (N = 114)	Science (N = 98)	Aquarium (N = 97)	
Negative:	Aggression	B 4.2	3.8	3.9	3.9	4.3	4.3	3.5	3.5	3.9
		A 3.8	3.6	4.0	3.6	4.4	4.4	3.4	3.4	3.8
Anxiety	A	B 4.3	3.8	3.8	4.2	4.5	4.0	4.0	3.9	4.1
		A 3.8	3.6	3.7	3.8	3.8	3.9	3.7	3.4	3.7
Sadness	A	B 4.0	3.7	3.6	3.7	3.7	3.6	3.5	3.6	3.6
		A 3.8	3.6	3.8	3.6	4.4	4.4	3.4	3.4	3.8
Skepticism	A	B 4.8	4.6	4.8	4.5	4.7	4.8	4.3	4.3	4.6
		A 4.3	4.0	4.3	4.1	4.2	4.4	3.8	3.7	4.1
Egotism	A	B 4.3	4.4	3.9	4.2	4.7	4.6	4.0	4.1	4.3
		A 4.2	4.0	3.7	4.3	4.1	4.0	3.8	3.8	4.0
Positive:	Surgency	B 8.0	8.3	7.9	8.0	7.8	8.3	7.6	7.9	8.0
		A 8.1	8.3	7.3	8.0	6.7	7.4	6.4	7.7	7.5
Elation	A	B 8.0	7.8	7.4	8.3	7.2	7.7	7.4	7.9	7.7
		A 8.7	7.6	6.9	8.4	6.2	6.4	7.1	8.1	7.5
Vigor	A	B 8.2	8.4	8.4	8.0	8.8	9.4	8.7	8.8	8.6
		A 7.7	7.6	7.2	7.7	6.5	7.3	6.3	7.9	7.3
Social affection	A	B 9.0	8.9	8.4	8.8	7.5	8.5	9.2	9.3	8.7
		A 9.0	8.9	8.3	8.5	6.7	7.5	8.3	8.9	8.2
Other:	Concentration	B 7.1	7.2	7.5	7.0	8.0	7.8	8.0	8.0	7.6
		A 7.0	6.1	7.2	6.7	5.9	6.6	7.2	7.5	6.7
Fatigue	A	B 4.9	5.1	4.6	4.5	5.0	4.6	4.3	4.4	4.7
		A 4.7	4.9	4.8	4.2	6.6	5.7	6.0	4.7	5.2

^aMoods are grouped conceptually into four groups: negative, positive, concentration, and fatigue (More and Payne 1978).

Mood changes during a recreation experience

ANOVAs conducted on individual mood scores indicated that most moods declined significantly ($p < 0.01$) during the course of the recreation experience. Sadness increased significantly ($p < 0.05$); aggression did not differ significantly, though the change was the predicted direction. This tends to confirm the second hypothesis—that the levels of both positive and negative moods decline significantly during on-site participation. However, the MANOVA results again indicated significant differences in mood changes between areas ($p < 0.001$). When broken down by the discriminant analysis, the moods most responsible for producing these differences ($p < 0.005$) were (in decreasing order of importance) vigor, concentration, sadness, fatigue, and elation (19.3 percent of cases correctly classified by area).

As before, three groups emerged when the canonical variables evaluated at group means were plotted. This time, however, one of the museums—the New England Aquarium—was included with the state parks, associated most closely with Mount Greylock. At Mount Greylock, people drive to the summit and spend about 45 minutes wandering about enjoying the views. Perhaps people experience aquaria in a similar fashion, treating the experience more as sightseeing than as an educational venture.

A MANOVA repeated on the groups of areas identified by the discriminant analysis found no significant differences within the group of state parks and the aquarium, indicating the moods changed in similar ways at these areas. However, when repeated for golf courses, significant differences ($p < 0.05$) were found. Subsequent ANOVAs indicated the two courses differed significantly on anxiety and concentration ($p < 0.05$).

While the discriminant analyses indicated that different moods and mood changes could discriminate among *individual* areas, the range tests were less successful in dividing individual areas into their appropriate recreation environment. Only in the case of aggression were the areas neatly classified into the three recreation environments; here, museum visitors scored lowest and golfers

scored highest, with state park users falling in the middle.

Effects of independent variables on mood

Finally, the MANOVA comparisons of mood and mood change scores across different levels of the independent variables (age, sex, income, education, number in party, time, weather, etc.) indicated that none of these variables exerted a significant influence on mood. It may be these variables describe who participates in an activity rather than how they feel when they arrive at the site.

DISCUSSION

What is the emotional process that occurs during the recreation experience and how does it differ across activities and sites? For natural areas near cities, More and Payne (1978) suggested that the decision to participate in a recreational activity establishes a goal—arriving at the site and initiating participation. As people anticipate the experience, the amount of positive emotion builds until the goal is reached. Once on site, people consume the recreation experience until they reach a point where continued participation no longer seems desirable or an alternative activity becomes more pressing and they decide to leave. This consummation is accompanied by a slight but statistically significant decline in the level of positive emotion—when people leave, they are still in a “good” mood, but one that is down somewhat from the peak near the start of the experience. This process has been depicted graphically by More and Buhyoff (1979).

This study suggests that this emotional process is a general one, applicable to a variety of recreational activities. Two reasons support this: first, the general pattern of moods was the same across the activities—people both entered and left all the areas with moderate levels of positive moods and low levels of negative moods. This similarity is particularly striking since state park visitors, golfers, and museum visitors probably have vastly different motives for participating in their activities. Second, while the discriminant

analyses were significant, they were only marginally so; both analyses only managed to correctly categorize about 20 percent of the cases. Thus, while people's moods can be used to discriminate between areas, they do not provide a particularly good basis for doing so.

While this buildup and decline of positive moods may apply generally across all recreational activities, it still seems possible for specific moods to vary slightly across specific activities—the subtle shadings of mood referred to earlier. For example, while the general pattern of moods was similar across areas and the discriminant analyses were only marginally significant, the MANOVAs indicated that the areas differed significantly both in terms of entering moods and in the way moods changed during the course of the experience. The feelings most consistently responsible for producing these differences (i.e., those found to be significant in both discriminant analyses) were vigor, elation, and concentration. However, none of these could be clearly associated statistically with the three major types of recreation environments studied. In fact, aggression was the only mood that could be categorized as being highest for golfers and lowest for museum visitors, with state park users in the middle.

One potential reason for this inability to associate moods and environments is the sheer number of sites used. For example, had each environment—forest, outdoor nonforest, and indoor—been represented by only one site, the differences among them might have seemed more apparent. With eight areas, the chances of obtaining such a neat classification are greatly reduced; it may be that moods for a recreation environment are distributed about a mean, and that areas on an end of the distribution overlap areas of another environmental type. On this basis, there do seem to be some general *trends* in the data from this study, which, though not verifiable statistically, appear to make some sense intuitively. Relative to the other groups, state park visitors, for example, showed average levels of negative moods, and above average levels of surgency, elation, and social affection (Table 1). They were also concentrating less initially, while their experience left them feeling some-

what more vigorous and less fatigued than other groups. Golfers, on the other hand, tended to show the highest levels of negative feelings on both interviews. Initially, they had high levels of vigor and concentration coupled with below average levels of social affection, perhaps attributable to the competitive nature of the game. However, their recreational experiences left them, as a group, with below average scores on surgency and concentration, and well below average scores on elation and social affection. Fatigue levels increased substantially.

The museum visitors consistently showed the lowest levels of negative moods on both interviews. They began their experience with above average levels of vigor, concentration, and social affection, coupled with lower than average levels of surgency and fatigue. When leaving, they still showed above average levels of concentration and social affection.

While many of these differences seem intuitively appealing, recall that, as mentioned earlier, they do *not* represent statistically significant differences between recreation environments. This may be due, in part, to the fact that the MACL provides only a crude, although comprehensive, index of people's feelings (Nowles 1965); the differences might be more apparent with a more finely calibrated instrument or with different indicator variables. Future research using different sites and activities and alternative instrumentation will have to clarify the reasons for and extent of these differences before definitive statement can be made about one type of environment producing a specific feeling.

Thus far, I've been discussing what I believe is a general process that applies to most people most of the time. Yet it is important to recognize that in addition to differences between sites, there can be a vast array of individual differences in recreation experiences and the moods they foster. All of us can recall individual experiences that stand out either positively or negatively; over the population of users of a given site or facility, some will be excited by it, others turned off. Some people are simply more "into" an activity than others.

Understanding these differences and how they are incorporated into the general recre-

ational process provides a basis for managing recreation quality (More and Buhyoff 1979). First, one must be conscious of the buildup and decline of emotion that occurs generally during the recreation experience—on an emotional level we may be dealing with entirely different user populations at the beginning and end of an experience. Because of this, the timing and location of a variety of management activities becomes important. For example, people may be more responsive to requests for information or donations earlier in their experience than they are later.

Similarly, attempts to communicate rules should be more effective early in the experience, and care should be given to the location of interpretive and information facilities to ensure that people encounter them near the start of their experience. Programed events such as interpretive walks or instruction might also best be scheduled at times when most visitors are fresh and receptive to information. Conversely, since people at the end of an experience tend to be in not quite such a good humor, they may be somewhat more prone to complain at this time. Consequently, managers would probably do well to avoid controversial features, requests, or presentations that people might encounter near the end of a visit.

From the standpoint of individual differences, More and Buhyoff (1979), following Lewin (1951), suggested that a recreation experience should be treated as a series of goals, and the amount of emotion people experience is related to how attractive they find these goals. Thus, from a management standpoint, we need to identify and manipulate those attributes of the goals that people find attractive (cf. Peterson 1974). In this way it may be possible to have a positive impact on the emotional aspects of people's recreation experiences.

CONCLUSION

Are there differences in the emotional effects of recreation environments? On the basis of the data in this study, I cannot conclude that there are with any degree of confidence. Certainly, there are differences in moods and mood changes between individual areas, and there appear to be some interesting—though not statistically significant—trends in the data. However, until future research examines these trends in greater detail using different sites, activities, and other, more precise indicators, it is premature to conclude that there are major emotional differences among forest, outdoor nonforest and indoor recreation environments. Sweeping statements asserting unique psychological benefits for outdoor recreation are, at best, oversimplifications.

In sum, two of the major hypotheses of this study were confirmed: people did arrive at all areas with low levels of negative moods and moderate levels of positive moods, and the levels of most moods declined during participation. On the basis of these results, I believe there is a general process involving a buildup of positive emotions during anticipation followed by a decline during consummation. However, individual moods, while generally conforming to this process, may vary slightly between activities, producing subtle differences in people's experiences. Research is needed to examine these differences in greater detail, especially in relation to specific attributes of a site that can be regulated by managers. When we understand more about the relationship between people's moods and these attributes, we will be better able to attain one of the most important goals of recreation management and research—providing high-quality recreation experiences for the general public.

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