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ABSTRACT

Presented is research exploring the relationships between cutdocr leisure participation and pro-environmental attitudes and behavior. The seven hypotheses investigated related to determinants of leisure behavior, attitudinal consequences of this behavior, and the relationships among group membership, attitudes, and pro-environmental behavior. These hypotheses were tested using data from two samples of students from a large state university: (1) members of a class in social problems, and (2) members of the hiking division of an outdoor recreation club. Likert scales were employed to measure two attitudinal and two behavioral variables. Correlational analyses showed that membership in a scouting organization and parental education level are significant predictors of leisure behavior. In addition, appreciative leisure behavior was associated with nature appreciation, and nature appreciation was associated with environmental concern. Membership in the recreation club correlated with both nature appreciation and environmental concern. Regression analysis revealed that of nine independent variables, only environmental concern and appreciative leisure participation were significant predictors of pro-environmental behavior. (Author/WB)

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Outdoor Leisure and Environmentalism Among College Students

A Thesis in

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by

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ABSTRACT

This study explores the relationships between outdoor leisure participation and pro-environmental attitudes and behavior. Past research suggests that attitudes are often influenced both through group affiliations and through having a special "interest" at stake in an issue. Other research indicating the problematic connection between attitudes and behavior is considered, and it is suggested that this relationship may be stronger when an attitude is "salient" or when there is "reference group support" for behavior. It is suggested that "appreciative" outdoor recreation activities like hiking and backpacking, and membership in an outdoor recreation group are especially conducive to the development of pro-environmental attitudes and behavior. Seven formal hypotheses are presented which deal with the determinants of leisure behavior, attitudinal consequences of this behavior, and the relationships among group membership, attitudes, and pro-environmental behavior. The hypotheses are tested using data from two samples of students from a large state university: members of a class in Social Problems and members of the hiking division of an outdoor recreation club. Likert scaling is employed to measure two attitudinal and two behavioral variables. The results show that membership in a scouting organization and parental education level are significant predictors of leisure behavior but that personal intentions to attend graduate school and parental occupation level are not. Appreciative leisure

participation is found to be strongly associated with an attitude of nature-appreciation, nature-appreciation is strongly associated with concern for environmental problems, and membership in the recreation club is strongly associated both with nature-appreciation and environmental concern. A regression analysis shows that of nine independent variables only environmental concern and appreciative leisure participation are significant predictors of pro-environmental behavior. These findings are discussed in the light of prior studies, and suggestions for further research are made.

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CHAPTER I

INTRODUCTION

Statement of the Problem

A recent and important social trend has been the emerging recognition of the seriousness of various "environmental" problems. Such issues as the kind, level, and danger of water and air pollutants, proper methods of waste disposal, the supply of certain renewable and non-renewable resources, rapid world-wide population growth, endangered species of animals and plants, and even the future habitability of the earth have aroused much concern. Although numerous studies have suggested that people vary widely in their concern over these problems, little is known about the reasons for this variation. Because the explanation of attitudinal differences in general is an important task for social scientists, differences in attitudes toward the environment constitute an appropriate professional focus.

Of related interest is the question of whether differences in attitudes may translate into differences in actual behavior. This important theoretical question is often referred to as the "Attitude-Behavior" problem. Answers to it may contribute to the prediction of behavior with important consequences for environmental quality.

A fruitful area for investigating these substantive and theoretical problems lies in the study of participants in selected types of outdoor recreation. The burgeoning of interest in many kinds of

outdoor leisure pursuits has paralleled the growth of "the environment" as an issue, and although the relationship between the two has received some discussion in the literature, the area has not been thoroughly investigated. Specific areas which past research has neglected and which the present study will explore include the relationship between leisure participation and environmental attitudes and behavior.

Purposes of the Research

The purposes of this research are to clarify the process of becoming a participant in certain kinds of outdoor recreation, and to determine the influence of such participation upon environmentally-relevant attitudes and behavior.

Methods and Limitations of the Research

Data for the present research was gathered through the administration of a questionnaire to two groups of college students attending the Pennsylvania State University, University Park, Pa., during the fall term of 1976. One group consisted of members of the hiking division of a large campus recreation organization, while the other consisted of students enrolled in a course in Social Problems. The survey represented an innovation in the study of environmentalism by attempting to apply a standard scaling procedure to the measurement of both attitudes and behavior.

Because the sample was limited to college students, generalization of the results beyond such populations would be questionable. In addition, the study's complete reliance upon questionnaire data for both attitudinal and behavioral measurement necessitates interpreting results

conservatively. Nonetheless, the research provides one of the first opportunities in the literature for examining possible influences of leisure upon environmental concern, and the consequences of these attitudes for behavior.

CHAPTER II

THE ENVIRONMENT, ATTITUDES, AND BEHAVIOR

In principle, the problems and issues which might be viewed as part of the overarching problem of environmental quality are limitless. However, there are several areas which may serve as examples of "environmental" problems for purposes of discussion. For example, Albrecht (1975) begins his discussion of the "parameters" of the problem by pointing to the projected depletion of certain renewable and non-renewable natural resources under the pressures of expanding population, industrialization, and consequent increases in demand. In addition to dwindling energy sources, some projections suggest that the United States will have completely used up its reserves of several important metals by the year 2000 (p. 564).

Although other important resources like clean air and water have not been "consumed" in the same sense, various pollutants have nonetheless made them more scarce. Some of these same pollutants are seen by many to pose health hazards to humans, with one obvious example of this being the instances of respiratory diseases which may be traced to levels of particulate matter in the air. Numerous cases of leukemia and high blood pressure may be caused by abnormal concentrations of "toxic" metals like lead and mercury which result from environmental pollution (see Albrecht, 1975, p. 565; Smith et al., 1974, pp. 51, 56).

Other environmental problems which have gained attention from

experts and the media would include solid waste disposal and its immediate manifestation in "litter," serious pollution of local aquatic systems, crowding in parks and recreational facilities, the decline of areas of "open space" and other "aesthetic" problems relating to such intangibles as the "beauty" of the landscape. Although the areas noted do not come near to cataloging the ills besetting the environment, they should suggest something of their variety.

To some extent, solutions to these problems rest less upon scientific and technological breakthroughs than upon alterations in patterns of environmentally damaging behavior, both on individual and collective levels. Because social scientists have often suggested variations in attitude as a partial explanation of behavior variation, one goal of the present chapter is to set forth definitions of the term "attitude" and to review research concerning the genesis of attitudes toward the environment. Next, research showing the problematic nature of the Attitude-Behavior connection will be considered. At this point, two additional factors which may increase attitude-behavior consistency will be introduced. Research into the relationship between attitudes and behavior toward the environment will be considered, with specific reference to the role the two additional factors alluded to above may play in strengthening it.

Attitudes and Their Formation

In common parlance, and occasionally in social science research, the word "attitude" is used interchangeably with such terms as "values" and "opinions." However, where Rokeach defines values as ". . . abstract ideals, positive or negative, not tied to any specific attitude-object

or situation" (1968, p. 24), most theorists regard attitudes as having links to specific, denotable objects, ideas, or situations, sometimes explicitly social and sometimes not (Sherif & Sherif, 1969, p. 335). An attitude is therefore also more general than the highly specific "opinion," and is assumed to be more or less enduring and consistent (Fishbein & Ajzen, 1975, pp. 6-8).

In addition, attitudes are evaluative in nature. That is, they are consistently favorable or unfavorable. According to Berkowitz, an attitude is said to exist when there is an "evaluative or feeling reaction," also known as an "affective" response, toward some object (1975, p. 289). Other theorists, while agreeing with their fundamentally evaluative character, suggest that attitudes are constellations of three elements: a cognitive or "belief" component, an affective or evaluative component, and a "conative" or behavioral component (Fishbein & Ajzen, 1975). Instead of being isolated from each other, however, these factors are often highly intercorrelated (Sherif & Sherif, 1969, p. 336).

What has made attitude theory a particularly pertinent topic for the social sciences is the common, albeit often unstated assumption that attitudes have some governing effect on behavior.[1] For example, Allport has included as part of his popular definition of attitudes the contention that they exert a "directive or dynamic influence on behavior" (quoted in McGuire, 1969, p. 142). We would therefore expect a favorable attitude toward some object to be associated with favorable

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[1]There have been conflicts over the Attitude-Behavior causal order, with evidence that in some instances attitudes seem to develop in order to "justify" behavior (Berkowitz, 1975, pp. 301-03).

behavior as well. Furthermore, when the components mentioned in the preceeding paragraph are consistent with each other, we should expect an even closer association between an attitude and behavior (Fishbein & Ajzen, 1975, pp. 381-3).

Despite an apparent consensus among theorists that attitudes are learned through experience (see McGuire, 1969, p. 147), one writer has observed that no "generally accepted theory of learning" has emerged which accounts for attitude formation (Sherif, 1976, p. 234). One current theoretical perspective seems especially worth reviewing in this regard, both for its explanatory power and broad applicability. This orientation is what has come to be known as "reinforcement" theory (Deutsch & Krauss, 1965). Homans has set forth this basic tenet of the reinforcement orientation: patterns of behavior are performed or not performed according to their "payoff" and are dependent upon the "amount and kind of reward and punishment" they fetch (1961, p. 13). There is a marked similarity between this formulation and the notion of the self-seeking or "hedonistic" man of classical and utilitarian economics (Turner, 1974, chap. 13), which also underlies the "interest" theories of the "conflict" school of social theory (see Collins, 1975).

Triandis, in extending reinforcement theory to attitude formation, notes that we should expect favorable attitudes to ensue if an attitude-object becomes associated with "rewarding states of affairs" (1971, p. 94). Although one frailty of the "reinforcement" orientation is that "rewards are rarely specified with precision" by researchers working within it (see Turner, 1974, chap. 14), two distinct hypotheses can nevertheless be derived from it. The first follows upon Rokeach's

suggestion that attitude-objects become positively or negatively evaluated to the extent that they contribute to the satisfaction of "higher-order" values (1968, p. 132). Applied to the area of environmental attitudes, this implies that those who perceive environmental reforms to carry with them distasteful political consequences might tend to view such reforms in an unfavorable light. The compatibility of the general "reinforcement" orientation with the "interest" theories of the conflict school alluded to above may be illustrated by noting that an attitude-object perceived as posing a threat to economic well-being would also be likely to arouse negative feelings.

Together, these considerations suggest what will be called the "interest" theory of attitude formation: attitudes toward environmental reforms will be more positive for persons who stand to benefit most by them, or who do not experience these reforms as threats to their "higher-order" values.

A second way in which reinforcement theory can be applied to the explanation of attitudinal differences derives from the observation that the approval or disapproval of other people is a potent source of reward and punishment. For example, Cohen has noted that even some presumably trivial, experimentally induced attitude change has been known to persist for at least short periods of time (1964, p. 39). This is especially true when the approval comes from "significant others" like parents or peers, or when it derives from the "reference groups" to which a person belongs or aspires to join. Here, Cohen has suggested that the desire to remain in a group results in a greater likelihood of manifesting attitudes which accord with group norms. Similarly, Newcomb

(1943) has demonstrated that the experience of being exposed to new reference groups and consequently different patterns of approval resulted in permanent attitude change for many of the students in his Bennington College study. These studies suggest a second specific hypothesis regarding the development of environmental attitudes: membership in a group with characteristic attitudes toward environmental issues will result in the development and maintenance of similar attitudes in an individual.

Studies of Environmental Attitudes

The two hypotheses just discussed are not mutually exclusive, and may be viewed as complementary in some ways. They will be referred to as the "interest" and "group" theories of attitude formation. Oddly, beyond the occasional finding that members of ecology groups manifest greater concern for environmental problems than non-members (see e.g. Maloney & Ward, 1973), little has appeared in the literature which would suggest or deny the validity of the "group" theory. Concerning the former, or "interest" theory, however, there is substantial supporting evidence.

Economic and non-economic interests have been shown in the literature to exercise an important influence upon the perception of environmental problems even in the presence of high "objective" levels of pollution. For example, Humphrey and Krout showed that beliefs concerning the impact of a nearby highway on property values were significant predictors of annoyance with traffic noise, even though some 50% of the variation in annoyance could be attributed to sound levels (1975, pp. 606-07). More dramatically, Wall (1973) found that even

though the coal miners in his study lived in "probably the filthiest spot in England" and suffered from "extremely high" levels of air pollution, they were also strongly opposed to legislation aimed at controlling smoke from the use of coal for home heating because it would restrict the use of their free "concessionary" coal (p. 225).

Other studies underline the role of specific economic interests in the development of environmental attitudes. For example, Buys (1975) found considerable support for the use of various economically expedient but environmentally damaging poisons to control predators among his sample of New Mexico sheep ranchers. Similarly, Creer et al. (1970) found what they termed a "very strong" negative relationship between dependence upon a source of air pollution for employment and environmental concern. In addition, Crenson found the tendency for opposition to pollution control in Gary, Indiana and East Chicago to be concentrated in "business and industrial organizations" (1971, p. 84) whose economic interests might be injured by such restrictions.

Such broad aggregates as social classes may also have conflicting interests vis à vis the environment. For example, plant closings ordered on environmental grounds are more likely to affect blue-collar than white-collar workers (Dillman & Christenson, 1972, p. 251; Morrison et al., 1972, p. 266), and so it is not surprising that one study found blue-collar workers and the "not-employed" to reject the idea of closing factories to reduce pollution (Opinion Research Corporation, 1975). Similarly, because higher-income groups are more able to pay for the costs of environmental reform reflected in higher taxes, prices for consumer goods (Beckerman, 1974), and utility costs (Schnaiberg, 1973,

p. 620), they should oppose these things less strongly. In fact, the study just cited suggested the validity of this assumption when it found that blue-collar and "not-employed" workers favored lower prices at the expense of environmental protection, and favored strip mining if it would reduce electricity costs (Opinion Research Corporation, 1975). Although there is only mixed evidence that different class interests concerning economic growth determine attitudes toward the environment (Albrecht, 1975; Costantini & Hanf, 1972; Buttel & Flinn, 1975), it is clear from this review that economic interests play a significant role in the formation of environmental attitudes.

However, before accepting the "interest" theory of the formation of environmental attitudes, it is necessary to recognize that various "interest groups" may differ on other significant dimensions, and that these may also have a bearing upon attitude formation. For example, those in the higher economic groups often have relatively high levels of formal education, and education is itself found to be strongly associated with environmental concern (Tognacci et al., 1972, p. 84; Dillman & Christenson, 1972, p. 251; Costantini & Hanf, 1972, p. 225; Buttel & Flinn, 1974, p. 61). Political party affiliation and liberal or conservative political ideologies may also predispose people toward positive or negative attitudes concerning environmental reform (Dunlap & Gale, 1974; Koenig, 1975; Tognacci et al., 1972, pp. 81-2; Costantini & Hanf, 1972, p. 233; Dillman & Christenson, 1972, p. 251), as may status as a college student (Dunlap, 1975; Dunlap & Gale, 1972). Granting the possibility that some of these variables may be more closely associated than social class with environmental attitudes does not, however, invalidate the

"interest" theory but points out the likelihood that there are complex relationships among these many variables which have yet to be closely examined.

The Relationship Between Attitudes and Behavior

The preceding literature review has established the plausibility of the "group" and "interest" theories of attitude formation. So far we have tacitly assumed that attitudes toward the environment do exercise some sort of influence, even an important one, upon such behavior as participating in recycling projects, attempting to lessen consumption of natural resources like energy, and working for "proenvironmental" policies. However, the strength of this attitude-behavior relationship has been brought into serious question by numerous researchers. A justifiably famous and early study which raised these questions was by LaPiere (1934). He found very little agreement between the attitudes expressed by hotel and restaurant owners toward accepting Chinese patrons and their subsequent behavior in this regard. Wicker has reviewed numerous attitude-behavior studies since LaPiere's and found a strong tendency for attitudes to be ". . . unrelated or only slightly related to overt behavior" (1969, p. 65). Although several studies (e.g., Schuman & Johnson, 1976) challenge the extreme conclusion that attitudes are irrelevant for predicting behavior, the preceding skeptical notes suggest the need for some reorientation in our thinking about the attitude-behavior relationship. Specifically, there may be special conditions under which this relationship may be stronger or weaker.

One such condition bears some affinity with the "affective" dimension of attitudes mentioned earlier. This is the rarely-measured quality

of attitudes called their "salience" or importance. Several theorists have noted that although attitudes toward some object may be similar in extremity or direction for two people, their behavior may differ because of the different significance the object holds for them. Various formulations have been set forth in the literature to describe this element, with some calling it "attitude-object importance" (Perry et al., 1976), others referring to the extent of "ego-involvement" of a person in an issue (Sherif & Sherif, 1969, pp. 295-7), and still others employing the term "salience" or "affective salience" (Scott, 1968, p. 206).

These "salient" or "ego-involving" attitudes are capable of arousing substantial amounts of "affect" or emotion, and it is this emotional coloration which seems to produce greater consistency between attitudes and behavior. In addition, one literature survey suggests that numerous "experimental and empirical findings over the last quarter of a century" support the notion that the inclusion of some kind of measure of "importance" or "ego-involvement" as a supplement to traditional attitude measures will improve the prediction of behavior (Sherif & Sherif, 1969, p. 287).

A second variable which may influence attitude-behavior congruence is social support for behavior. Researchers have noted that "reference groups" and "significant others" are influential not only in the formation of attitudes but also in increasing their correspondence with behavior. For example, Fendrich (1967) had his sample of students fill out both a traditional scale to measure racial attitudes and a scale to measure the extent to which they thought various presumed "reference groups" like close friends and family would engage in certain inter-

racial behavior. He found that such "perceived reference group support" for behavior correlated both with racial attitudes and overt behavior while controlling for the effects of attitudes, indicating an independent influence of perceived reference group support on behavior. Schuman and Johnson reviewed six studies bearing on this problem, including Fendrich's, and came to a generally positive conclusion regarding this line of inquiry:

> Overall, it appears that (a) some additional variance in behavior can be explained by adding appropriate reference group measures to an attitudinal questionnaire; (b) there is some joint effect of both variables, the causal character of which is unknown and largely unstudied; and (c) attitude has an independent effect on behavior even when reference group measures are controlled (1976, p. 188).

Three hypotheses concerning the attitude-behavior relationship emerge from the foregoing survey. First, there should be a positive and significant correlation between attitudes and behavior. Second, these relationships should be stronger when the attitude in question is a salient and ego-involving one. Third, when support for a given behavior exists within an individual's reference groups or among his significant others, the attitude-behavior relationship should be even stronger.

As a final step in this review, it is necessary to ask how well these three contentions are borne out by the available research concerning the relationship between environmental attitudes and "pro-environmental" behavior.

Past Studies of "Pro-environmental" Behavior

Although numerous studies have appeared which attempt to explain variation in behavior toward the environment, few of these directly bear upon the hypotheses mentioned in the previous section. In the first of

two studies relevant to the simple relationship between environmental attitudes and behavior, Weigel et al. (1974) observed that a reason for the chronic low correlations reported by many researchers lies in the use of overly general attitude measures. In their study, as the specificity level of their attitude measures came closer to the target behavior of willingness to participate in local Sierra Club activities, the attitude-behavior correlation rose significantly (p. 728). Similarly, Heberlein and Black (no date) demonstrated that responses to attitude questions which dealt specifically with buying unleaded gasoline were strongly correlated with this behavior, and that more general attitudes toward the environment correlated less strongly. These two studies suggest that attitudes toward the environment do correspond with behavior. At times these correlations are substantial, particularly when attitudes and behavior are equally specific.

Two other studies have dealt with the question of whether "salient" or "important" attitudes are more strongly correlated with pro-environmental behavior than less important attitudes. In the first, Perry et al. (1976) employed a five-item Guttman scale to measure how serious their subjects thought the problem of air pollution to be, and an index combining two measures of "attitude-object importance." Their somewhat questionable "behavioral" measure consisted of a similar index composed of responses to questions regarding "willingness to take action" and whether or not subjects had returned a postcard requesting more information concerning air pollution. They found that "attitude-object importance" was substantially correlated with attitudes, and that:

> action against air pollution is directly and positively related to attitudes toward air pollution. Furthermore, action against air pollution is related to the degree of importance that air pollution has for each respondent. This substantiates our assertion that consistency between attitude and action is in part a function of attitude-object importance (1976, p. 143).

In a second relevant study, Maloney and Ward (1973) included scales tapping two different aspects of environmental attitudes. One of these, a "verbal commitment scale," consisted of statements concerning specific behavior a person would be willing to perform on behalf of environmental goals. In addition to this "concern" type of variable was an "affect" scale which may be viewed as measuring a "salience" or "importance" dimension. It attempted to measure the "degree of an individual's emotionality related to ecological issues." When the authors tried to predict self-reported behavior using these variables,[2] they found a "moderately high" correlation between verbal commitment and past behavior, with higher correlations between verbal commitment and the "affect" scale.

Although they leave open the question of whether "affect" and "verbal commitment" act in conjunction to influence behavior, they hinted at the possibility that group membership may play a role in increasing the congruence between attitudes and behavior, as suggested by the third hypothesis discussed in the preceding section. When they treated members of the Sierra Club separately from their other subsamples of college and non-college groups, the correlation between "affect" and past behavior jumped to an impressive .83, compared to .40

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[2]For a discussion of the validity of behavioral self-reports, see Chapter V.

and .39 for the other two groups (p. 585). Admittedly, this serves less to confirm the theory that group membership acts independently of attitudes to influence behavior than to show that it remains a plausible hypothesis. Regrettably, no other studies have appeared which would supplement these findings.

The literature pertaining to the relationship between environmental attitudes and behavior is limited, and generalizations from it are suspect. However, three hypotheses set forth above do seem to receive some support from this literature. These hypotheses are that attitudes and behavior are significantly correlated with each other, "salient" attitudes are more strongly correlated with behavior than less important attitudes, and membership in a group concerned with environmental issues also increases this correspondence.

CHAPTER III

LEISURE STYLES AND ENVIRONMENTALISM

The preceding discussion has focused on the role played by such factors as economic interests and group membership in the formation of environmental attitudes, and on the complex relationships among attitudes, their salience, group membership, and pro-environmental behavior. The goal of the present chapter is twofold: (1) to integrate this general discussion with theory and research concerning the development of leisure styles and their attitudinal consequences; and (2) to review research linking leisure and environmentalism.

The Importance of Leisure

Recent research indicates that increasing amounts of time and money are being devoted to recreational pursuits. For example, Kando estimates that in 1972 over $100 billion was spent on leisure-related items (1975, p. 98), while Kaplan suggests that "expenditure for recreation in the United States amounts to one-fifth or more of consuming expenditures" (1975, p. 123).

In addition, some argue that a significant transformation of values regarding leisure has taken place, with the result that

> . . . pleasures accruing from leisure time activities become legitimate objectives in life and not merely a means to another objective, in contrast to the earlier Protestant ethic in which free time was supposed to be used for rest and recuperation for the work tasks ahead (Gist & Fava, 1974, p. 432).

In other words, society's former work-centeredness has been increasingly replaced by a leisure-centeredness, and some see leisure as being on the verge of becoming a dominant value (Kaplan, 1975, p. 320).

Studies of the "central life interests" of different kinds of workers suggest that life's meaning is being increasingly found in the "consumptive sector" (Kando, 1975, p. 74). Kaplan notes that as a consequence workers are demanding more free time in lieu of increased income (1975, p. 56). He notes not only that people have more free time and participate more in certain kinds of leisure pursuits, but they often feel "most alive" when involved in those pursuits (p. 297). Collins suggests that for many people leisure activities ". . . become the most important realities, overshadowing work, politics, and family," and that they "become major topics of conversation, the basis of friendships, the subjective worlds of greatest immediacy" (1975, p. 83). If leisure pursuits have taken on the importance which these theorists imply, an interest in certain kinds of outdoor recreation may clearly act as a catalyst for environmental concern.

An Outdoor Recreation Typology and "Wilderness" Values

The relationship between interest in outdoor recreation and environmental concern is suggested by some recent research which implies that learning to be a participant in a given kind of leisure entails not only the learning of skills, but also the acquisition of ". . . relational norms, equipment, attitudes, and frequently the taste required for participation" (Kelly, 1974, p. 182). Kaplan has suggested that leisure and values are intimately bound up with one another:

> Leisure is involved directly in images and judgments of good or evil, beautiful or ugly. The problem is circular: the value has influence on the choice and use of leisure, but conversely, the exercise of leisure may reinforce, modify, or contradict values (1975, p. 39).

Similarly, several writers have suggested that participation in a certain "type" of outdoor leisure activity is particularly apt to result in "pro-environmental" attitudes. This typology, which grew out of some early work by Burch (1965), was put forth most completely by Hendee et al. (1971). Its two main categories of activity, which the authors saw as being in opposition to each other, were named "extractive-symbolic" and "appreciative-symbolic." Activities fitting the former type would be characterized by a "utilitarian" or "transformational" approach to nature and would include activities like hunting or fishing. In the second, or "appreciative-symbolic" type, enjoyment is had through the appreciation of primitive and undisturbed nature. "Self-propelled" activities like canoeing, hiking, and mountain-climbing, as well as such aesthetic pursuits as nature photography would be included in this category.[1]

Research suggests that participants in this latter kind of activity develop a taste for a coherent pattern of facets or qualities of the natural environment, and it is these tastes which may lead to a "pro-environmental" viewpoint. Hendee et al. (1968) offered the most

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[1]Although the authors did not substantiate their typology through multivariate statistical techniques, the reported activity preferences appeared to be consistent with it. McKechnie (1972, 1974) challenged the dimensionality of the typology, through his factor-analyzed data, but his finding that various "appreciative" activities loaded on "Intellectual" or "Glamour Sports" factors may be partially due to the heterogeneity of the sample used and the large number and variety of leisure activities employed in the survey.

extensive inventory of the "likes" and "dislikes" of appreciative outdoor recreationists. One identifiable factor which they found to be strongly associated with "wilderness" rather than "automobile" camping pertained to what they termed "primevalism"; here the emphasis was on the importance of natural lakes, virgin rather than second-growth forests, and "native wild animals." Other associated factors included an "anti-artifactualism" grouping in which various kinds of developments like campsites with plumbing were rejected by wilderness "purists," and an "escapist" dimension wherein purists registered a liking for remoteness from cities, absence of man-made features, solitude, tranquility, and the absence of people.

The authors cited the results of several prior studies which were consistent with these findings, showing for example the tendency for canoeists to subscribe to virtually the same set of "wilderness" values, and to be acutely sensitive to crowding in their recreational environments (pp. 33-4). Knopp's (1972) sample of recreationists also cited solitude and a recreational environment "free from noise and dirt" as very important to them. Briefly put, these studies all point to the common desire among "appreciative" outdoor recreationists for a high quality recreational environment, defined broadly as being as free as possible from the intrusion of civilization.

In the prior chapter, an "interest" theory of attitude formation was sketched, and this theory may be used to suggest the consequences of developing the set of recreational values outlined above for the growth of environmental concern. First, it is clear that several of the aspects of the environment most valued by these recreationists are

threatened--either through the increasing popularity of outdoor recreation (see Nash, 1973; Fletcher, 1975; Kando, 1975, 213ff.), or through the simple development of hitherto primitive areas. Assuming that appreciative outdoor recreationists are motivated to protect these leisure resources from encroachment, their interests would be best served through policies which might be called generically preservationist, such as banning development in certain areas or protecting wildlife. Other environmental issues might not be quite as germane to the "quality" of the wilderness experience, but the pursuit of an "environmentalist" position with respect to the problem of recycling waste products, for example, could have some beneficial effect by helping to preserve forests. These considerations lead to the hypothesis that the adoption of "wilderness" values will lead to a generalized environmental concern, with a stronger concern for leisure-relevant environmental problems.

There are also reasons why such a concern on the part of outdoor recreationists might be especially apt to be translated into action. We have seen in Chapter II that some research has shown greater attitude-behavior consistency when attitudes are highly "salient" or invested with "affect" or emotion. It is in such emotional terms that many appreciative recreationists characterize their experience of undisturbed nature. Like the American transcendental philosophers (see Burch, 1971, pp. 67-108), they often speak of outdoors enjoyment in emotional, mystical or religious tones (Kemsley, 1974, p. 39). Researchers have noted this "aesthetic-religious" motif as a predominant one in the appeal of wilderness (Hendee et al., 1968, p. 32), and one study has revealed

that backpackers in the Adirondack and White Mountain regions consistently cited aesthetic or emotional qualities of their experiences as their most important sources of satisfaction (Shafer & Mi , 1969). Before considering what evidence there may be concerning whether these values lead to pro-environmental behavior, however, it is necessary to consider research concerning the genesis and maintenance of leisure styles.

Determinants of Leisure Behavior

There are several reasons for extending the discussion to the determinants of leisure behavior. First, if certain types of leisure are associated with pro-environmental attitudes and behavior, an understanding of the causes of the former adds to an understanding of variation in the latter. In addition, if it can be determined that certain variables are often found to be associated with both leisure behavior and environmentalism, we may control for their effects. This can add to our confidence that a demonstrated correlation between leisure behavior and environmentalism could not be attributed to the effects of a third variable.

Although there are numerous approaches to explaining variation in leisure behavior, the literature appears to reveal two as most promising. The first attaches special importance to social class as an explanatory variable, while interpersonal relationships are viewed as particularly important in the second. Our attention will first be focused upon the elaboration of the "social class" explanation.

Weber (1946) noted the existence of three separate but interrelated dimensions to systems of social ranking: wealth, prestige or

"status-honor," and political power. The first two dimensions are the bases for membership in "classes" or "status groups," respectively, which are distinguished as follows:

> With some over-simplification, one might say that "classes" are stratified according to the principles of their relations to the production and acquisition of goods; whereas 'status groups' are stratified according to the principles of their consumption of goods as represented by special "styles of life" (p. 193).

Certain kinds of leisure pursuits have also traditionally marked off different "styles of life" and therefore different "status groups." For example, Gist and Fava remark that

> . . . in Medieval England and other countries of that era, hunting and jousting were exclusively upper-class activities which the lower classes were prohibited from participating in (1974, p. 434).

Veblen (1899) argues that because in the past "predatory" activities were more highly valued than labor, leisure pursuits associated with these activities were accorded greater prestige. Leisure itself was valued because it enabled ". . . the rich to assert their freedom from work in symbolic acts" (Kaplan, 1975, p. 5). This encouraged the "conspicuous consumption of wealth as the primary way to gain the esteem of others and to invidious distinctions between the different social strata" (Kando, 1975, p. 5).

Although the loosening of class structure has made leisure style more a matter of personal choice (Kaplan, 1975, p. 92), strong connections remain between life-style and position in the stratification system (Collins, 1975, pp. 83-4). For example, an individual's occupation determines to a large extent his share of the available power, prestige, and wealth (De Fleur et al., 1971, p. 224), and occupational

folkways may be instrumental in dictating such facets of lifestyle as "proper dress and decorum, housing, and appropriate sports and patterns of recreation" (Caplow, 1954, p. 125).

Some of these uniformities within social strata are probably due less to the operation of an occupational culture than to shared educational backgrounds. Various writers have remarked that educational experiences help socialize people into a particular kind of culture (Collins, 1975, pp. 86-7) and have an "impact on style of life, taste, curiosity, sense of discrimination, and values" (Kaplan, 1975, p. 97). It is education which helps to establish and maintain a "continuum of tastes and manners" which marks off different social classes (Collins, 1975, p. 87). For example, an interest in going to museums, classical music concerts, and other "high culture" pursuits is encouraged through college and post-graduate training, and this is more decidedly so if the college or university is of an elite nature (Kando, 1975, p. 122; Wilensky, 1964, pp. 516-7). Becoming a "high culture" consumer evidently requires an extensive socialization process and often continues across generations (Kando, 1975, p. 122).

Although it may be reasonable to claim that genuine and valid canons of taste and manners are transmitted through the family and the educational process, the adoption of these standards by high-status groups serves an obvious exclusionary or distance-maintaining function. Therefore, conformity with certain standards of taste may "have more to do with status-seeking than with leisure" (Kando, 1975, p. 76). Hugh D. Duncan has noted, as well, that acceptance as an equal in the upper social strata may be contingent upon an individual's demonstrating that

he or she subscribes to the requisite set of aesthetic and recreational values (quoted in Burch, 1971, p. 95).

Burdge's research (1969) suggests that "high culture" and "aesthetic" pursuits tend to be the domain of higher-status groups. He found that members of the highest of four broad categories of occupational prestige were consistently the most active in all categories of leisure activity, and that this tendency was more pronounced for some specific activities than for others. Activities requiring some "special talent, as well as financial support and educational background," like photography, painting, decorating, flower arranging, and music were quite clearly dominated by this group; pursuits which might have some utilitarian value, such as hunting, fishing, or vegetable gardening, were the province of groups with both lower prestige and less money.

We have already seen that the activities contained within the "appreciative" outdoor leisure type are characterized by their "non-utilitarian" and "non-transformational" approach to the enjoyment of nature, and that there are codified aesthetic standards which seem to be used by these recreationists to judge their leisure sites and experiences. This suggests that appreciative outdoor leisure stands in the same relationship to social status as other "cultural" pursuits. In fact, virtually every study of the characteristics of these recreationists points to their high social standing. For example, Shafer and Mietz found 70% of their sample of hikers to be either "professional, white collar workers, or students" (1969), and Vaux (1975) found his sample of wilderness recreationists to have substantially higher than average incomes.

Education level is an even stronger predictor than income or occupation of appreciative leisure behavior. White (1975) found in his multiple regression analysis of Canadian data that education was the single most important variable in predicting frequency of participation in 26 outdoor activities, and that the influence of occupation level was minimal (p. 196). Hendee et al. noted that in eight different studies of wilderness users, between 64% and 82% of these recreationists held college degrees or had done some post-graduate work, compared to 7.7% for the U.S. and 9.0% for Washington-Oregon populations (1968). These findings are consistent with some of their other research (Hendee et al. 1971). There is, therefore, substantial evidence in favor of the hypothesis that high social status is positively associated with participation in appreciative styles of outdoor recreation.

The second, and in some respects complementary approach to explaining variation in leisure behavior mentioned above emphasizes the role of interpersonal and group factors. We have noted elsewhere the tendency for "significant others" and "reference groups" to influence attitudes. Much the same process seems to operate with respect to leisure behavior. Numerous studies have revealed that childhood experiences with parents or close friends lead to participation in these same leisure activities later in life (Burch, 1969, p. 143; Kelly, 1974, p. 191; Yoesting & Burkhead, 1973, p. 25; Sofranko & Nolan, 1972, p. 15). In addition, "social reinforcement through family and friends" has been found to be associated with an increased commitment to wilderness use (Hendee et al., 1968, p. 18).

Conversely, common leisure interests often form the basis for

friendships. One study suggested that past experiences will lead a person to choose friends with similar leisure interests because this will tend to "reinforce his values concerning leisure" (Yoesting & Burkhead, 1973, p. 27). Burch, in noting the association between number of close friends who camp and the level of participation in that activity, stated that

> Though the data permit no way of determining whether close friends are cause or consequence of leisure activity, it seems reasonable to assume that this circle of close friends constrains an actor to remain within a given style of leisure. To opt out of a leisure style may also mean leaving a particular circle of close friends (1969, pp. 141-2).

This "personal community" of leisure associates may have several ramifications with respect to environmentalism. First, if a consistently "pro-environmental" outlook is part of the leisure culture of appreciative recreationists, an individual who is learning to be a backpacker or canoeist may readily adopt this outlook from those who are or appear likely to become his close friends. Furthermore, the knowledge that these "significant others" bear these attitudes may act to strengthen the relationship between the individual's pro-environmental attitudes and behavior.

Such social affiliations may be particularly important if a recreationist were to join an organized recreation group in order to improve his skills and meet people with similar interests. Many such groups have been instrumental in promoting "environmental" causes, even though many, like the Sierra Club, began with limited and specific goals like the popularization of their leisure pursuits and "wilderness preservation" (Gale, 1972, p. 285). Although the "homogeneity of beliefs" regarding environmental problems within such groups may have been exaggerated

(Stallings, 1973, p. 476; Harry et al., 1969, pp. 251-2), an affiliation with one of them seems likely to reinforce whatever pro-environmental attitudes a new member may have had when he joined, and to provide social support for action in accord with these values.

Studies of Leisure and Environmentalism

Before discussing past research on the relationships among outdoor leisure, environmental attitudes, and pro-environmental behavior, it is necessary to review what our theoretical discussion leads us to expect from this literature. First, an "interest" theory of attitude development predicts the tendency for participation in appreciative styles of outdoor leisure to be associated with a concern for environmental problems, and particularly a concern for "leisure relevant" problems such as crowding and pollution in recreational areas. Second because the emotional content of wilderness recreation may make these issues salient or ego-involving, this environmental concern should lead more unambiguously than usual to pro-environmental behavior. In addition, because co-recreationists tend either to be drawn from one's circle of close associates or to become members of this circle, membership in an organized recreation group should provide "reference group support" for pro-environmental behavior and therefore result in greater attitude-behavior consistency.

The discussion has also suggested that many of the variables under consideration are strongly associated with one another. For example, we have seen that social class is strongly associated with environmental attitudes and appreciative outdoor recreation participation.[2] An

[2]There is considerable evidence to suggest that members of recreation organizations are an even higher-status group than the broader

adequate research design would allow a researcher to determine that an association between the latter two variables was not due to the influence of the former.

McKechnie's studies (1972, 1974) are among the few available works to deal in any way with the above hypotheses. He found that his "Intellectual" leisure factor, which contained numerous appreciative outdoor leisure items, correlated substantially with three different dimensions of environmental attitudes (p. 34). However, the fact that all three of these scales intermixed what we would call "concern" and "affect" statements, and the fact that his leisure variable is not directly comparable to the "appreciative" leisure type mean that no firm conclusion regarding the leisure-environmental concern relationship can be drawn from the study.

Knopp and Tyger (1973) sought to examine the relationship between outdoor recreation and environmentalism by contrasting the attitudes of a sample of registered snow-mobile owners and presumably more "appreciative" members of a ski-touring club. As expected, they found that the two groups differed significantly with respect to their expressed attitudes toward nine environmental issues, such as the need for the Alaskan oil pipeline and the SST, development of mineral deposits in remote regions, and the use of public funds for the protection of endangered species of wildlife. In all cases, ". . . the ski-tourers were much more likely to conform to the environmentalist image," though both groups tended to make "pro-environmental" responses (p. 11).

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population of appreciative outdoor recreationists (see Faich & Gale, 1971; Devall, 1970; Harry et al., 1969; for a critique of this study and a rejoinder, see McEvoy, 1971; Harry et al., 1971).

These results, though suggestive, become difficult to interpret when certain methodological considerations are taken into account. First, although it is quite plausible that both groups were more "pro-environment" than the general public, the lack of a sample to represent this wider group left the question in some doubt. Interpretation is hindered further because group membership as such is a possible determinant of attitudes, and as we have seen, the ski-tourers were members of a common organization while the snowmobilers were not. Third, the authors attempted to explain attitudinal differences by pointing to group contrasts regarding education, income, and residence. The failure to employ any of these as a control variable to clarify the relationship between leisure styles and environmentalism leads to the plausible conclusion that they are both due to the influence of these three variables.

Dunlap and Heffernan's (1975) study of Washington state residents provides clearer evidence concerning the leisure-environmentalism relationship. Here respondents were asked to assign government spending priorities to a number of issue-areas, eight of which were relevant to environmental problems in some way. Respondents were categorized as "appreciative" or "consumptive" outdoor recreationists according to whether they reported past participation in camping, hiking, or visiting state parks on one hand, or in fishing or hunting on the other.

They found that participation in the "appreciative" leisure activities was moderately associated with concern for environmental problems, and that participation in fishing or hunting was not (p. 23). In addition, they found that "involvement in outdoor recreation was much more likely to be associated with a concern for protecting nature than

with controlling pollution," which accords well with the "interest" theory of attitude formation. The existence of several associations between appreciative leisure participation and support for pollution control suggests that concern may broaden to include areas of limited importance to these leisure pursuits.

This study represents a significant advance over others in this area because of its use of statistical controls. Because the obtained correlations may have been due to the influence of other variables, the original associations were examined while controlling for the effects of age, sex, rural-urban residence, education, and income. The authors found that this procedure had little effect on the size of the zero-order correlations, which provides evidence that leisure participation does have an influence upon environmental attitudes independent of these several confounding factors. It is of particular interest to note that the two social class indicators did not "explain" the associations.

Little research seems to have been done concerning the relationship between group membership as such and environmental attitudes and action. Hendee et al. found that outdoor recreation organization members tended both to make more and longer wilderness visits and to manifest more "wilderness-purist" tendencies (1968, p. 21). Maloney and Ward (1973) found that Sierra Club members scored significantly higher than either college students or non-college adults on all of the components of their "ecology" scale, and that among this group there was a very high correlation (.83) between the scores on an "affect" scale and a measure of self-reported "environmentalist" behavior.

There are numerous questions raised in the previous discussion which these research studies leave unanswered. First, although there is some support for the contention that "appreciative" recreationists develop more strongly "pro-environmental" attitudes than numerous other comparison groups, it remains unclear whether this concern finds a parallel in actual behavior. In addition, it is unclear whether attitudes of "nature-appreciation" are relevant to the "attitude-behavior" relationship or if organizational affiliations play a role in the development of environmental attitudes and behavior. The study which follows was aimed at filling some of these gaps in past research, and the hypotheses employed are set forth formally in the ensuing chapter.

CHAPTER IV

DEVELOPMENT OF HYPOTHESES

The foregoing literature review touched upon numerous topics, but the overriding aim throughout has been to show how variations in environmental actions might be explained. Working backward, certain facets of attitudes associated in past research with the performance of this behavior were outlined, as well as special conditions under which this "attitude-behavior" relationship is stronger or weaker. In addition, participation in certain kinds of outdoor leisure was shown to be a plausible influence upon these attitudes and conditions.

The goal of the present chapter is to develop specific hypotheses which, taken together, give a systematic account of some of the relationships among these variables. That is, the hypotheses are meant to outline an explanatory chain, with the first three hypotheses suggesting determinants of outdoor leisure behavior, hypotheses four and five suggesting attitudinal consequences of this behavior, hypothesis six suggesting the role of group influences upon attitudes, and hypothesis seven suggesting the simultaneous influence of three variables upon pro-environmental behavior.

Some research has indicated that the process of socialization into different leisure styles is one which extends throughout a person's life cycle, during the course of which he or she is influenced through interaction with various "significant others." Because the family is one

such socializing agent, and because of the marked tendency for high social status to be associated with participation in "appreciative" outdoor leisure pursuits such as backpacking in undeveloped landscapes, children of high social status families should be more likely to adopt those leisure styles. Therefore, the first hypothesis is as follows:

Ho_1: Membership in a family marked by high social status will be influential in the development of "appreciative" outdoor recreational interests.

One other factor in the development of leisure interests which relates to social status deserves to be considered. Full acceptance into certain higher social strata appears to hinge not simply upon the possession of a given amount of money or education, or incumbency in a prestigeful occupation; more diffuse considerations characterized by the classical sociologist Max Weber as belonging in the sphere of "style of life" (1946, pp. 187-8) are also significant. That is, an aspirant to upper-level social status must indicate through his leisure and other tastes the similarity of these values with those prevalent in the group he aspires to join. To the extent that "appreciative" styles of outdoor recreation are associated with persons of higher social status, an aspirant to such status may personally tend to adopt such a leisure style. This forms our second hypothesis:

Ho_2: An aspirant for high-level social status will develop tastes and leisure interests congruent with that status.

Although recognizing the importance of social class as a determinant of leisure style, it is also necessary to recognize the fact that boundaries between social classes have grown less distinct in past years, thus making the choice of leisure activities to be pursued more a matter

of personal preference. Other influences of early socialization such as peer group membership and participation in voluntary associations may enter into such choices. Therefore, membership in an organized youth group such as the boy scouts or girl scouts, which aim to teach "outdoors" skills and interests as part of a general program, may lead to later participation in "appreciative" leisure interests. This leads to the third hypothesis:

> Ho_3: Participation during childhood in outdoor recreation activities in an organized group will lead to participation in those activities later in life.

Having thus explored the process of developing an interest in the pursuit of "appreciative" styles of outdoor recreation, it is necessary to examine the consequences of such participation for the development of environmentalism. We have seen that general studies of leisure socialization have indicated the tendency for a characteristic set of "values" and attitudes to be absorbed by those who are being socialized into particular leisure activities. Participants in "appreciative" styles of outdoor recreation have been characterized as placing a high value on the aesthetic qualities of a "primitive" and "undisturbed" natural environment. Such aesthetic tastes may "foster a generalized opposition to environmental degradation" (Dunlap & Heffernan, 1975, p. 18), and hence lead to a wider environmental concern. An "interest" theory here would predict the tendency for that concern to be weaker for environmental issues bearing a less clear relationship with the leisure pursuits. These considerations lead to the fourth and fifth hypotheses:

> Ho_4: Participation in "appreciative" outdoor recreation activities will lead to an attitude of greater aesthetic sensitivity to the natural world.

Ho_5: This aesthetic sensitivity will lead to a generalized environmental concern, with a stronger degree of concern for protecting parts of the environment relevant to the pursuit of "appreciative" leisure activities.

An additional plausible consequence of the development of the leisure interests described is deserving of note. Outdoor recreational organizations have played a significant role in the emergence of the environmental movement through group efforts such as lobbying for stricter environmental regulations. As an individual develops an interest in relevant leisure activities he may join such a group in order to improve his skills and find other persons with whom he can pursue the activities in question. This will reinforce his interests in those activities, and as he interacts more with the organization's members he may begin to employ them as a reference group for the formation and validation of his beliefs and attitudes about the environment, thus coming to adopt a more "pro-environment" position. Therefore, hypothesis 6 is as follows:

Ho_6: Interest in "appreciative" leisure pursuits will tend to lead to membership in an outdoor recreation organization, which will in turn heighten both aesthetic sensitivity to the natural world, and concern for environmental issues.

The discussion has yet to center unambiguously upon the relationship between leisure participation and the performance of "pro-environmental" behavior. Because an individual expresses a "pro-environmental" attitude, he may still not be supportive of environmental reforms because of the costs those reforms might impose on him, either in the form of taxes, higher prices, or the performance of environmentally-relevant behavior. The literature on the "attitude-behavior" problem suggests that a given

attitude may be more consistent with behavior when the attitude in question is a "salient" one for him, or is dominated by "affective" or emotional content. It is suspected that the internalization of an attitude of "appreciation" of nature would have the effect of increasing this "affective" component of environmental attitudes, thus resulting in greater attitude-behavior consistency.

In addition, other research has indicated the tendency for such attitude-behavior consistency to be heightened when the individual perceives "support" for his behavior within his "reference groups" (Fendrich, 1967). Because membership in an outdoor recreation organization may lead to the adoption of its members as such a reference group, such membership may also have the effect of increasing attitude-behavior consistency. This discussion leads, therefore, to the final hypothesis:

H_{O7}: Concern for environmental problems, an attitude of aesthetic sensitivity toward the natural world, and membership in an outdoor recreation organization will all be positive influences in the performance of "pro-environmental" behavior.

CHAPTER V

METHODS

The hypotheses just described were tested with data collected at the Pennsylvania State University in the fall of 1976. The six-page questionnaire which was employed asked for general demographic information and attempted to elicit attitudinal and behavioral self-reports from the respondents.[1] Although an interview approach might have been considered better from the standpoint of maximizing the rate of response or allowing respondents an opportunity to clarify questions and instructions (see Selltiz et al., 1959, pp. 241-43), budgetary and time limitations intervened to make this impossible. Because the sample was limited to college students, the common problem of respondents' literacy was minimized. However, this means that the results of the investigation must only be applied to such a population.

The questionnaires themselves were distributed to respondents along with two slightly different cover letters, one for each of the two subsamples. The letters briefly explained the purpose and importance of the study to the subjects and attempted to enlist their cooperation. Great care was taken to assure respondents that their participation in the study was strictly voluntary, and that their replies would remain completely anonymous. No names or student identification numbers were

[1] Copies of the questionnaire and the cover letters used in the study are included in Appendices A and B.

requested so that it would be impossible to determine how particular individuals had responded. It was hoped that this attention to the privacy of the respondents, of value in its own right, might have the additional effect of increasing the candor of reply.

The Sample

The study required that two different groups be represented in the sample. One group had to consist of members of an organization devoted to the pursuit of "appreciative" outdoor recreation activities, while the other had to be reasonably representative of the undergraduate student body at the university. To represent the first group, it was decided to draw upon the membership of the Penn State Outing Club, which is a student organization with different subdivisions devoted to such activities as mountain climbing, skiing, sailing, canoeing, horseback riding, and hiking.[2]

Several factors influenced the sampling technique employed for the outing club members. Because the club is small relative to the overall student population at the university, a random sample of students large enough to include an acceptable number of outing club members would clearly have to be enormous. The alternative of merely drawing a random sample of the membership was not a plausible one, due to the university's policy of not maintaining official membership lists of campus organizations. Circumventing this policy through access to a knowledgeable

[2]Students become members of the Outing Club as such, and are then enabled to take part in the activities of all of the sections at reduced rates. However, there is an organizational structure in each of the sections, and members tend to limit their participation to one or two particular sections.

informant or an "unofficial" list of members could be interpreted as an unwarranted invasion of privacy.

An alternative which avoided these problems was formulated. Because the hiking division is large, and because hiking clearly falls within the bounds of the "appreciative" outdoor recreation typology, attention was devoted to members of this section, rather than attempting to include representatives of all the divisions. Permission was asked of the officers of the section for the investigator to hand out questionnaires to persons attending a general meeting of the group. In return for the investigator's help in publicizing the meeting, permission was granted. At the beginning of the meeting, the content of which was devoted to a discussion of different kinds of backpacking equipment, one of the club's officers made a simple announcement that the investigator had requested permission to hand out the questionnaires, and he asked people to cooperate with the study. Of the 55 students attending the meeting, 71% returned usable questionnaires.

Other considerations influenced the selection of subjects to represent the wider student body. The first of these was the monetary cost and time involved in drawing a random sample of students at the university and mailing questionnaires and follow-up letters to non-respondents. To avoid these problems, it was decided to administer the questionnaire to a regularly scheduled class at the university. In selecting that class, an attempt was made to gain as broad a cross-section of the student body as possible, particularly with respect to major and term standing. The class finally selected was a lower-level course in Social Problems which is often scheduled by non-social science

majors in order to satisfy social science course requirements for their degrees. Although a lower-level course, students tended to be sophomores, juniors, and seniors. At the time the questionnaire was handed out to the class, no discussion had yet taken place within it concerning environmental problems.

The instructor for this course offered to distribute and collect the questionnaires, but his position of authority was not used to gain cooperation with the study. In order not to take class time away for the project, students were asked to complete the questionnaire on their own time and to turn it in during class.[3] The instructor requested on several occasions that questionnaires be completed and handed in, and on one occasion handed out additional copies to those who had lost or discarded their first ones. Nearly 62% of the 128 questionnaires originally distributed were returned in usable form.

Because this was not a random sample, and in order to have some basis for generalizing the results of this study, it was necessary to have some indication of the extent to which the respondents and the overall Penn State and national student bodies were similar. Unfortunately, comparative information was only available for Penn State and national freshman averages[4] regarding one variable: parental education.[5]

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[3]To allow class time for this purpose might undermine the autonomy of respondents in determining whether they would participate. This issue of respondent autonomy has received increasing attention in discussions of research ethics (see e.g. American Psychological Assoc. 1973, Penn State University, 1976).

[4]These data derive from a summary of the "Fall 1976 ACE Freshman Survey," which was made available to the author by the Office of Institutional Research, Pennsylvania State University, University Park, Pa.

[5]In the present study, students were asked to indicate the education level of their "main-earning" parent, while in the ACE survey the

As can be seen in Table 1, the present sample appears to be similar to the comparison groups except in the "professional school" category, in which it lags behind. This suggests that some contrasts between the Outing Club and control samples may be somewhat more pronounced than might be the case if a random sample of college students were employed as a control.

Measurement and Scaling

Having discussed the selection of respondents for the study, it is necessary to bring into focus the methodological viewpoint at work in measuring several of the key variables. Measurement, in Burke's view, is the ". . . assignment, according to fixed rules, of numbers to objects" (1963, p. 45). It is in the formulation of such rules that weaknesses have often been noted by critics of social science research practice. Often it is argued either that measuring devices are not measuring what they were intended to measure, or that these devices are inconsistent or ambiguous. These problems are known to researchers as the issues of validity and reliability, respectively (for definitions of these terms, see Theodorson and Theodorson, 1969, pp. 343-44, 455).

One way in which validity and reliability of measurement may be adversely affected is in the reliance upon single-item measures of attitudes. Although they continue to be used, some feel these measures to be inherently unstable, and subject to excessive response error (Scott, 1968, p. 221). A better approach to measurement would be to

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levels of both parents were obtained. Because the vast majority of respondents in the present study indicated that their fathers were the main earners, comparing the two sets of figures seemed justified.

TABLE 1

Comparison of Parental Education Levels for the Present Study and Fall 1976 Averages for Penn State and National Freshman Populations[a]

Education Level	Present Survey[b] (n = 72)	Penn State Freshmen[c] (n = 2400)	National Freshman Average
Less than High School	11.1	9.0	12.1
High School Graduate, or non-college technical training	37.5	29.4	27.0
Some college	15.3	10.6	13.5
College Graduate	25.0	26.2	24.9
Some professional school or professional school graduate	11.1	24.8	22.5
Totals	100.0	100.0	100.0

[a]Summarized from American Council on Education, Fall 1976 Freshman Survey.

[b]Represents education level of main-earning parent.

[c]Represents education level of father.

arrive at scores for individuals based on several items intended to "converge" on a given attribute.

The same general observations may be made of the use of more than one method to measure the same property. When only one method is used for measuring all or most of the key variables, common variance among measures may be attributable less to the presumed underlying traits than to the method. As antidotes to this problem, some have suggested employing "two or more independent measurement processes" (Webb et al., 1966, p. 3) and others the use of "maximally dissimilar methods" (Campbell & Fiske, 1959, p. 102). The arguments for this general position appear compelling, and it is believed that a small step in the required direction may be taken without the full-blown "multi-method, multi-trait matrix" approach espoused by the latter authors. This has dictated the measurement of several of the study's key variables through the use of multi-item indicators, as well as the use of two such multi-item indicators to measure environmental concern.

Although each of the variables and their operationalization will be discussed individually, one particular approach to scale building was employed for four of them. The approach, known as "Likert" or "summated-rating" scaling, has been shown to possess numerous virtues which render it especially useful. For example, it is less cumbersome than Thurstone scaling or the use of the Semantic Differential, and is the only approach which incorporates "an internal measure of strength of feeling" (Schuman & Johnson, 1976, p. 180). The method is apparently also capable of producing higher coefficients of reliability for a given number of items than other approaches, and allows a convenient way of assessing

that reliability which will be discussed later on in this chapter (see Tittle & Hill, 1967; Seiler & Hough, 1970; Poppleton & Pilkington, 1963).

Although it is toward the measurement of attitudinal variables that most Likert scaling has been directed, it can be fruitfully employed for other attributes as well. In the present study, for instance, it is used both for the measurement of attitudes and behavior. In either case, the first step in the procedure is to collect a pool of statements or behaviors thought to represent the attribute of interest. Respondents may then be requested to estimate how often they have performed a given behavior, or in the case of attitudes to indicate the degree to which they agree or disagree with an attitude statement.

In order to avoid encouraging an "acquiescent" or agreeing response see (see Cook & Selltiz, 1964, p. 28), it is desirable to make roughly equal proportions of questions "positively" and "negatively" worded; in the former case the respondent registers a positive attitude by agreeing with a statement, and in the latter by disagreeing. Once scores have been assigned to responses (scoring is "reversed" for negatively worded items), the scale is created by summing the scores over all items.

Each item is then analyzed to determine the extent to which it represents the same attribute as the other items. This is commonly accomplished in two ways. First, a correlation coefficient is calculated between scores on a given item and the overall scale score, with the intention of removing items showing a low correlation.[6] Although

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[6] Scott (1968) has suggested that these item-total correlations are often inflated, due to the presence of the item score in the overall score. The "adjusted" item-total correlation, which removes this source of bias, is a more meaningful figure and is the one employed in this study (Kohr, 1974, pp. 7-8).

guidelines for what would constitute an unacceptable correlation do not seem to be available,[7] anything less than .30 must somewhat arbitrarily be regarded with some suspicion. Negative correlations may mean either that the item does not belong to the same "universe of content" or that it merely needs to be reversed in scoring (Kohr, 1974, p. 13).

The second criterion for an item's inclusion in the final scale is whether or not an individual item "discriminates between 'contrast' groups of respondents who are at the high and low ends of the overall scale" (Likert, 1935, pp. 238-39). The procedure calls for the calculation of the mean scores for each of the extreme groups, and to conduct a "t" test for the equality of the two means. As with the correlation criterion, the t-test is "intended only as a crude index of discriminating power," especially when using a large sample (Kohr, 1974, p. 7). The choice of the "cutoff" points for high and low contrast groups is again an arbitrary decision, but the high and low 27% is said to be "most common" in Likert scaling (Kohr, 1974, p. 7).

Once the two criteria just described have been met for individual items, the question of the accuracy of the measurement accomplished through the scale, or its reliability, still remains. In the past, reliability has often been assessed either through the repeated administration of the scale to the same group of respondents, which is subject to several drawbacks (see Scott, 1968, p. 211; Bohrnstedt, 1970, p. 85), or through the use of different but "parallel" forms of the scale, which are extremely difficult to compose. Correlations between two groups of

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[7] Likert states vaguely that this should be a "function of the purpose for which the attitudes are being measured" (1932, p. 238).

randomly selected items have also been employed for the purpose, but this "split-half" estimate has been criticized because only one of many possible "splits" is used. "Coefficient alpha," which surmounts the somewhat arbitrary "split-half" method by presenting an average of all the possible split-half correlations calculable from a scale of a given length, is used in the present study for this reason (see Cronbach, 1951; Bohrnstedt, 1970).

The Variables

Several of the questions in the survey were included primarily for purposes of showing whether or not the two subsamples were similar to each other in certain respects and to allow for comparisons between these groups and the wider student body. These questions referred to the respondents' sex, term standing, and participation in campus organizations other than the Penn State Outing Club.

Other single-item questions were included to test specific hypotheses. For example, respondents were asked if they were members of the Outing Club and whether or not they had ever been members of the Boy Scouts, Girl Scouts, or a similar organization. To measure family social status, respondents were asked to relate the amount of formal education their "main-earning" parent had completed and to identify this person's occupation. Responses to this latter question were coded into four crude categories of status: professional, technical, and upper-level management; clerical, sales, and other white-collar workers; skilled labor and craftsmen; and unskilled labor. To measure aspirations for high-level social status, respondents were asked how likely they thought it was that they personally would be going to "graduate or professional

school" sometime after college graduation.

Because of the numerous ways in which concern for environmental problems has been operationalized in the past, it was decided that it was especially important to have more than one way in which to measure it for this study. Two approaches were taken. The first, which represents an adaptation of a method employed in a series of significant studies of environmentalism (see e.g., Dillman & Christenson, 1972; Dunlap & Heffernan, 1975; Dunlap & Dillman, 1976) called for respondents to make decisions concerning whether "less," "the same amount," or "more money" should be devoted by the federal government to the solution of problems presented by fourteen important "issue areas."

Of the areas employed for this part of the questionnaire, five can be readily identified as being of some significance for environmental quality. Three of these appear to be of relatively wide public concern: the control of air and water pollution, conservation of energy resources, and public transportation in cities. Two issues presumed to have special relevance for "appreciative" styles of outdoor recreation were also included: protection of endangered species of wildlife, and protection of national parks and forest areas.

The remaining 9 items in this section were chosen primarily on the basis of their demonstrated popularity in past studies of this type (especially Dillman and Christenson, 1972), and included such areas as crime prevention and control, health and medical care, public education, urban renewal and national military defense.

There are several drawbacks to this method. First, the assumption is made that "concern" for environmental problems will be strongly

associated with the feeling that more federal funds should be spent in this area. However, there may be other important determinants of response, such as a particular viewpoint concerning the proper scope of federal government operations, or the feeling that more federal funding simply will not contribute substantially to ameliorating environmental problems.

The second approach to measuring environmental concern was through the construction of a Likert scale, and this method represents several improvements over the method just discussed. For example, questions were not confined to the simple issue of government funding, but extended to other areas as well. Because there were three times as many items which dealt with environmental problems, a broader and more representative sampling was also made possible.

The items for the scale were randomly arranged along with items for another attitude scale in order to help minimize the likelihood of the emergence of a "set" for responding to scale items in a particular way, and approximately half of the items for each scale were worded in a negative fashion. The response task called for the subject to register his agreement or disagreement with statements presented to him, with five choices available. These ranged from "strongly agree" to "strongly disagree" and included a neutral point.

The majority of the issues represented in the attitude statements, as in the first concern measure, were thought to portray areas which would be of concern to a wide public. In many instances respondents were asked to express a preference between courses of action where an environmental "good" was offered as being implicitly or explicitly in

conflict with other valued social goals. A number of the attitude statements made reference to the control of certain sources of pollution like factories and the use of pesticides in farming. Other statements referred to the general problem of resource conservation and the recycling of materials. Two others dealt with such specific issues as permitting Super-Sonic Transport jets to land in the U.S., and the value of the Alaskan oil pipeline.

Three other attitude statements were included because they were thought to represent problems of more immediate concern for the "appreciative" outdoors enthusiast. These focused on the strength of the means the government should employ in protecting "endangered species of wildlife," whether more roads and facilities should be built in "natural areas like forests and parks so more people can enjoy them," and the setting aside of more land to be "preserved in its natural state for the future."

It was necessary to measure one other attitudinal domain: the amount of emotion or feeling associated with the world of nature, or the attitude of "nature-appreciation." Many of the items for this Likert scale were suggested by past studies in the area. Hendee et al's (1968) discussion of the preferences of wilderness purists suggested the inclusion of items dealing with the questions of the introduction of "facilities" into wild environments and whether subjects would feel comfortable if they were "away from town or city life and other people for very long." Other items were suggested by McKechnie's (1972, 1974) discussion of "pastoralism" and "environmental trust" factors: the ability to identify flowers and trees, the appeal of walking into the

woods and living there for a week, and whether or not it would be "fun to walk in the rain, even if you get wet." In addition to these, other items referred to the "feeling of peace" to be gained from being in a forest, or people "getting to know themselves and be happy" from the enjoyment of unspoiled natural beauty."

When an item-analysis was performed for the two scales just described, there was evidence to suggest that all items were significantly related to their proper scales. As can be seen in Tables 2 and 3, all adjusted item-total correlations were higher than the arbitrary .30 established previously as a criterion for including an item in a Likert scale. In addition, all t-tests of item discriminating power were significant beyond the .01 probability level. The scales as defined proved to possess adequate levels of reliability, with alpha coefficients of .82 for the "concern" scale and .87 for the "nature-appreciation" scale.

Because there may be some question concerning the "dimensionality" of the scales, particularly with respect to whether the items belong to the scales to which they have been assigned, it was necessary to provide some evidence concerning this subject. To do so, correlations were calculated between each of the items and the scale to which it had not been assigned. These correlations, also shown in Tables 2 and 3, were lower in every case than the adjusted item-total correlations with the proper scale, which suggests that items have been properly assigned.

Thus far this discussion has centered primarily upon the measurement of various attitudinal constructs. In addition to these, it was necessary to measure past leisure participation and actions taken on behalf of "environmentalist" goals. As with attitudes, to r[illegible]ly simply

TABLE 2

Scale Analysis Results for the Environmental Concern Attitude Scale

No.	Attitude Statement*	Adjusted Item-Total Correlation	Correlation with "Nature" Scale	t-Statistic
1.	The use of pesticides in farming should not be so tightly controlled by government agencies (R)	.358	.114	4.390**
2.	Endangered species of wildlife should be protected by the government through the strongest means	.419	.285	4.470
7.	More roads and facilities should be built in natural areas so more people can enjoy them (R)	.386	.384	5.228
8.	Many laws controlling air pollution from industry today should be taken off the books (R)	.459	.138	5.734
10.	People should do less driving to ease air pollution	.439	.230	4.773
11.	The population in this country can continue to grow without much danger of running out of resources (R)	.378	.232	4.052
16.	The "SST", or Super-Sonic Transport jets should be allowed to land at large airports in the U.S. (R)	.566	.284	7.177
17.	Natural resources must be preserved, even if people in this country must do without many things they like	.499	.099	6.313
19.	It is better to put up with some pollution than to have a high rate of unemployment (R)	.475	.189	5.567
22.	Government agencies should spend more money on programs to recycle materials	.518	.367	7.155

TABLE 2 (Continued)

	Adjusted Item-Total Correlation	Correlation with "Nature" Scale	t-Statistic
25. Compared to a lot of other social issues, environmental problems aren't very important (R)	.532	.329	5.916
26. I would support a law requiring people to wash and set aside all glass jars and bottles for recycling	.529	.202	6.429
27. More land should be set aside and preserved in its natural state for the future	.621	.480	7.848
28. The Alaskan oil pipeline will probably be worthwhile (R)	.481	.157	7.398
30. Air and water pollution are not as dangerous to man as ecologists say they are (R)	.640	.419	8.313

* Some items have been shortened. For complete items, see Appendix A.

** $p < .001$

(R) indicates that scoring has been reversed.

Coefficient Alpha = .82

TABLE 3

Scale Analysis Results for the Nature-appreciation Attitude Scale

No.	Attitude Statement*	Adjusted Item-Total Correlation	Correlation with "Concern" Scale	t-Statistic
3.	Today people are too isolated from the forces of nature	.473	.382	5.996**
4.	A forest area wouldn't be enjoyable without facilities (R)	.606	.237	5.782
5.	People get to know themselves and be happy when in a forest or enjoying an area of unspoiled natural beauty	.597	.310	7.341
6.	The idea of walking into the forest and living there for a week doesn't really appeal to me (R)	.706	.283	9.089
9.	I don't feel comfortable if I'm away from town or city life and other people for very long (R)	.488	.244	5.948
12.	I wouldn't mind that much if I had to live in an area that is a little noisy or dirty (R)	.336	.306	3.888
13.	I would be a little uneasy if I had to spend a night by myself in a wilderness area (R)	.541	.126	6.425
14.	Every chance I get, I like to get outdoors and feel like I'm in touch with nature again	.693	.358	10.192
15.	Being in a forest gives me a deep feeling of peace and contentment	.687	.288	7.816
18.	I've never really been moved by the outdoors, nature and fresh air as much as many people seem to be (R)	.752	.381	6.117

TABLE 3 (Continued)

No.	Attitude Statement*	Adjusted Item-Total Correlation	Correlation with "Concern" Scale	t-Statistic
20.	If I had more free time, I would probably spend it out on a lake, or in the woods, or some other natural area	.688	.361	7.707
21.	It's fun to walk in the rain, even if you get wet	.394	.314	5.101
23.	There are few things in life as moving as a sunrise or sunset	.430	.333	5.017
24.	I can't identify the different kinds of flowers and trees I see around me very often (R)	.348	.232	5.671
29.	Hiking or walking in the woods aren't very interesting to me (R)	.788	.352	8.010

* Some items have been shortened. For complete items, see Appendix A.

** $p < .001$

(R) Indicates that scoring has been reversed.

Coefficient Alpha = .87

on single-item or single-behavior indicators is to base findings on inherently unstable measurement. In Tittle and Hill's judgment (1967, p. 469), therefore:

> Preferably, a behavioral measure or index should refer to sets of acts indicative of consistent or patterned action.

The difficulty in measuring these sets or configurations of behavior, of course, lies in their observation. Not only would systematic observation be fairly costly, but it might also constitute a questionable invasion of subjects' privacy.

One alternative to direct observation is to request respondents to furnish accounts of their own behavior. There are several apparent pitfalls here. First, the farther into the past the investigator probes, the more likely will the memory of even the most candid and forthright subject become frail and selective. If the behavior in question is likely to be controversial, socially desirable, or stigmatizing in some ways, a potentially more serious source of response bias may enter. That is, there is little reason to expect that the same respondent who wishes to present himself to the investigator as ". . . well adjusted, unprejudiced, rational, open-minded and democratic" (Cook & Selltiz, 1964, p. 26) through his responses to attitude questions will forego the same opportunity in recounting his own behavior.

Little seems to have been written concerning this validity problem associated with behavioral self-reports. Wicker (1969) appears to feel the problem to be so serious that the self-report is nearly useless, although Schuman and Johnson hold out some tentative hope for the method (1976, pp. 164-65, 185). One case where some data is presented on this problem is described by Tittle and Hill (1967, pp. 474-75). They found

that in 11% of their sample, self-reports of voting behavior in a student election a week prior to administration of their questionnaire did not correspond to records of such action. Although they concluded that ". . . the self-reported data in this instance appear to provide a fairly close approximation to the actual behavior of the subjects," there is reason to view results of these self-reports with a reasoned skepticism. With this in mind, the discussion now turns to the behavioral measures themselves.

The first behavior variable measured through such a self-report was past leisure participation. As indicated in Chapter III, several investigators have suggested the validity of typologies of leisure activity which distinguish between what they term "appreciative" outdoor recreation activities and "extractive," "consumptive," or "abusive" pursuits (see Burch, 1965; Hendee, et al., 1971; Dunlap & Heffernan, 1975). If these typologies possess some validity, purportedly "appreciative" leisure pursuits should be consistent with each other in the same manner that similar attitudes should be.

In order to validate the typology and build a scale of "appreciative" leisure participation, a modified check-list of leisure behavior was first assembled. The response task, adapted from a recent Ph.D. dissertation which related leisure styles to environmental attitudes (McKechnie, 1972) called for subjects to indicate for each of a list of leisure activities both their past and anticipated future participation. However, only responses concerning past behavior were employed for the analysis. Choices for the past participation segment included four categories, ranging from "you have never engaged in the activity"

to "you have done it quite often in the past."

The fourteen items on the leisure participation scale were meant to represent three different kinds of activities. Seven of them were hypothesized to represent "appreciative" leisure activities and had received some discussion in the literature as belonging to that "type." These activities were: backpacking, hiking in a forest or wilderness area, cross-country skiing or snow-shoeing, canoeing, mountain climbing or technical rock-climbing, visiting state and national parks, forests, and scenic areas, and camping overnight.

The second set of leisure activities was thought to represent a different approach to the enjoyment of the outdoors. These pursuits included water-skiing, hunting, fishing, snowmobiling, and riding a trail bike in a forest or wilderness area.

Two other activities were included as a different kind of validity check. Because "appreciative" leisure pursuits have long been associated with high levels of social status and educational attainment, two "cultural" activities which have consistently shown the same association with high social status were included. These were "visiting museums," and "going to plays or classical music concerts."

The item analysis for this scale required three phases. In the first, all 14 of the items were included. This led to the deletion of five items on the basis of their low adjusted item-total correlations, with the highest correlation among the deleted group being a weak .135. This group consisted of these items: "snowmobiling," "hunting," "fishing," "visiting museums," and "water-skiing." The scale analysis procedure was then repeated with the nine remaining items. Two of these,

"going to plays or classical music concerts" and "riding a trail bike in a forest or wilderness area" were then deleted from the scale because they correlated only .070 and .085 with the total scale.

The seven remaining items, presented in Table 4, were then analyzed together. They correlated strongly with the overall scale, and with the exception of the "camping overnight" measure yielded highly significant t-statistics. In this case, the statistic could not be calculated because there was no variance within the high contrast group, which does not indicate an inability to discriminate between the high and low groups. The results of the scaling procedure were interpreted as being supportive of the "appreciative" outdoor leisure typology. Coefficient alpha for the final scale was found to be .78, indicative of an adequate level of reliability.

One other variable remains to be discussed: the extent of past behavior in support of environmentalist goals. Since this behavior might in principle extend to an almost limitless variety of activity, an attempt was made to restrict measurement to actions which students might reasonably be expected to undertake, and therefore to reject those which might be ". . . alien to the subject's customary behavioral context" (Tittle & Hill, 1967, p. 469).

A list of "pro-environmental" behavior was developed. The format and response task were the same for this scale as for the leisure scale, with the exception that only estimates of past behavior were elicited. Some of the items for the scale referred to behavior of an "information-seeking" variety, like reading articles or watching television programs concerning environmental issues, while others referred to past

TABLE 4

Scale Analysis Results for the Appreciative Outdoor Recreation Scale

Leisure Behavior	Adjusted Item-Total Correlation	t-Statistic
Backpacking	.733	18.281*
Hiking in a forest or wilderness area	.598	8.119*
Cross-country skiing, or snow-shoeing	.450	5.169*
Canoeing	.608	9.678*
Mountain climbing, or technical rock-climbing	.524	6.333*
Visiting state and national parks, forests, and scenic areas	.337	3.748*
Camping overnight	.731	**

* $p < .001$

** Could not be calculated due to zero variance in high contrast group

Coefficient Alpha = .78

participation in various recycling activities. In addition, students were asked about their participation in political activities such as rallies and demonstrations or letter-writing campaigns. Respondents were also asked if they had "worked on a project . . . to clean up a natural area: or bought lead-free gasoline for an automobile not requiring it. In all, there were thirteen items included.

When a scale analysis was performed, the results of which are summarized in Table 5, all of the items correlated substantially with the overall scale score. In two instances, "taken a course on environmental problems" and "bought lead-free gasoline for an automobile that did not require it," the correlations were .299 and .245, respectively. In the first case, the difference between the correlation and the arbitrary cut-off point of .30 was minimal, so the item was retained. In the second case, the item yielded a t-statistic which was higher than that found for four constituents of the scale. It was therefore decided to retain the item despite its low correlation. Coefficient alpha for this scale was determined to be .76, also an acceptable figure.

The limits of inference to be drawn from this scale are deserving of some comment. One such limit stems from the problem of response bias in the "socially responsible" direction. This is more acute with respect to this scale than the preceding one because it seems fairly obvious that many of the items are indicative of "socially desirable" behavior. In addition, there may be a tendency for students to attempt to manifest a consistency with their previously expressed attitudes, thereby poorly representing their true behavior. Beyond this, the

TABLE 5

Scale Analysis Results for the Pro-environmental Behavior Scale

Behavior Item*	Adjusted Item-Total Correlation	t-Statistic
Worked on a project to clean up a natural area	.420	5.101
Participated in a rally or demonstration having to do with environmental issues	.311	3.039**
Tried to convince someone of the importance of environmental issues	.575	6.152
Donated money to or collected money for an environmental group	.688	8.039
Collected magazines or newspapers for a group or organization	.363	5.653
Taken a course on environmental problems	.364	3.222**
Bought lead-free gasoline for an automobile that did not require it	.245	4.155
Read a book or magazine article concerning environmental problems in the last six months	.473	9.838
Taken newspapers, bottles, or cans to a recycling center	.500	7.902
Voted for or worked for a political candidate with strongly pro-environmental concerns	.433	4.060
Participated in a letter-writing campaign on some environmental issue	.483	3.731
Boycotted a company's products on environmental grounds	.450	6.208

TABLE 5 (Continued)

Behavior Item*	Adjusted Item-Total Correlation	t-Statistic
Watched a TV show concerning environmental problems in the last six months	.537	7.755

* Many of the items have been shortened. For complete items, please see Appendix A

** $p < .01$; otherwise $p < .001$

Coefficient Alpha = .76

the attempt to keep the list to a reasonable length while maintaining reliability implied that the same kinds of validity checks employed for the leisure scale could not be used. Each of these things undoubtedly contributes its own share of "error" variance to the measure. Nonetheless, it is believed that responses to the items in question may still be useful indicators of past behavior.

CHAPTER VI

FINDINGS

The primary purpose of the present chapter is to present data derived from the study in order to test the seven hypotheses set forth in Chapter IV.

Influences on Appreciative Outdoor Recreation

The first of three hypotheses dealing with possible influences on participation in appreciative styles of outdoor recreation implied that membership in a family marked by high social status would be positively associated with this behavior. In order to test the hypothesis, the relationships between leisure behavior and parental occupation and education were examined. The first of these relationships may be seen in Table 6. As the hypothesis suggested, respondents whose main-earning parents were in prestigeful occupations showed the highest rates of appreciative leisure behavior. Similarly, respondents who reported that their main-earning parent was in the unskilled labor category also reported the lowest rates of leisure participation. This pattern was not repeated for the middle two occupational groups, and these mixed findings are reflected in the relatively low Gamma and in a chi-square statistic which was not significant at the .05 probability level.[1] Therefore,

[1] In the succeeding bi-variate tables, a coorelation coefficient (r) between the variables of interest is also shown as an alternate statistical test. Unless this statistic conflicts with the other tests, however, it will not be discussed separately.

TABLE 6

Relationship Between Past Appreciative Leisure Behavior and Occupation Level of Main-earning Parent

Occupation Level	Leisure Behavior			Totals
	Low	Medium	High	
Professional, technical, management	25.6	30.2	44.2	100.0 (n = 43)
Clerical, sales, and other white collar	44.8	20.7	34.5	100.0 (n = 29)
Skilled labor and crafts	32.0	36.0	32.0	100.0 (n = 25)
Unskilled labor	42.9	35.7	21.4	100.0 (n = 14)

$X^2 = 5.286$, d.f. = 6, n.s.

Gamma = .184

When past leisure behavior was left free to vary, the correlation (r) between the two variables was found to be .091, not significant at the .05 probability level.

although there was some evidence to suggest that parental occupation level acts as an influence upon appreciative leisure behavior, it could not be concluded that this was an important factor.

A clearer statistical pattern, visible in Table 7, emerged when the relationship between leisure and parental education was examined. With the exception of the "college graduate" and "some college" groups, each increment of education was associated with higher rates of leisure participation. The Gamma statistic and chi-square test, which was significant beyond the .01 probability level, suggest that parental education level is associated with appreciative leisure behavior, even if parental occupation level as such is not.

The second hypothesis suggested that aspirations for high social status would also be a determinant of leisure participation. To test this hypothesis, the relationship between intention to attend graduate school and leisure behavior was examined. The data, summarized in Table 8, show that respondents who said they would "definitely" pursue graduate training also manifested the highest rates of appreciative leisure behavior. However, those who only thought they would "probably" attend graduate school reported lower rates of leisure behavior than those who said they were "unsure" or who doubted that they would do so. Although a chi-square test proved significant at the .05 probability level, an examination of the percentages in the table shows that the relationship is not a linear one, as the hypothesis had predicted. This is also reflected in the low Gamma statistic, and in the fact that a correlation coefficient (r) between the freely varying measures also proved non-significant. This suggests that personal intentions to attend

TABLE 7

Relationship Between Past Appreciative Leisure Behavior and Education Level of Main-earning Parent

Education Level	Leisure Behavior			Totals
	Low	Medium	High	
Graduate or professional school	18.2	18.2	63.6	100.0 (n = 22)
College graduate	37.5	21.9	40.6	100.0 (n = 32)
Some college	14.2	42.9	42.9	100.0 (n = 14)
High school graduate	41.7	38.9	19.4	100.0 (n = 36)
Less than high school	63.6	27.3	9.1	100.0 (n = 11)

$X^2 = 20.232$, d.f. = 8, $p < .01$

Gamma = .388

When the measures were left free to vary, the correlation (r) between the two variables was found to be .295, $p \leq .001$.

TABLE 8

Relationship Between Past Appreciative Leisure Behavior and Intention to Attend Graduate or Professional School

Intention	Leisure Behavior			Totals
	Low	Medium	High	
Definitely yes	25.0	17.9	57.1	100.0 (n = 28)
Probably yes	39.4	42.4	18.2	100.0 (n = 33)
Not sure	42.1	21.1	36.8	100.0 (n = 38)
Probably or definitely not	29.4	41.2	29.4	100.0 (n = 17)

$X^2 = 13.259$, d.f. = 6, $p < .05$

Gamma = .136

When the measures were left free to vary, the coorelation (r) between the two variables was found to be .087, not significant at the .05 probability level.

graduate or professional school do not have an important bearing upon the pursuit of an "appreciative" outdoor leisure style.

The third hypothesis suggested that childhood participation in a group which aimed to teach outdoor skills and values would be a significant influence upon the adoption of an "appreciative" outdoor leisure style. The percentages in Table 9 showing the relationship between membership in a scouting group and leisure behavior suggest that this relationship is a strong one, as do the relatively strong Gamma and the significant chi-square test results. These data suggest that, as hypothesized, childhood participation in organized scouting groups is a factor in the adoption of an "appreciative" outdoor leisure style.

Attitudinal Consequences of Appreciative Outdoor Recreation

Hypothesis four stated that appreciative outdoor recreation will lead to aesthetic sensitivity to the natural world. As can be seen in Table 10, the evidence of a strong association between these two variables is substantial. The tabular percentages, high Gamma statistic and highly significant chi-square test results all point strongly in this direction. Although they do not permit any conclusions regarding the causal order between these variables, and their relationship may be an interactive one, these data may be interpreted as supportive of the hypothesis.

Hypothesis five implied that environmental concern would arise from nature-appreciation rather than directly through participation in appreciative outdoor recreation, and that concern for leisure-relevant issues would be more strongly associated with nature appreciation than

TABLE 9

Relationship Between Past Appreciative Leisure Behavior and Childhood Membership in Scouting Group

	Leisure Behavior			
Membership	Low	Medium	High	Totals
Member	25.3	31.3	43.4	100.0 (n = 83)
Non-member	60.6	24.2	15.2	100.0 (n = 33)

$X^2 = 14.052$, d.f. = 2, $p \leq .001$

Gamma = .583

When past leisure behavior was left free to vary, the correlation (r) between the two variables was found to be .411, $p \leq .001$.

TABLE 10

Relationship Between Past Appreciative Leisure Behavior and Attitude of Nature-appreciation

	Leisure Behavior		
Nature-appreciation	Low	Medium	High
Low	61.0	25.0	7.5
Medium	22.0	53.1	32.5
High	17.0	21.9	60.0
Totals	100.0 (n = 41)	100.0 (n = 32)	100.0 (n = 40)

$X^2 = 36.895$, d.f. = 4, $p < .001$

Gamma = .641

When the measures were left free to vary, the correlation (r) between the two variables was found to be .577, $p \leq .001$.

with concern for other issues. To show that there was no direct link between leisure participation and environmental concern, the relationship between these variables was examined. When, as expected, no significant association was found,[2] attention was shifted to the relationship between nature-appreciation and environmental concern. It is apparent from Table 11 that there was a strong relationship between these two Likert scales, as indicated by the relatively high Gamma and significant chi-square statistic. This was interpreted as evidence for the validity of the first part of the hypothesis.

To test for the second part of the hypothesis, two steps were taken. First, associations between the nature-appreciation scale and the individual items making up the environmental concern scale were examined. These associations, visible in Table 12, gave only mixed evidence in favor of the hypothesis. That is, the strongest association was found for one of the leisure-relevant items which dealt with the setting aside of more land for the future. Although the Gamma statistics for the two remaining leisure-related issues, protection of wildlife and the building of roads and facilities in wilderness areas, were also strong and exceeded most of the other associations, at least two other less relevant environmental issues showed equally strong associations.

Evidence concerning hypothesis five is also available in Table 13, which shows the associations between nature-appreciation and attitudes toward government spending in various environmental and non-environmental

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[2]Table A, which shows the relationship between leisure participation and environmental concern, can be seen in Appendix C. Neither the chi-square test nor the correlation coefficient (r) proved significant at the minimal .05 probability level.

TABLE 11

Relationship Between Attitude of Nature-appreciation and Environmental Concern

	Nature-appreciation		
Environmental Concern	Low	Medium	High
Low	54.1	27.4	15.4
Medium	35.1	37.8	30.8
High	10.8	35.1	53.8
Totals	100.0 (n = 37)	100.0 (n = 37)	100.0 (n = 39)

$X^2 = 20.090$, d.f. = 4, $p < .001$

Gamma = .531

When the measures were left free to vary, the correlation (r) between the two variables was found to be .487, $p \leq .001$.

TABLE 12

Associations Between Attitude of Nature-appreciation and Attitudes Toward Individual Environmental Issues

No.	Environmental Issue*	Gamma Statistic
1.	Regulation of pesticides in farming	.186
2.	Protection of endangered wildlife	.411**
7.	Building of roads and facilities in wild areas	.374**
8.	Regulation of air pollution from industry	.295
10.	Less driving to ease air pollution	.322
11.	Population growth and threat to resources	.378
16.	Allowing SST to land in U.S.	.274
17.	People doing without to conserve resources	.087
19.	Putting up with pollution versus unemployment	.188
22.	Government spending on recycling	.416
25.	Importance of environmental problems	.417
26.	Support for household recycling law	.176
27.	Setting aside more land for the future	.623**
28.	Alaskan oil pipeline	.290
30.	Danger of air and water pollution	.486

* Items have been shortened. For complete items, see Appendix A.

** Denotes issue with relevance for "appreciative" leisure pursuits.

TABLE 13

Associations Between Attitude of Nature-appreciation and Attitudes Toward Government Spending in Selected Issue-areas

Issue Area	Gamma Statistic
Providing training and jobs for the unemployed	-.024
Health and medical care	-.148
Public transportation in cities	.185*
Control of air and water pollution	.197*
Crime prevention and control	.257
Conservation of energy resources	.103*
Poverty programs	-.220
Alcoholism and drug abuse	-.055
Public education	-.094
Protection of endangered species of wildlife	.462**
Housing	-.161
Protection of national parks and forest areas	.706**
National military defense	-.001
Urban renewal	-.229

* Denotes general environmental issue

** Denotes environmental issue with relevance for "appreciative" leisure pursuits

issue-areas. As expected, positive associations were found between the "nature-appreciation" scale and approval of government spending on environmental problems. Although some of these associations were relatively weak, only one other positive association was found. In addition, the two strongest associations were found for the two leisure-relevant issues: protection of endangered wildlife and protection of national parks. These data and the evidence discussed in the previous paragraphs, although inconclusive and mixed, suggest the validity of both segments of hypothesis five.

Hypothesis six implied that an interest in appreciative outdoor recreation would lead to membership in an outdoor recreation organization, and that this membership would increase attitudes of nature-appreciation and environmental concern. The percentages in Table 14, showing the relationship between Outing Club membership and leisure participation, illustrate the validity of the first part of this hypothesis. The strong Gamma and significant chi-square test results underscore the association between these two variables, although this causal relationship may also be an interactive rather than unidirectional one, with club membership also leading to increased leisure participation.

To test the second part of the hypothesis, the investigator examined the relationships between outing club membership and the attitudes of nature-appreciation and environmental concern. Table 15, showing the relationship between Outing Club membership and nature-appreciation, gives evidence of a clear association in the expected direction between the two variables, and can be interpreted as providing support for the hypothesis.

TABLE 14

Relationship Between Past Appreciative Leisure Behavior and Membership in Outing Club

Club Membership	Leisure Behavior			
	Low	Medium	High	Totals
Member	16.6	27.8	55.6	100.0 (n = 36)
Non-member	45.5	28.6	25.9	100.0 (n = 77)

$X^2 = 11.673$, d.f. = 2, $p < .01$

Gamma = .535

When past leisure behavior was left free to vary, the correlation (r) between the two variables was found to be .373, $p \leq .001$.

TABLE 15

Relationships Between Outing Club Membership and Attitudes of Nature-appreciation and Environmental Concern

	Nature-appreciation				Environmental Concern			
Club Membership	Low	Medium	High	Totals	Low	Medium	High	Totals
Member	5.6	36.1	58.3	100.0 (n = 36)	13.9	41.7	44.0	100.0 (n = 36)
Non-member	44.2	33.8	22.0	100.0 (n = 77)	41.6	28.5	29.9	100.0 (n = 77)

$X^2 = 21.101$, d.f. = 2, $p < .001$

Gamma = .694

When the attitude scale was left free to vary, the correlation (r) between the two variables was found to be .398, $p \leq .001$.

$X^2 = 8.530$, d.f. = 2, $p < .05$

Gamma = .404

When the attitude scale was left free to vary, the correlation (r) between the two variables was found to be .247, $p < .01$.

The relationship between Outing Club membership and environmental concern was then examined. Table 15, which also shows this relationship, indicates that although the association between these variables is not as strong as the preceeding one, there is nevertheless a decided tendency for club members to manifest higher levels of environmental concern than non-members. This tendency, which is also shown in the Gamma and chi-square statistics, provides further evidence for the hypothesis that membership in an outdoor recreation organization leads to increased nature-appreciation and environmental concern. This interpretation received added support when the introduction of leisure participation as a control variable had no appreciable effect on the original relationship, thereby suggesting that the differences could not be attributed to the influence of this variable.[3]

The Prediction of Pro-environmental Behavior

The final hypothesis considered was also the most complex, and suggested that the attitudes of nature-appreciation and environmental concern, along with membership in the Outing Club, would independently influence pro-environmental behavior. Because of the complexity of the hypothesis, and the possibility that several other variables might account for correlations between the dependent variable and the three variables of interest, it was decided to test the hypothesis through

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[3]This procedure resulted in the generation of six partial tables, all of which may be seen in Appendix C. These tables show that Outing Club members score higher on these attitude scales at each of three levels of leisure participation. In the case of environmental concern, Gamma for each of the partial tables was almost identical to the Gamma found for the original relationship.

the use of multiple regression analysis.[4]

The first step in the procedure was to assemble a pool of "candidate" predictor variables. Six variables in addition to the three mentioned in the hypothesis were included: leisure behavior, parental occupation and education, intention to attend graduate school, childhood membership in a scouting organization, and the sex of the respondent.

A regression analysis was then performed using the nine independent variables. A summary of the results of this analysis may be viewed in Table 16. Initial support for the hypothesis was evident in the size of the zero-order correlations (r) between the independent variables and the pro-enviornmental behavior scale. Although six of these correlations reached or exceeded the .01 probability level, three of the four largest correlations were found between the three hypothesized predictors and the dependent variable. All of these were significant at or beyond the .001 probability level. A finding that was not anticipated by the hypothesis was the substantial and significant correlation found between leisure behavior and the dependent variable. The other significant correlations were found between the dependent variable and parental occupation and education.

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[4]According to Kim and Kohout (1975, p. 321), multiple regression is a ". . . general statistical technique through which one can analyze the relationship between a dependent or criterion variable and a set of independent or predictor variables," with one of its important uses being to "control for other confounding factors in order to evaluate the contribution of a specific variable or set of variables." Strictly speaking, regression analysis requires that several assumptions, including the "interval-level" measurement of independent variables and their lack of inter-correlation, be met (see Loether & McTavish, 1974, p. 308; Blalock, 1972, chap. 19). Because the present data do not satisfy all these assumptions the following results should be viewed primarily as suggestive evidence concerning the hypothesis.

TABLE 16

Multiple Regression Analysis of Pro-environmental Behavior (n = 110)

Independent Variables	Zero-Order Correlation With Behavior (r)	Multiple Correlation Coefficient (r)	Coefficient of Determination (r^2)	Standardized Regression Coefficient (Beta wt.)
Environmental concern	.496**	.496	.246	.332**
"Appreciative" leisure behavior	.460**	.631	.398	.326*
Attitude of nature-appreciation	.540**	.647	.418	.181
Occupation of main-earning parent	.226*	.663	.439	.150
Childhood membership in scouting organization	.078	.673	.453	-.148
Intention to attend graduate of professional school	.144	.684	.468	.116
Membership in Outing Club	.328**	.685	.469	.041
Sex	-.035	.686	.470	.030
Education of main-earning parent	.264*	.686	.470	.023

* $p \leq .01$

** $p \leq .001$

When the beta weights from the regression analysis were examined, the initial support for the hypothesis became qualified. Although 47% of the variation in pro-environmental behavior was explained by the nine independent variables, only two variables appeared to account for significant amounts of it. Environmental concern accounted for nearly 25% of the variation in pro-environmental behavior by itself, while another 15% was attributable to the influence of leisure behavior, a finding not anticipated in the hypothesis. The attitude of nature-appreciation, which showed the strongest zero-order correlation with pro-environmental behavior, also showed the third-largest beta weight. However, the requisite .05 significance level was not reached, and the variable accounted only for another 2% of the variation in behavior. Although Outing Club membership had also been suggested in the hypothesis as a potential influence upon pro-environmental behavior, this variable proved almost useless as a predictor. This finding was repeated when a separate regression analysis was performed in which only environmental concern and club membership were used as independent variables.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary

The present research began with the observation that although environmental problems are currently receiving substantial attention from various quarters, relatively little is known concerning the reasons for variation in attitudes toward these problems. It was further suggested that less is known concerning whether these attitudinal differences might translate into variation in environmentally-relevant behavior. This "Attitude-Behavior" relationship was identified as a problematic one and therefore an important area for research. It was further suggested that the emerging interest in outdoor recreation might be a significant factor in the development of both attitudes toward environmental issues and "pro-environmental" behavior.

Tentatively assuming a connection between attitudes and behavior, the discussion focused upon possible determinants of environmental attitudes. Two partially complementary theories of attitude formation which appeared consistent with a general "reinforcement" approach were discussed. The first of these, which was referred to as the "interest" theory, proposed that support for environmental reforms should be stronger among people who stand to gain most from them. The second, or "group" theory, suggested that reinforcement from important individuals or groups would be an important determinant of attitudes. Although

little research concerning the latter theory was available, evidence was presented in favor of the "interest" theory. It was suggested that other variables such as educational background might also be determinants of these attitudes, and that their effects should be accounted for in research designs.

The "Attitude-Behavior" problem was then treated in finer detail, and several studies challenging the existence of any connection between the two variables were noted. It was suggested that although we should legitimately expect a positive correlation between attitudes and behavior, prediction of behavior might be enhanced if information concerning two other variables was available. The first of these variables referred to the "salience" of an attitude, or the degree to which "affect" or emotion entered into it; the second referred to the amount of "social support" for pro-environmental behavior to be found among an individual's "significant others" or "reference groups." What little research had been done in this area seemed to support the notions that attitudes help determine behavior, and that this is more likely to be so when the attitudes are salient and when a person is a member of a group concerned with environmental issues.

Participation in various leisure activities was then discussed as a plausible determinant of general attitudes and values. A discussion of different types of outdoor recreation led to the conclusion that an interest in what were termed "appreciative" activities, like backpacking and canoeing, might lead a person to want to preserve the sites necessary to these pursuits. In addition, it was suggested that socialization into this leisure style might result in a greater emotional

involvement in and sensitivity to nature. This might make the aforementioned environmental concern a more "salient" attitude and therefore lead to greater correspondence between attitudes and behavior.

The importance of understanding the reasons for participation in different styles of leisure was then noted, and two explanatory approaches were outlined. The first approach began by showing that leisure pursuits often mark off different lifestyles and therefore different "status groups." The similarity between appreciative outdoor recreation and such traditionally "high culture" pursuits as concert and museum attendance was noted, and it was suggested that social class background and aspirations might therefore influence the adoption of an "appreciative" leisure style. The second approach placed special emphasis upon the "social reinforcement" from family and other close associates, both during childhood and in later years, as a determinant of leisure style. It was suggested that this "personal community" of co-recreationists might be particularly important in conveying appropriate attitudes to novice recreationists and in encouraging "pro-environmental" behavior through the provision of social support for it. A review of the limited literature in this area suggested that appreciative leisure participation does seem to lead to an increased concern with environmental issues, but that little could be said concerning whether this leads to any "pro-environmental" behavior.

At this point seven formal hypotheses were presented. Three suggested plausible determinants of participation in appreciative outdoor recreation: membership in a family marked by high social status, aspirations for high-level social status, and participation during childhood

in an organized group which pursued such activities. The fourth and fifth hypotheses suggested that participation in "appreciative" outdoor recreation would lead first to a greater aesthetic sensitivity to nature, and then to different levels of concern for environmental problems, depending upon their relevance to the given leisure pursuits. Hypothesis six implied that appreciative leisure interests would lead to membership in an outdoor recreation organization, and this would encourage aesthetic sensitivity to nature and environmental concern. The final hypothesis was that environmental concern, sensitivity to nature, and Outing Club membership would each be positive and independent influences on "pro-environmental" behavior.

These hypotheses were tested through the administration of a questionnaire to two groups of college students. One group consisted of students attending a meeting of the hiking division of a large outdoor recreation organization at a large state university, while the other was composed of members of a large class in Social Problems at the same university. It was suggested that limiting the sample in this way placed limitations on the extent to which generalizations of the study's results might be made.

The questionnaire itself contained items requesting general demographic and background data, and attempted to measure two attitudinal and two behavioral variables. A general methodological discussion led to the conclusions that much past research has relied too heavily upon single-item indicators for attitudes and behavior, and that too often only one method has been used as well. To guard against the reliability and validity problems associated with these practices, it was decided to

employ the Likert scale building method for the attitudinal and behavioral variables of interest, and to use an additional and supplementary method for the measurement of environmental concern.

Item analyses were performed for each of the hypothesized scales. The two presumed "dimensions" of environmental attitudes--"nature-appreciation" or "affect," and "concern"--proved to be internally consistent and distinguishable from each other. The validity of the "appreciative" type of outdoor recreation was also indicated when only the activities deemed consistent with it remained in the leisure scale after a similar item analysis. In addition, all items for the final "pro-environmental behavior" scale survived this same kind of analysis. The four final scales proved to possess adequate levels of reliability, as measured by Cronbach's coefficient alpha.

The three hypotheses dealing with the determinants of leisure behavior found mixed support in the data. For example, there was no consistent or monotonic relationship between parental occupation and appreciative leisure behavior, but a clear and positive association between parental education and leisure behavior was found. The second hypothesis, which pointed to aspirations for high social status as an influence upon leisure behavior, could not be supported because of the lack of a clear association between the latter variable and intentions to pursue graduate or professional study. There was, however, substantial evidence that childhood membership in a scouting organization is related to participation in appreciative leisure activities, which suggested the validity of hypothesis three.

The fourth hypothesis, which suggested that participation in

appreciative outdoor recreation will lead to an increased aesthetic sensitivity to nature, found strong support in the data, but the fifth hypothesis was more ambiguously supported. There was, as suggested by the first part of this hypothesis, a strong relationship between environmental concern and nature-appreciation. However, the expected tendency for nature-appreciation to be more strongly associated with concern for leisure-relevant environmental issues than concern for broader environmental problems was a weak one. It was concluded that both parts of this hypothesis were nonetheless valid.

In hypothesis six it was suggested that interest in appreciative outdoor recreation might lead to membership in an outdoor recreation organization, with consequently stronger attitudes of environmental concern and nature-appreciation. The data showed a strong correlation between outing club membership and appreciative leisure behavior, suggesting the validity of the first part of the hypothesis. There was also a strong relationship between organization membership and the two attitudes in question. When this persisted upon the introduction of leisure participation as a control variable, it was concluded that the second part of the hypothesis was also valid.

A multiple regression analysis was performed to test the final hypothesis, which suggested that environmental concern, nature-appreciation, and outing club membership would contribute to the performance of pro-environmental behavior. These three variables showed strong and highly significant zero-order correlations with the dependent variable, as did appreciative leisure behavior. Only environmental concern and leisure behavior yielded significant beta weights when nine independent

variables were included in a regression equation with pro-environmental behavior as the dependent variable, although nature-appreciation also yielded a sizable coefficient. These results suggested that club membership was a poor predictor of pro-environmental behavior once the influence of the other significant predictors had been taken into account, and that the influence of nature-appreciation was relatively unimportant. The influence of leisure behavior upon the dependent variable was not anticipated in the hypothesis.

Discussion

It is appropriate at this point to briefly explore some of the relationships between the results of this research and the findings of other studies, and then to present some speculation regarding the significance of the research for the future of the environmental movement.

It was originally thought that various social class indicators would help explain variation in appreciative leisure behavior, but only parental education turned out to be strongly associated with it. In fact, the small association between parental occupation level and leisure might be attributable to this factor's influence. The discussion in Chapter III pointed to the importance of education as a determinant of lifestyle in general and leisure style in particular (see Kaplan, 1975; Kando, 1975; Wilensky, 1964), so this finding is within the main stream of research in this area. The specific finding that parental education is more important than parental occupation in predicting leisure also mirrors numerous prior findings concerning the relative importance of personal income and education in this respect (see White, 1975; Hendee et al., 1968, 1971; Knopp & Tyger, 1973).

Personal intention to attend graduate or professional school was one of the social class indicators which failed to predict leisure behavior. The consistency with which graduate training has been shown by past researchers to predict appreciative leisure participation accords poorly with the present findings, and suggests the need for some explanation of this seeming inconsistency. One possibility is that the individual who undergoes "anticipatory socialization" does not have the opportunity for extensive interaction with highly-educated people which is one result of attending graduate or professional school. This difference may be the reason why the two variables do not bear the same relationship to appreciative leisure behavior.

Several interesting aspects of the relationship between appreciative leisure behavior and attitudes also deserve attention. It will be recalled that Dunlap and Heffernan found a "moderate" relationship between their appreciative leisure indicators and concern for environmental problems (1975, p. 23). They also noted that this relationship was stronger with respect to "protecting nature" than "controlling pollution," and hypothesized that this was because people interested in appreciative leisure pursuits have a more direct stake in protecting nature. In the present study only a minor correlation was found between leisure participation as such and concern for environmental issues, but the nature-appreciation scale was strongly related to both leisure participation and concern for environmental problems. This finding supports the view that leisure participation is important to the growth of environmentalism only to the degree that it fosters an appreciation of nature. Recognition is therefore made of the fact that people may engage in such leisure

activities for many reasons having little to do with their feelings about the world of nature.

Dunlap and Heffernan noted that recreationists tend to be more concerned about leisure-relevant issues than less-relevant issues, and the present study yielded similar findings. The difference between their study and the present one is that here a correlation between nature-appreciation and concern for environmental issues was reported, while Dunlap and Heffernan reported an association between leisure participation and environmental concern. Owing to the weakness of the correlations obtained in the present study, the appropriate conclusion to draw seems to be that nature-appreciation is associated with a concern for a fairly wide range of environmental issues, and is not necessarily limited to leisure-relevant issue areas.

Another interesting trend was for this attitude to be negatively associated with support for government spending in some traditionally "liberal" or "social welfare" areas: health and medical care, urban renewal, and poverty programs. Although there was no association between nature-appreciation and people's viewpoint on defense spending, there was a positive association between the former and desire to spend more on crime prevention and control. Some critics of the environmental movement (e.g. Beckerman, 1974) are apparently correct in the view that many environmentalists are essentially of conservative inclination, and may be willing to sacrifice the economic security of the less-privileged in order to achieve their objectives.

Perhaps the major question to be resolved by the research was whether environmental concern would translate into action. A firm and

highly significant link was established between these two variables. Judged on the basis of Wicker's remark that an attitude-behavior correlation of .30 is "rare" in reported research (1969, p. 65), the obtained correlation of .50 must be viewed as substantial. It must be remembered that Wicker excluded from his analysis studies relying, as the present one did, upon self-reports of behavior. Nonetheless, the present findings must be viewed as evidence against his view that attitudes are relatively insignificant determinants of behavior, and are in accord with some other studies of the determinants of pro-environmental behavior (see e.g. Weigel et al., 1974; Heberlein & Black, no date). It must not be concluded from this that attitudes are either the sole or most important determinants of behavior.

Nature-appreciation was expected to aid in the prediction of pro-environmental behavior but did not appear to be of any importance in this respect. However, some additional variance in the dependent variable was explained as a result of introducing nature-appreciation into the regression equation, so it may be that a different approach to defining "salience" would succeed where this one failed.

Outing club membership, on the other hand, failed completely to predict pro-environmental behavior after the effects of environmental concern were accounted for, so no better understanding could be gained from the use of this variabe. Maloney and Ward's research (1973) showed a very high correlation between attitudes and behavior among their Sierra Club sample, so this finding was quite surprising. Schuman and Johnson's literature review (1976) showed strong enough support for the theory of "perceived reference group support" as an influence upon

behavior to make rejecting the theory on the basis of the present findings both premature and questionable. Instead, explanations for the failure of outing club membership to predict pro-environmental behavior must be sought in some of the assumptions that were made.

For example, no attempt was made in the present study to determine whether the other group members really did function as a "reference group" for the individuals in the outing club sample. It is possible that too much has been assumed in this respect that is in need of demonstration. In addition, it should be noted that some researchers have hypothesized a range of types of environmental groups ranging from "expressive" to "instrumental" (Faich & Gale, 1971). The Sierra Club, being a more "instrumental" or activist organization, may attempt to enforce more "activist" behavioral norms with respect to the environment than the presumably more "expressive" or activity-oriented campus organization. This interpretation would be consistent with the finding that outing club membership was more closely associated with leisure participation and nature-appreciation than with environmental concern. The importance of outing club membership may be, as the previously cited authors have suggested, that it forms a "stepping stone" for later, more intense involvement in the environmental movement through national organizations such as the Sierra Club.

It is also interesting to speculate on the possible relationship between this negative finding and the positive association found between leisure behavior and pro-environmental behavior. First, it must be noted that the response task for the two behavioral scales was identical. There is at least some likelihood that their common variance may be the

result of using two measurement techniques which are biased in the same direction. Another intriguing possibility is that the network of close associates or "personal community" common among recreationists may provide "reference group support" for pro-environmental behavior. It may even be that this personal community is a more significant influence upon behavior than formal membership in an organized recreation group. However, this interpretation seems to run counter to the finding that leisure behavior as such was not significantly related to environmental concern.

Conclusions and Suggestions for Further Research

Although the discrete findings in this study do not directly confirm it, the pattern they follow suggests the plausibility of a particular chain of events. First, membership in a family marked by high educational attainment increases the likelihood that an individual will be exposed to appreciative leisure activities and therefore pursue this style of recreation. Among the values which the person may come to adopt during the leisure socialization process is an attitude of nature-appreciation, and this attitude seems to encourage a concern for environmental problems. Membership in an organized recreation group, which may result from an interest in appreciative recreation, also strengthens these attitudes. Perhaps most significantly, this process appears to result in a willingness to pay the personal costs of performing actions aimed at resolving a range of environmental problems.

It is always risky to extrapolate beyond the available data, particularly when the extrapolation extends into the future. With this in mind, some plausible, broad contours of the future of the environmental

movement might be suggested. We have seen that both leisure time and leisure-oriented values seem to be on the increase, while the middle classes will probably continue to expand, particularly through broader accessibility to higher education. This sociological trend implies that an interest in appreciative styles of outdoor recreation will probably increase, with the probable transfer of attitudes of environmental concern and nature-appreciation to the participants. Even though the probable increase in pressure on already-strained recreational areas may serve as a crystallizing agent for this group's willingness to participate in the political arena, other issue areas may be capable of having a comparable effect. That a constituency for environmental reforms may persist despite an apparent overall decline in public support for these reforms (Downs, 1974; Dunlap & Heffernan, 1976) may prove crucial for environmental quality. The accuracy of these speculations, of course, will be decided by future events and research.

It is hoped that more studies will be forthcoming in the areas touched upon in this research, and it is hoped that some of the problems encountered here will draw attention. For example, many past studies have adopted operational definitions of behavior which are lacking in some respects, and the present study sought to correct these errors by employing a self-report for the behavioral variables of interest. However, it is still not known how accurate a portrayal of behavior is produced in this way. Owing to its convenience and lack of expense, the self-report will probably continue to be popular, so research aimed at establishing its validity and reliability over a range of content

areas, methods of administration, and specificity of time-frame would be most welcome. It would be especially useful to explore the relationships between attitudes and accuracy of self-report, because the assumption of a connection between them is a legitimate and enduring source of reservations concerning the technique.

More research into the relationships between attitudes and behavior is also needed. Hopefully, such studies will proceed from the assumption that more than one attitude, or facet of an attitude, may influence behavior. Despite the failure of nature-appreciation to aid in the prediction of behavior, other studies might approach the "salience" issue by linking their operational definitions more closely to environmental issues. For example, it might be useful to try to measure the amount of emotion or "affect" associated with a desire to protect parks or preserve energy resources. Fishbein and Ajzen's three-part definition of attitudes (1975) might also furnish an initial point for such studies.

It might also be of interest to explore in greater detail the roles of organization membership and reference group support in the development of environmental concern and pro-environmental behavior. A longitudinal study might succeed in demonstrating whether members of recreational organizations do change their attitudes toward the environment in a more "activist" direction after joining, or whether they held such views prior to becoming members. Attention should also be devoted to the role of interpersonal factors in this process. Questions might be asked concerning respondents' lengths of membership in such an organization, how frequently they participate in group activities, the

number of close friends they have among the membership, what they perceive the group's prevailing views concerning the environment to be, and their perception of the kinds of pro-environmental behavior other members participate in. It is also important to know whether, as was suggested here, membership in different kinds of outdoor or environmental groups carries different implications for attitudes and behavior. Research should therefore be aimed at a variety of organizations, and should not be limited to a college student population.

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APPENDICES

APPENDIX A

The Questionnaire

Department of Sociology
Penn State University

Fall term, 1976

CONFIDENTIAL

Please answer all of the following in the spaces provided; questions will appear on both sides of the paper.

1. What is your present academic term standing?

   a. ____1st thru 3rd
   b. ____4th thru 6th
   c. ____7th thru 9th
   d. ____10th or above
   e. ____graduate student
   f. ____adjunct or non-degree

2. Sex. a. ____male b. ____female

3. Who was the main provider of income in your family when you were living at home with your parents?

   a. ____mother b. ____father c. ____other (specify)_____

4. What is (or was) this person's major occupation? If he or she held more than one job, describe the one held for the longest period of time.

   _____

   _____

5. How much formal education has he or she completed?

   a. ____sixth grade or less
   b. ____7th to 9th grade
   c. ____10th or 11th grade
   d. ____high school graduate
   e. ____some college
   f. ____college graduate
   g. ____graduate or professional school
   h. ____other (specify)_____

6. Do your career plans include going to graduate school or professional school sometime after you graduate from college?

   a. ____Definitely yes
   b. ____Probably yes
   c. ____Unsure or don't know
   d. ____Probably not
   e. ____Definitely not

7. Were you ever a member of the Girl Scouts, Boy Scouts, Campfire Girls or any similar organizations while you were growing up? If yes, please list them by name:

   _____

8. Are you a member of the Penn State Outing Club? ____yes ____no

9. Are you a member of any conservation or ecology groups, such as the Audubon Society, Sierra Club, Friends of the Earth, etc.? If yes, please list them by name:

_____

10. Are you a member of any campus organizations other than the Penn State Outing Club, such as student government, a fraternity or sorority, athletic team, hobby club, religious or political group, etc.? If yes, please list them by name:

_____

11. Are you registered to vote in the next election? ____yes ____no

12. If you <u>are</u> registered to vote, with which party are you registered (e.g. Democratic, Republican, Independent, etc)? Please specify:

_____

13. The federal government spends tax money in many problem areas, some of which are listed on this page. For each of the areas listed below, please indicate whether you would favor government spending less money, the same amount, or more money than is now being spent.

		Less Money	Same Amount	More Money
		(circle one number for each issue)		
A.	Providing training and jobs for the unemployed	1	2	3
B.	Health and Medical Care	1	2	3
C.	Public transportation in cities	1	2	3
D.	Control of air and water pollution	1	2	3
E.	Crime prevention and control	1	2	3
F.	Conservation of energy resources	1	2	3
G.	Poverty programs	1	2	3
H.	Alcoholism and drug abuse	1	2	3
I.	Public education	1	2	3
J.	Protection of endangered species of wildlife	1	2	3
K.	Housing	1	2	3
L.	Protection of national parks and forest areas	1	2	3
M.	National military defense	1	2	3
N.	Urban renewal	1	2	3

14. If government spending were possible in only some of these areas, which of them should be given money before the others would get it? Please indicate which three areas you think are most important by putting the appropriate letters in the spaces provided below.

1. ____The most important area
2. ____The second most important area
3. ____The third most important area

Below you will see a series of short statements. Please read each one of them and indicate how much you agree or disagree by circling the appropriate number.

	S.A.	A.	N.	Dis.	S.Dis.
1. The use of pesticides in farming should not be so tightly controlled by government agencies.	1	2	3	4	5
2. Endangered species of wildlife should be protected by the government through the strongest available means.	1	2	3	4	5
3. Today people are too isolated from the sunshine, wind, and other forces of nature.	1	2	3	4	5
4. A forest area wouldn't be enjoyable to me unless there were some facilities to help me feel comfortable.	1	2	3	4	5
5. I feel that people really get to know themselves and be happy when they're in a forest or enjoying an area of unspoiled natural beauty.	1	2	3	4	5
6. The idea of walking into the forest and living there for a week doesn't really appeal to me.	1	2	3	4	5
7. More roads and facilities should be built in natural areas like forests and parks so more people can enjoy them.	1	2	3	4	5
8. Many laws controlling air pollution from industry today should be taken off the books so that factories can use all available fuels.	1	2	3	4	5
9. I don't feel comfortable if I'm away from town or city life and other people for very long.	1	2	3	4	5
10. People should do less driving to help ease air pollution.	1	2	3	4	5

	S.A.	A.	N.	Dis.	S.Dis.
11. The population in this country can continue grow without too much danger of running out of resources like energy and metals.	1	2	3	4	5
12. I wouldn't mind that much if I had to live for a few years in an area that is a little noisy or dirty.	1	2	3	4	5
13. I would be a little uneasy if I had to spend a night by myself in a wilderness area.	1	2	3	4	5
14. Every chance I get, I like to get outdoors and feel like I'm in touch with nature again.	1	2	3	4	5
15. Being in a forest gives me a deep feeling of peace and contentment.	1	2	3	4	5
16. The "SST", or Super-Sonic Transport jets, should be allowed to land at large airports in the U.S. where landing them would not be dangerous or difficult.	1	2	3	4	5
17. Natural resources must be preserved, even if people in this country must do without many of the things they like.	1	2	3	4	5
18. I've never really been moved by the outdoors, nature, and fresh air as much as many people seem to be.	1	2	3	4	5
19. It is better to put up with some pollution than to have a high rate of unemployment.	1	2	3	4	5
20. If I had more free time, I would probably spend it out on a lake, or in the woods, or some other natural area.	1	2	3	4	5
21. It's fun to walk in the rain, even if you get wet.	1	2	3	4	5

	S.A.	A.	N.	Dis.	S.Dis.
22. Government agencies should spend more money on programs to recycle materials like paper, glass, and metals.	1	2	3	4	
23. There are few things in life as moving as a sunrise or sunset.	1	2	3	4	5
24. I can't identify the different kinds of flowers and trees I see around me very often.	1	2	3	4	5
25. Compared to a lot of other social issues, like race relations and unemployment, environmental problems aren't very important.	1	2	3	4	5
26. I would support a law requiring people to wash and set aside all glass jars and bottles for recycling purposes.	1	2	3	4	5
27. More land should be set aside and preserved in its natural state for the future.	1	2	3	4	5
28. The Alaskan oil pipeline will probably be worthwhile, even if the environment is somewhat damaged by it.	1	2	3	4	5
29. Hiking or walking in the woods aren't very interesting to me.	1	2	3	4	5
30. Air and water pollution are not as dangerous to man as ecologists say they are.	1	2	3	4	5

Below is a list of leisure and recreation activities. For each activity, please indicate the extent of your past participation by circling one of the numbers appearing in the column labeled "past" next to it:

1 - you have never engaged in the activity
2 - you have done it once or twice
3 - you have done it a few times or several times
4 - you have done it quite often in the past

After you have completed the list, go back to the first activity and indicate how likely it is that you will engage in each of them sometime in the future by circling one of the letters appearing in the "future" column:

A - you do not expect to do it in the future
B - you are uncertain or don't know
C - you do expect to do it sometime in the future

	PAST				FUTURE		
1. Snowmobiling	1	2	3	4	A	B	C
2. Backpacking	1	2	3	4	A	B	C
3. Going to plays or classical music concerts	1	2	3	4	A	B	C
4. Hunting	1	2	3	4	A	B	C
5. Hiking in a forest or wilderness area	1	2	3	4	A	B	C
6. Fishing	1	2	3	4	A	B	C
7. Cross-country skiing, or snow-shoeing	1	2	3	4	A	B	C
8. Visiting museums	1	2	3	4	A	B	C
9. Canoeing	1	2	3	4	A	B	C

	PAST				FUTURE		
10. Mountain climbing, or technical rock climbing	1	2	3	4	A	B	C
11. Riding a trail bike in a forest or wilderness area	1	2	3	4	A	B	C
12. Visiting state and national parks, forests, and scenic areas	1	2	3	4	A	B	C
13. Water-skiing	1	2	3	4	A	B	C
14. Camping overnight	1	2	3	4	A	B	C

For this last section of the questionnaire I'd like you to go through the following list of behavior and indicate for each item the extent of your past participation only. The system for doing this is the same as the one just used:

1 - you have never engaged in the activity
2 - you have done it once or twice
3 - you have done it a few times or several times
4 - you have done it quite often in the past

	PAST			
1. Worked on a project of some kind to clean up a natural area such as a campsite or hiking trail in the last 5 years.	1	2	3	4
2. Participated in a rally or demonstration having to do with environmental issues, such as conservation or air pollution.	1	2	3	4
3. Tried to convince someone of the importance of environmental issues.	1	2	3	4
4. Donated money to or collected money for an environmental group, such as Friends of the Earth, Sierra Club, etc.	1	2	3	4
5. Collected old magazines or newspapers for a group or organization.	1	2	3	4
6. Taker a course on environmental problems.	1	2	3	4
7. Bought lead-free gasoline for an automobile that did not require it.	1	2	3	4
8. Read a book or magazine article concerning environmental problems which you weren't required to do in the last 6 months or so.	1	2	3	4
9. Taken newspapers and magazines, bottles or cans to a recycling center in the last 5 years.	1	2	3	4
10. Voted for or worked for a political candidate with strongly "pro-environmental" concerns.	1	2	3	4

	PAST			
11. Participated in a letter-writing campaign on some environmental issue	1	2	3	4
12. Boycotted or refused to buy a company's products because you didn't think they followed sound environmental policies.	1	2	3	4
13. Watched a TV show concerning environmental problems in the last 6 months or so.	1	2	3	4

Thank you for giving so much of your time in filling out this questionnaire -- I sincerely appreciate it.

APPENDIX B

Cover Letters

THE PENNSYLVANIA STATE UNIVERSITY
206 LIBERAL ARTS BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

College of the Liberal Arts
Department of Sociology

Area Code 814
865-2527

September, 1976

Dear Penn State Student:

I would like to ask your help and cooperation in filling out the questionnaire that is attached to this letter. I plan to use the information that I get from it in my M.A. thesis in sociology, so your help is very important to me. Because the questionnaire is aimed at seeing what your feelings are about environmental problems and related matters, I also feel that the results of the study may be highly significant and timely. Regardless of the way you feel about these issues, however, your responses are important. If you would take a few minutes to answer the following questions, I would very much appreciate it.

You should understand that your cooperation in filling out this questionnaire is completely voluntary. Since there is no space for your name or student number, there will be no way for anyone to know how you as an individual have responded, or whether you have filled out the form or not. You can be sure that your replies will remain anonymous.

Thanks again for your help.

Sincerely yours,

Timothy D. Jewell
M.A. degree candidate
P.S.U. Department of Sociology

THE PENNSYLVANIA STATE UNIVERSITY
206 LIBERAL ARTS BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

College of the Liberal Arts
Department of Sociology

Area Code 814
865-2527

October, 1976

Dear Penn State Outing Club Member:

I have been given permission to hand out copies of this questionnaire concerning environmental problems to you and other members of the hiking division, and would like to ask for your help and cooperation in filling one of them out. Because I plan to use the information I get from the questionnaire as part of my M.A. thesis in sociology, and because I believe the subject of the survey to be a significant and timely one, your help is very important to me. If you would take a few minutes to answer the following questions, I would very much appreciate it.

You should understand that your cooperation in filling out this questionnaire is completely voluntary. Since there is no space for your name or student number, there will be no way for anyone to know how you as an individual have responded, or whether you have filled out the form or not. You can be sure that your replies will remain anonymous.

When you have finished the questionnaire, please return it to me either by leaving it at the front of the room after this meeting is over, or by dropping it off or sending it to the sociology department office, as listed at the top of this page.

Thanks again for your help.

Sincerely yours,

Timothy D. Jewell
M.A. degree candidate
P.S.U. Department of Sociology

APPENDIX C

Supplementary Statistical Tables

TABLE A

Relationship Between Past Appreciative Leisure Behavior and Environmental Concern

	Leisure Behavior		
Environmental Concern	Low	Medium	High
Low	39.0	34.4	25.0
Medium	34.1	34.4	30.0
High	26.9	31.2	45.0
Totals	100.0 (n = 41)	100.0 (n = 32)	100.0 (n = 40)

$X^2 = 3.470$, d.f. = 4, n.s.

Gamma = .221

When the measures were left free to vary, the correlation (r) between the two variables was found to be .149, not significant at the .05 probability level.

TABLES B, C, and D

Relationship Between Outing Club Membership and Attitude of Nature-appreciation, Controlling for the Effects of Past Appreciative Leisure Behavior

Table B

Low Leisure Behavior

	Nature-appreciation			
Club Membership	Low	Medium	High	Totals
Member	16.7	16.7	66.6	100.0 (n = 6)
Non-member	68.6	22.9	8.5	100.0 (n = 35)

Gamma = .831

Table C

Medium Leisure Behavior

	Nature-appreciation			
Club Membership	Low	Medium	High	Totals
Member	10.0	70.0	20.0	100.0 (n = 10)
Non-member	31.8	45.5	22.7	100.0 (n = 22)

Gamma = .248

Table D

High Leisure Behavior

	Nature-appreciation			
Club Membership	Low	Medium	High	Totals
Member	0.0	25.0	75.0	100.0 (n = 20)
Non-member	15.0	40.0	45.0	100.0 (n = 20)

Gamma = .600

TABLES E, F, and G

Relationship Between Outing Club Membership and Environmental Concern, Controlling for the Effects of Past Appreciative Leisure Behavior

Table E

Low Leisure Behavior

	Environmental Concern			
Club Membership	Low	Medium	High	Totals
Member	16.7	50.0	33.3	100.0 (n = 6)
Non-member	42.9	31.4	25.7	100.0 (n = 35)

Gamma = .347

Table F

Medium Leisure Behavior

	Environmental Concern			
Club Membership	Low	Medium	High	Totals
Member	20.0	40.0	40.0	100.0 (n = 10)
Non-member	40.9	31.8	27.3	100.0 (n = 22)

Gamma = .333

Table G

High Leisure Behavior

	Environmental Concern			
Club Membership	Low	Medium	High	Totals
Member	10.0	40.0	50.0	100.0 (n = 20)
Non-member	40.0	20.0	40.0	100.0 (n = 20)

Gamma = .353