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Individual and social motive factors influencing recreation participation in the Rattlesnake backcountry

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INDIVIDUAL AND SOCIAL MOTIVE FACTORS INFLUENCING

RECREATION PARTICIPATION IN THE

RATTLESNAKE BACKCOUNTRY

By

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B.S. University of Idaho, 1976

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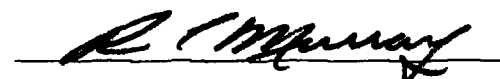
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ABSTRACT

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Individual and Social Motive Factors Influencing
Recreation Participation in the Rattlesnake Backcountry

Major Professor: Dr. Stephen F. McCool

A behavioral approach to recreation planning which
emphasizes participants' motives and satisfactions
extends recreation planning beyond its present descrip-
tive approach. This study uses social psychological
factors and situational norms to broaden a currently
used psychological model of recreation behavior.
Questionnaires were distributed to 319 recreationists
visiting the Rattlesnake backcountry area north of
Missoula, Montana. The questionnaire measured six
possible motives recreationists have for visiting the
area (individual motives), perceptions of the same six
motives for their significant others (social referents'
motives), and ratings as to the appropriateness of
selected recreation activities (normative constraints).
These three categories are used in regression equations
to predict past and future recreation visitation to the
Rattlesnake area by hikers and motorcyclists. The
regression correlations between predicted and measured
recreation participation rates using individual motive
scores while controlling for the effects of the
normative constraints, range from .27 to .29 for hikers
and from .36 to .57 for motorcyclists. Using the
social referents' motive scores with the normative
constraints controlled yields correlations of .21 to
.25 for hikers and .44 to .53 for motorcyclists. The
full model using individual motives, social referents'
motives, and normative constraints, yields regression
correlations of .36 to .39 for hikers and from .61 to
.83 for motorcyclists. The difference in correlations
between these two groups may be due to the greater
degree of group similarity among motorcyclists. Further
development of social psychological models and planning
procedures involving recreationists' physical and social
environments are strongly recommended.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Despite the growing importance of recreation and
increasing amounts of money and effort devoted to providing
recreation opportunities, managers and planners lack
adequate means of measuring the social benefits sought by
recreationists (National Academy of Science, 1975; Driver
and Brown, 1975; Driver and Knopf, 1977). Recreation plan-
ners have also been criticized as using inadequate techniques
and theories to predict future recreation activity demands
(Brown et al., 1973). In particular, identification of the
types of recreation experiences sought from specific
recreation environments and methods for predicting future
desired recreation experiences sought are needed (Driver and
Knopf, 1977). Information on types of experiences sought,
capabilities of existing areas to provide certain types of
experiences, and characteristics of potential and actual
recreationists desiring each of the differing types of
experiences would significantly enhance the ability of
managers and planners to more efficiently allocate their
resources toward meeting the specified types of desired

This thesis follows style of the <u>Journal of Leisure
Research</u>.

recreation experiences (Driver and Brown, 1975, 1978; Davey and Stout, 1976).

Outdoor recreation planning and prediction of recreation demand[1] is a difficult and involved problem, requiring application of a variety of theories and types of knowledge (N.A.S., 1975). A variety of perspectives is desirable whether the planning is local, regional, or national in scope. Past and current recreation demand studies have over-emphasized a limited set of historical perspectives (primarily socio-demographic descriptions) and have focused on statistical manipulations of insufficiently few variables (Driver and Brown, 1975). In particular, behavioral approaches drawing from psychological, sociological and consumer marketing disciplines are lacking.

A behavioral approach to recreation planning requires a viewpoint that recreation is not merely participation in an activity or a means of filling unobligated time; rather that recreation is a set of experiences providing a variety of individual and social benefits (Driver and Tocher, 1970). Persons may be viewed as participating in recreation activities in order to move from a present state toward more preferred social and psychological states (Driver and Brown, 1975). Identification of the types of expected experiences

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[1]Demand is herein used as referring to actual and latent recreation participation, rather than an economic definition of quantities demanded at various prices.

will provide insights into the social and individual benefits sought. Using this conceptual framework, the old planning question of "What activities does this segment of the recreation public desire?" becomes "What types of experiences are being sought and how can our areas provide these desired experiences?" (Driver and Brown, 1975).

STATEMENT OF THE PROBLEM

This study is based on previously developed experience expectation scales measuring a large number of individual psychological motivations for recreation participation. However, contemporary social psychological research strongly indicates individual motives are only one of several factors influencing behavior (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1972, 1973; Birch and Veroff, 1966; Ehrlich, 1969; Wicker, 1969).

A second factor having significant impact on an individual's behavior is the person's social environment (Mercer, 1976; Mischel, 1973, 1976; Shibutani, 1955; Sherif, 1953; N.A.S., 1975). Social influences are the primary ingredient in sociological research wherein individuals are examined in the context of their social system (Burch, 1965). Social group variables have been found to have significant effects on the degree and amount of recreation participation (Field and O'Leary, 1973; Burch, 1969; Field, 1971; O'Leary et al., 1974). Sociological variables, however, have been

utilized only from the perspective of activity participation, not from the more contemporary recreation experiences perspective. Measurement of social group influences variables by means of social group experience expectations scales would free sociological recreation research from its "activity" emphasis and allow it to move toward a recreation experiences perspective. Combinations of psychological and sociological variables are expected to increase the power and accuracy of recreation demand estimates.

STUDY PURPOSE

Several contemporary models of recreation behavior have been developed. One of the leading models is the "social-psychological model of recreation demand and benefit," developed by B. L. Driver (Driver and Brown, 1975; Driver, 1976a, 1976b). This problem solving model postulates recreationists are motivated by their perception of a more desirable psychological state to take actions to move toward that desired state. Several factors affect these motives and the actions taken to satisfy these desires. In addition to these individual motivations, this study examines the use of one's reference groups' motivations as additional factors influencing an individual's rate of recreation participation.

Development of a social group experience expectations

scale (one's reference groups' motives)[2] will provide
recreation planners and managers with theoretically based
social psychological variables useful in recreation demand
predictions. Identification of reference group recreation
motive types will provide a second means of delineating
recreationists on their social psychological characteristics.

A third influence on recreation participation is the
perceived attributes of potential recreation sites. Not all
areas are equally suited to provide various experiences
desired by recreationists. Each recreation setting is
characterized by differences in physical, social and manageri-
al attributes (Driver and Brown, 1978). Visitors recreating
in each area may hold differing views of each of these
situational characteristics.

STUDY OBJECTIVES

This study seeks to measure individual recreation-
ist's motivations and their social referents' motivations
and relate these motives to recreationists visitation rates in
the Rattlesnake backcountry. This will be accomplished by
satisfying the following goals:

1) Measure the individual experience expectations (individ-
ual motives) of a representative sample of Rattlesnake

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[2]In this paper the terms "social group motives" and
"reference group motives" are used interchangeably, although
there are several possible theoretical differences.

recreationists

2) Measure social group experience expectations (social group motives) of the same Rattlesnake recreationists

3) Factor analyze individual and social group experience expectations separately

4) Measure Rattlesnake recreationists' definitions of normative situations

5) Develop an index of the normative situation(s)

6) Determine the amount individual and social group experience expectations predict variations in the amount of Rattlesnake recreation participation while controlling for the effect of normative situations.

CHAPTER II

CONCEPTUAL FRAMEWORK

This section reviews four methods of viewing
recreation participation, critiques B. L. Driver's model of
recreation behavior, and drawing from several social
psychological theories develops modifications to Driver's
model and suggests some new theory.

FOUR METHODS OF PREDICTING

RECREATION PARTICIPATION

Socio-demographic

The collection of variables such as occupation,
income, age, education, and place of residence describing
recreation participants has been basic to most early recrea-
tion research (Meyersohn, 1969; Burdge and Hendee, 1972).
The Outdoor Recreation Resources Review Commission (ORRRC)
study, completed in 1962, set the tone for a spate of
recreation studies and State Comprehensive Outdoor Recrea-
tion Plans with its survey of the nationwide recreation
public (Burdge and Field, 1972). While indicating that
recreationists are often disproportionately drawn from
certain socio-demographic groups, this approach provides

only descriptive profiles of users with little or no informa-
tion as to their reasons for participation nor does it
provide usable information for long-range recreation demand
projections (Hendee and Burdge, 1974). Although certain
activities and settings are dominated by certain social
groups, this approach provides no causal explanations for
the differences in recreation participation rates.

Activity Clusters

A second methodological perspective is one that
organizes recreation activities into clusters based on
similarities in participation rates or activity preferences.
These clusters of activities are theorized to provide similar
types of satisfactions (Burch, 1965; McCool, 1976, 1978;
Moss and Lamphear, 1970; Hendee et al., 1971). Because
activities within a cluster tend to provide similar types of
satisfactions, individuals who participate in one activity
in the cluster are more likely to participate in other
activities in the cluster than ones outside the cluster
(Ditton, 1975). It has also been suggested that activities
within a cluster are generally substitutable one for another
because they provide equivalent satisfactions (Hendee and
Burdge, 1974).

Attitudes Toward Management

A third means of differentiating recreation users is
on the basis of their attitudes and values concerning various

features and activities characterizing the recreation area
(Schreyer et al., 1976). This type of information gives
managers and planners a means of differentiating user groups
and their reactions to facility and management changes.
The "wildernist-urbanist" scale of Hendee et al. (1968),
"purism" scale of Stankey (1973), and the "wildernism" and
"parkism" scales of Schreyer et al. (1976) are examples of
differentiating users on the basis of attitudes toward area
features, activities, and management actions. Using this
concept, recreationists are classed into groups on relevant
attitude dimensions. The manager or planner in allocating
organizational resources is in a position to select which
groups attitudes and facility preferences are to be best
served. Those individuals having preferences congruent
with the option selected are likely to receive the bulk of
the benefits of the area and are the ones to whom the manager
should be most attentive (Brown, 1975).

This preferred group is termed the "Primary Manage-
ment Clientele" (PMC) by Schreyer et al. (1976). As have
others, Schreyer et al. (1976) suggest that values and
attitudes of the PMC should be considered first when managers
are seeking guidance from the user publics (see especially
Hendee et al., 1968; Stankey, 1973).

Recreation Experiences and Motives

Using this approach, recreation is viewed as a stream
of experiences (Csikszentmihalyi, 1975; Driver and Brown,

1975). Factors making up recreationist's desired experiences are identified and measured. This approach emphasizes the reasons why a person participates, what experiences occur during participation, what benefits are derived from participation and the effects environmental factors have on the recreationist experiences and behaviors (Driver, 1976a). Recreation demand is then conceptualized in terms of desired consequences (experiences) and the site factors that provide and enhance the desired experiences (Brown, 1975). The experience factors that are most important to a user serve as indicators of the individual's recreation motivations (Brown et al., 1976).

Research on expected experience outcomes (recreation motives) has developed only recently (Driver, 1976a, 1976b; Brown et al., 1976). Psychological measurements quantifying desired experience outcomes can indicate demands for experiences which then can be compared to the ability of the area to provide the desired experiences (Brown et al., 1976). Researchers are identifying some of the attributes of areas that enhance specific types of experiences (Brown, 1975). Delineation and measurement of recreation experience objectives will become increasingly important in recreation area planning (Brown et al., 1978; Driver and Brown, 1978).

RECREATION BEHAVIOR MODEL

Behavioral approaches to recreation planning define recreation demand in terms of the amount of specific types of experiences sought (Brown et al., 1973; Driver and Brown, 1975, 1978; Hendee, 1974). Products from recreation engagements may come in two forms. First are the satisfying experiences produced from the recreation engagement. Second are the overall benefits accumulating to the individual engaged in the activity, such as an enhanced ability to function in everyday society, better family relations, improved self image, etc. (Driver, 1976a, 1976b).

Better information on experience types may serve to identify differing activities that may be substitutable for each other in terms of providing similar desired experiences (Hendee and Burdge, 1974). Identification of desired experiences would greatly assist planners in the allocation of recreation resources between differing activities providing these experiences and in managing for these experiences. Finally, information on recreation experience preferences can help identify latent demands of persons presently constrained by lack of available opportunities (Knopf, 1972).

Conceptual Basis

Many psychologists view human behavior as a problem-solving process (Howard and Scott, 1965; Knopf and Driver,

1973; Lawler, 1973). Using this approach, a problem is defined as a "gap between an existing (or perceived probable) state and one that is more preferred" (Driver, 1976a). The problem is not necessarily a negative state that one wishes to avoid or escape, merely a difference between one's present state and a more preferred state. A person would have a problem if he was in a state of bliss and perceived a state of more bliss, as there is a gap between the present state and a more preferred state (Driver and Brown, 1975). Using this approach, recreation behavior is by definition an attempt by individuals to solve problems (reach a more preferred state) by engaging in recreational activities. Generally it is in selection of recreational activities that one is able to exercise their widest freedom of choice in selecting activities for reaching a more preferred state (Driver and Tocher, 1970).

Figure 1 is a simplified model of recreation behavior (from Driver and Brown, 1975; Knopf, 1976). While every recreationist does not necessarily progress sequentially through the model's stages, it provides a general framework for understanding recreation behavior.

The model begins with a quantified recreationist having certain preferences and aspirations (Box C-2). From a problem-solving perspective, these are aspirations to move to a more preferred state. These aspirations are influenced by the recreationist's socio-economic characteristics,

Figure I
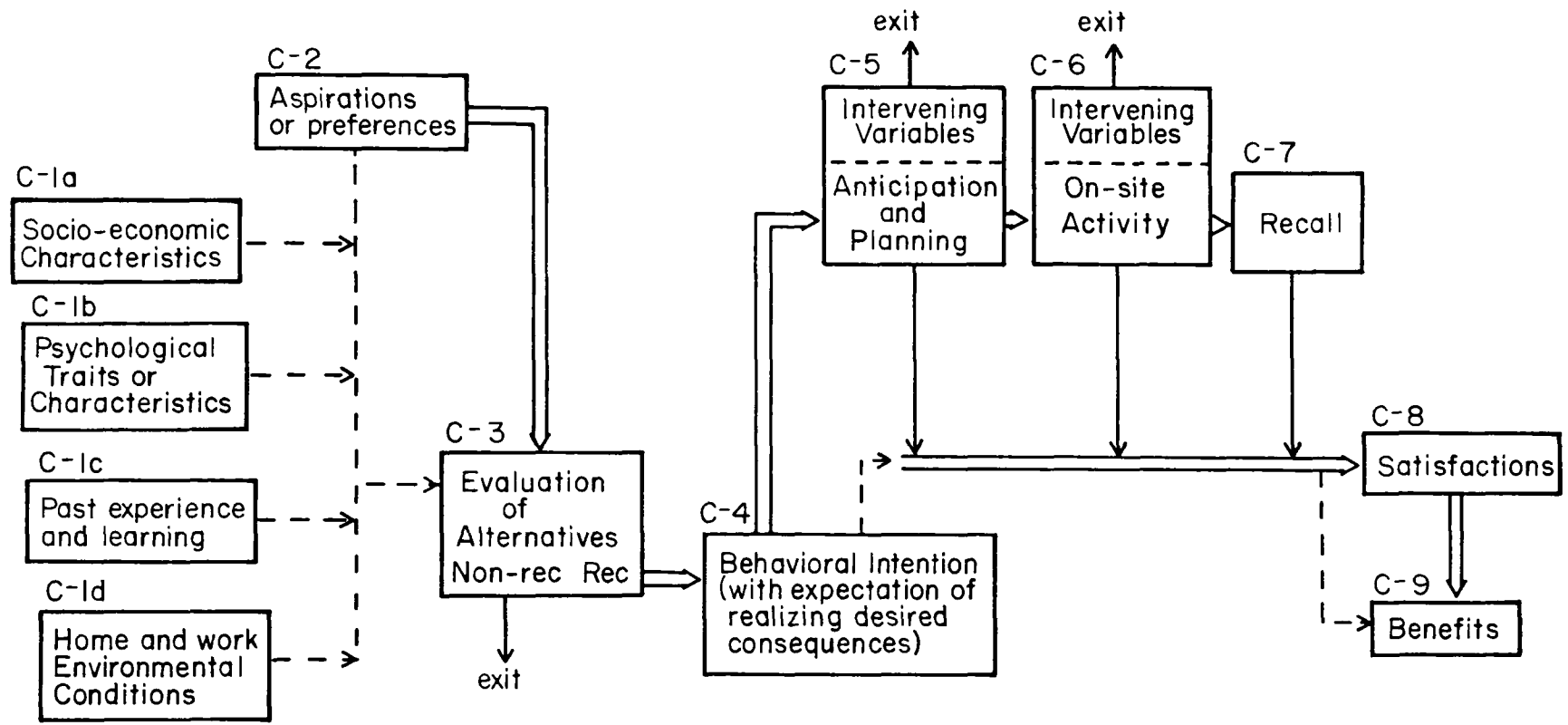
Driver's Model of Recreation Behavior

(from Knopf, 1976)

psychological traits, past learning, experiences, and
home-work environments (Boxes C-1a to C-1d).

Having been aroused, the individual will search for
alternative ways of resolving the problem (Box C-3). This
search for alternatives is strongly influenced by both the
internal characteristics of the individual and the external
environment in which the recreationist exists. It is these
internal and external factors that mediate the potential
range of alternative behaviors (Knopf, 1976). Alternatives
are evaluated on their perceived potential for moving the
person to the preferred state.

After the alternatives are identified and evaluated,
the person formulates a behavioral intention (Box C-4).
Assuming a recreational alternative is selected, it may be
considered an intention to engage in a specific recreation
activity. It is thought behavioral intentions are useful
antecedents to actual behaviors (Fishbein and Ajzen, 1975).

From the time the behavioral Intention (I) is formu-
lated (Box C-4) to the time the Behavior (B) takes place,
intervening variables (Box C-5) may act to modify the
Intention so that a different Behavior (recreation activity)
takes place (Fishbein and Ajzen, 1974, 1975, 1976a). For
example, after formulating an intention (Box C-5) to engage
in an activity, the individual may lack the necessary equip-
ment, weather may become inhospitable, or friends may suggest
participation in another activity.

The on-site activity (Box C-6) (which may only be mental in a psychic engagement) is the focal point from which follows recall, satisfactions and benefits. The degree to which the on-site activity allows the realization of the expected experiences and movement to a more desired state approximately determines the level of satisfaction (Peterson, 1974; Knopf, 1976; Graefe, 1977).

The ultimate product of the recreation experience may not be only satisfying feelings but some additional benefits (Box C-9) which serve to improve the person's psychological, social, and physical health. Examples of such benefits are greater work productivity, self-esteem, physical fitness, and marital stability (Driver and Brown, 1975).

Critique of Attitude-Behavior Research

The Driver model (1976a) posits a reasonably strong relationship between psychological motivations (experience expectations), behavioral intentions, and recreationist behavior. Psychological variables (generally attitudes) by themselves have been very poor predictors of a person's behavior (LaPiere, 1934; Wicker, 1969; Ehrlich, 1969; Mischel, 1973; McGuire, 1969, 1976). Wicker (1969) summarized the attitude-behavior literature by concluding:

> Taken as a whole, these studies suggest that it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviors

> than that attitudes will be closely related to
> actions . . . . Only rarely can as much as
> 10 percent of the variance in the overt behavioral
> measure be accounted for by attitudes.

Similarly McGuire (1969) concluded, ". . . the person's verbal report of his attitude has a rather low correlation with his actual behavior toward the object of his attitude."

These low correlations between psychological factors (primarily attitudes) and actual behavior have led to modifications in the definition of attitudes, their context and redefinitions of behavioral criteria (Ajzen and Fishbein, 1977; Fishbein and Ajzen, 1974, 1975). Other social-psychologists feel attitudes toward an object are but one of the variables influencing behavior regarding the attitude object. Additional factors such as social norms, habits, personality characteristics, and situational factors are thought to be involved (Mischel, 1976; Schuman and Johnson, 1976).

Reference Groups

Social psychologists have attempted to use measures of reference group support for certain behaviors in predicting behaviors (Schuman and Johnson, 1976). By using reference groups as a second variable accounting for some of the variance left unexplained by attitudes, researchers have attempted to increase the precision level of their behavioral predictions (Mischel, 1973).

While it may not be a major breakthrough, use of
reference group variables does increase somewhat the propor-
tion of the behavioral variance accounted for (Schuman and
Johnson, 1976). It is very likely there is a strong
interactive effect where the reference group is selected
on the basis of attitudinal compatibility with potential
members and where the reference group serves to reinforce
these shared attitudes. Even when accounting for this
interactive effect, it appears both reference groups and
attitudes may have significant effects on certain behaviors
(Schuman and Johnson, 1976).

Situations

Following LaPiere's (1934) analysis that a person's
response to an abstract set of words (symbols) in a
hypothetical situation did not predict the person's actual
behavior in a concrete (nonsymbolic) situation, several
researchers have attempted to incorporate situational factors
into their analysis (Warner and DeFleur, 1969; Rokeach and
Kliejunas, 1972; Ajzen and Fishbein, 1977). In particular,
certain behaviors are thought to be inhibited or encouraged
by the situations in which they may take place. Drawing
from Frederiksen's (1972) suggestion that situations can be
classified on the basis of the behaviors they influence,
Price and Bouffard (1974) developed an interaction matrix
of situations and behaviors. From ratings of a variety of

situations they describe situations effects on a range of

possible behaviors. They conclude situations can be arrayed

on a dimension (or dimensions) of behavioral appropriate-

ness, thus improving the prediction of individual behavioral

intentions. They also suggest that taxonomies of behavior-

situation appropriateness can be developed leading to

categories of similar situations (Price and Bouffard,

1974).

The concept that situations are a significant

influence on social behaviors perhaps was first enunciated

by Goffman (1963) when he proposed:

> . . . there may be one overall continuum or axis
> along which the social life in situations varies,
> depending on how disciplined the individual is
> obliged to be in connection with the several ways
> in which respect for the gathering and its social
> occasion can be expressed . . . . The terms
> "tight" and "loose" might be more descriptive
> . . . of the several ways in which devotions to
> the social occasions may be exhibited.

This author would go on to suggest that individuals may be

classed on the degree of restrictiveness they attribute to

the character of a situation. Thus each person holds an

individual definition of each situation's degree of social

constraint. Definitions of situationally proscribed

behaviors vary both in time and location (Wicker and

Kirmeyer, 1976). When these definitions of social constraint

are shared by members of a group they may be viewed as

normative definitions of place (Lee, 1972). One's social

groups' norms can also be classed as to their latitude or

restrictiveness regarding the range of socially appropriate or inappropriate behaviors (Jackson, 1965).

It appears that all of the factors mentioned above, attitudes, social groups, and situations, are useful in predicting differing types of behaviors. Combinations of these three factors may be important depending upon the individual, the type of social group and the situational conditions.

A CRITIQUE OF DRIVER'S MODEL

Assuming various types of recreation experiences can be measured for relevant subpopulations and that these subpopulations are the groups that are to be served, recreational experience demand analyses can be developed (Driver and Brown, 1975). These demand projections are based on several social psychological assumptions: first, that individual's attitudes can be accurately measured and that these measurements are sufficient to predict recreationist behavioral intentions; secondly, that all relevant individual motive factors are incorporated into the model; third, that the behavioral intentions are adequate predictors of behavior; and finally, that recreationists' decisions are based primarily on psychological factors and are influenced only indirectly by social conventions or other external factors.

1. <u>Measurement of Attitudes and Experiences and the Prediction of Behavioral Intentions</u>

Using questionnaires as a primary measuring instrument researchers have attempted to identify the most pervasive and managerially relevant experience consequences of defined users types engaged in a variety of recreation activities (Driver, 1976b). The consequences of recreation participation are measured as to their importance and the contribution they make to the satisfying experience desires. Groupings of these consequences (expected outcomes) provide scores on a variety of motivations (Knopf, 1972). For example, the experience expectations items "for the solitude," "to get away from other people," and "I thought there would be more privacy here," are viewed as measuring a motive that is labeled "Privacy" (Driver, 1977). Although these measurements of the importance of expected recreation experiences are not a complete measurement of one's attitudes toward attitude objects (recreational experiences), it does tend to measure the relevant action oriented dimensions of the recreationist's attitudes. Using the Fishbein's definition of attitudes as a person's predisposition to evaluate some entity in a particular manner, these items measure only the importance the person attaches to the attitude object (a particular recreation experience). It must be noted attitudes are only one of two components in the Fishbein model predicting behavioral intentions.

2. <u>Incorporating All Useful Motivational Factors</u>

Individuals may be assumed to have a wide variety of motivations for their behavior (McGuire, 1976). There are also a variety of methods for measuring and classifying motives. McGuire (1976) divides motives on the basis of:

1) cognitive (adaptive thinking) versus affective (feeling),

2) equilibrium maintenance versus stimulus seeking,

3) active initiation versus passive response, and

4) achieving a new internal state versus achieving a new external relationship to the environment. He suggests that each of the 16 motive categories may ". . . play a relatively large role in determining behavior in some areas and a relatively insignificant role" in other situations. Researchers have focused on relatively small segments of human behavior, within which one type of motive is generally dominant (McGuire, 1976). Approaches to human motivation specifying the types of motives that are most influential in a particular situation may lead to better behavioral predictability.

3. <u>Intention → Behavior</u>

Driver (1976b) reviewed the literature and concludes that expected consequences scales can be used to predict behavioral intentions (I), which are "closely related" to actual behaviors (B) to the extent that the specific con-sequences of the intended behavior are known, expected, and

valued. Prediction of behavior from attitudes and motives

has been strongly questioned (Ehrlich, 1969; Fishbein,

1967; McGuire, 1969; Wicker, 1969). Even Fishbein and

Ajzen (1976a) qualify their model as only predicting

behavioral intentions which then are "viewed as the immediate

determinant of overt behavior" (Figure 2). In particular

they state the I → B relation is contingent "upon corre-

spondence in the levels of specificity at which intention

and behavior are measured" as well as "the degree to which

the behavior is under volitional control."

Figure 2

Fishbein Model of Behavior

$$B \sim I = (Att._b) \cdot w_1 + (SN) \cdot w_2$$

where

B = behavior

I = intention to engage in behavior

$Att._b$ = attitude toward the behavior

SN = subjective norm to comply with
    referants expectations

w_1, w_2 = weighting coefficients (dependent
    on the person and the situation)

(from Fishbein and Ajzen, 1975)

---

4. <u>Solely Psychological Variables</u>

Many of the above theories have a strongly individ-
ualist bent, viewing man's behavior as that of a "skin
bounded organism" (Cheek and Burch, 1976; Cheek et al.,
1976). However, man's behavior is strongly shaped and
modified by social and environmental forces outside the
individual (Groves et al., 1975; Hare, 1976; Lee, 1972;
Stokels, 1977; Stafford, 1966; Ward, 1978). Ajzen and
Fishbein (1973) suggest that the consequences of one's
behavior and reactions of relevant others are two of the
significant variables influencing the intention-behavior
relationship. To focus primarily on psychological variables,
mainly attitudes and motives, unnecessarily restricts the
prediction of behavior (Mischel, 1977), tends to understate
the influences of the social-cultural situation (Feshbach,
1978) and may exclude the influence of one's social referents
(Fishbein and Ajzen, 1977).

MODIFICATIONS TO DRIVER'S MODEL

This study proposes several modifications to the
Driverian model of recreation behavior. The first, drawing
from the Fishbein model (Figure 2) which has two components,
attitudes and social norms, predicting variations in
behavioral intentions leads to the addition of a social-norma-
tive influences component to the factors comprising the
recreationists background and a rearrangement of the existing

influences (Figure 3, Boxes D-1a to D-1f). Secondly, drawing from consumer behavior models of purchasing behavior it is thought some type of arousal stimuli either internal or external in origin is needed to activate the recreationist into the decision making process.[1] This stimuli may lead to an extended information search process or may be an instantaneous thought, which is then accepted or rejected during the recreationist's subsequent evaluation of alternatives (Box 4-a). One of the major influences on selection of a recreation activity or recreational setting is the normative climate the recreationist ascribes to the potential setting(s). These norms may be held by the individual, the recreational group or by other outside groups. Many of motorized-nonmotorized recreationist conflicts are examples of divergent normative definitions, serving to influence recreationists' selection of activities and locations.

The evaluation of possible alternatives (Figure 3, Box D-3) may involve examining a variety of activities in order to find an activity that satisfactorily provides the desired experiences, may involve evaluation of several locations on their suitability for providing similar or differing experience (Driver and Brown, 1978) or can involve both activity and locational decisions (McCool, 1977; Mercer,

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[1]Two of the most prominent consumer behavior models having detailed arousal stimuli and information search components are the Howard-Sheth model and the Engel, Kollat and Blackwell model.

Figure 3
Modified Model of Recreation Behavior
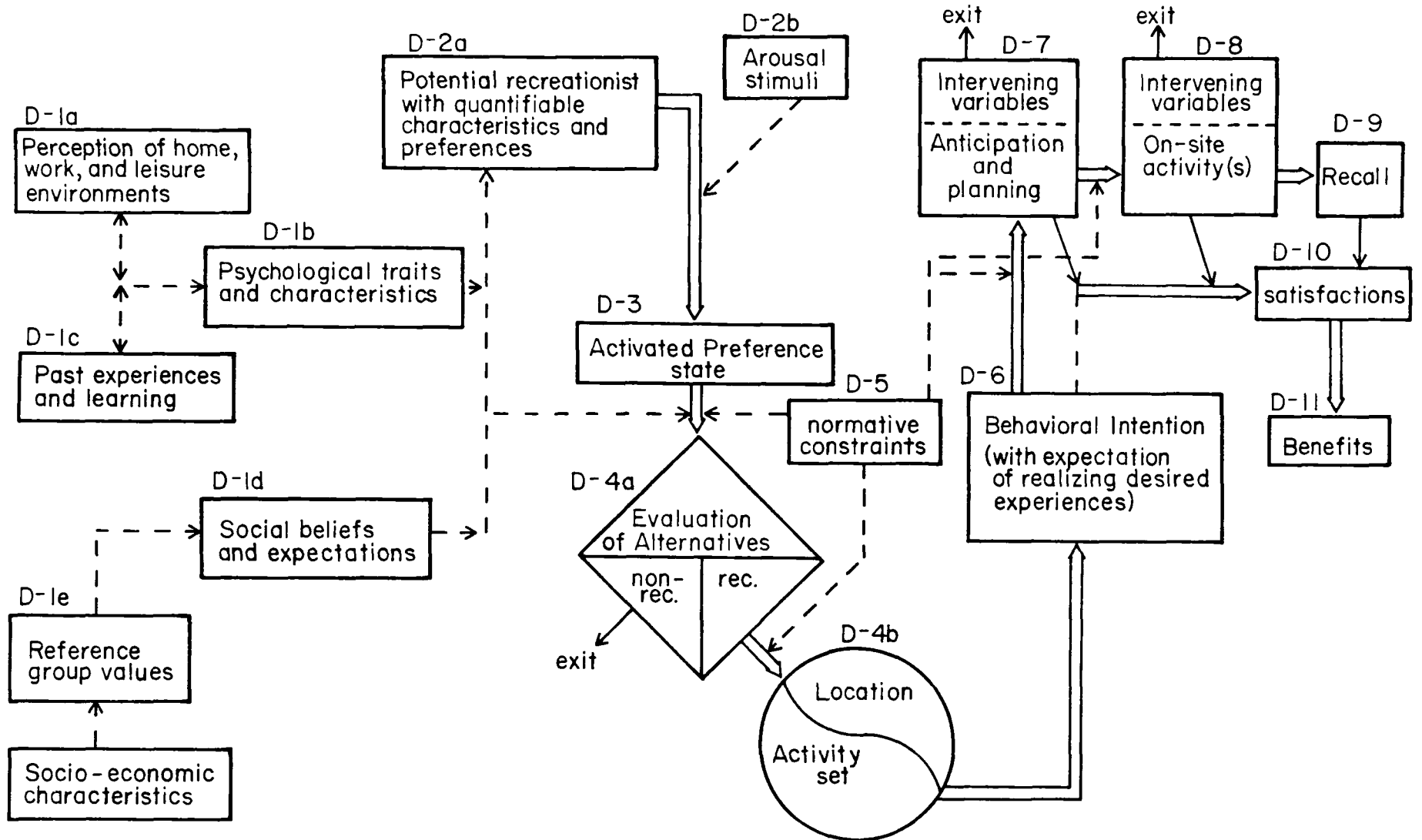
1976). It is theorized that in cases where one's group is influential in the recreation decision making process, the more generalized expectations of the group members focus predominantly on the selection of locations with activity choices of lesser importance. This would most commonly be the case in routine group decisions. Conversely, individuals or smaller groups engaging in new activities that require extensive investment of time and resources are theorized to have a more strongly defined activity emphasis, with locations being of lesser importance.

The remainder of the Driver model is felt to excellently explain the individual recreation decision process (Figure 3, Boxes D-6 to D-11). There are other interactions and feedback loops that are most likely involved. The following provides a more detailed explanation of two of the major modifications of Driver's model.

SOCIAL NORMATIVE FACTORS

The Fishbein model (Ajzen and Fishbein, 1977) uses attitudes toward the behavior ($Att._b$) and social normative factors (SN) to predict intended behaviors (Figure 2). While the attitudinal component has been clearly specified and tested (Ajzen and Fishbein, 1973, 1977; Bonfield, 1974; Fishbein, 1967, 1973; Fishbein and Ajzen, 1972, 1974, 1975; Schuman and Johnson, 1976), the normative beliefs or social norms component has received much less scrutiny, despite a

pointed reminder that "for some behaviors normative consider-
ations (expectations of friends, family, etc.) may be more
important in determining behavioral intentions than are
attitudinal considerations [the expected outcomes of the
act]" (Fishbein and Ajzen, 1975). In an early test of the
model, where recreation behavioral intentions were predicted
by attitudes toward the behavior (Att_{act}) in a specified
situation and by one's social normative beliefs (NB)
(perceived expectations of others) multiplied by motivation
to comply with other's expectations, the average Att_{act} to
BI correlation was .62, the average NB to BI correlation was
.54 and the full model (Att_{act} + NB) to BI correlation was
.76 (Ajzen and Fishbein, 1969) (Table 1).

The social normative beliefs variable has been
operationalized as the individual's perception of relevant
others expectations concerning the individual's behavior in
a particular situation (Ajzen and Fishbein, 1969). They
later define normative beliefs (social norms) as "The
persons perception that most people who are important to him
think he should or should not perform the behavior in
question" (Fishbein and Ajzen, 1975). Social normative
beliefs are ratings of an individual's perception of their
friends expectations of the probability the individual will
perform the particular activity. For example, each person
rated the statement "My friends expect me to go to a party
on Friday night" on a seven point Likert scale using the

Table 1

Correlations of Behavioral Intentions to
Attitudes Toward the Act and
Normative Beliefs

Behavior	Att_{act} - B.I.		NB - B.I.		Multiple R[*]
	r	Beta	r	Beta	
Going to a party	.52	.077	.59	.083	.82
Visiting an exhibition	.67	.440	.44	.128	.72
Watching a western on T.V.	.57	.255	.44	.180	.71
Going to a concert	.67	.303	.60	.244	.79
Playing poker	.67	.227	.59	.158	.79
Going to a French movie	.64	.190	.50	.191	.79
Participating in a discussion	.67	.252	.68	.300	.78
Reading a mystery novel	.54	.292	.51	.323	.68
Mean	.62	.255	.54	.202	.76

[*]Using three factors, Att_{act}, NB and NB_I relations to B.I.,
the third factor, individual normative-beliefs (NB_I) has
since been dropped from the model.

Based on the formula

$$B \sim B.I. = Att_{act}.w_1 + (NB \cdot MC)w_2$$

where

B = overt behavior

B.I. = behavioral intentions

Att_{act} = attitude toward behavior in a given situation

NB = social normative beliefs, i.e., perceived expecta-
tions of others

MC = motivation to comply with social normative beliefs

w_1, w_2 = empirically derived weights

From: Ajzen and Fishbein, 1969

bipolar adjectives of "probable" to "improbable" (Ajzen and
Fishbein, 1969).

Other researchers have operationalized the social
normative variable as "what one thinks his colleagues would
advise him to do in the particular situation" (Harrell and
Bennett, 1974). In this field study, each doctor rated on
a scale axis ranging from "Extremely improbable to Extremely
probable," their perception of actions their colleagues
would likely recommend they take in particular situations.
Social norm values correlated moderately with behavioral
intentions with r values ranging from .31 to .12, all of
which were significant at the .05 level. In this study the
total variance in behavioral intentions predicted by the
full Fishbein model ranged from .53 to .41 (Harrell and
Bennett, 1974).

Differing reference groups may be important depending
upon the behavior in question and the situation. Social
norms may be viewed as the "perceived [social] pressures to
perform a given behavior." Fishbein and Ajzen (1975) go on
to argue that one develops beliefs about their referents'
preferences in two ways. First, the referent or some other
person may tell the individual what attitudes the referent
holds toward a particular behavior. Second, the individual
may observe a particular event or in some other way develop
information that allows him to develop inferences or
attributions concerning the referents' attitudes. If the
individual believes the referent would be more pleased by

the individual performing a given behavior, the individual
then infers the particular referent prefers that the
individual perform that particular behavior rather than
alternative behaviors. By use of such attributional
processes, the individual develops beliefs about the types
of behaviors various referents would like one to perform
(Fishbein and Ajzen, 1975). Finally, "if the referent is
perceived to have a favorable attitude toward performing the
behavior . . . the normative belief may be formed that the
referent thinks the person should perform the behavior in
question" (Fishbein and Ajzen, 1975). Therefore, one is
likely to believe that if one's referents (especially one's
friends) enjoy participating in recreation activities providing
certain experiences that they expect the individual likewise
to enjoy participating in the activity.

Additional research is needed to establish the
influence or weight of the social referent factor on behav-
ioral intentions for behaviors in a variety of situations
and in comparison to the influences of the individual's own
attitudes.

SITUATIONS AND NORMS

As Fishbein and Ajzen (1974, 1975, 1976a) have
repeatedly pointed out, their model is useful to the extent
that the behavioral criteria are specified in both time and
situation. Behavioral intentions are expected to vary

depending upon the time they are to be performed and the
expected situation in which they are performed. While social
scientists can easily specify the time (or times) that a
behavior may be affected, situations have greater diversity
and present a number of problems. Mischel (1976) points
out each person tends to interpret a situation differently
depending on one's experiences, attitudes and other factors.

Several types of situations are thought to facilitate
or restrict the range of potential behaviors (Fredrickson,
1972; Goffman, 1963; O'Riordan, 1976; Price and Bouffard,
1974). Goffman (1963) felt situations could be arrayed on
an axis ranging from situations with few restrictions on
behavior to situations which strictly proscribe potential
behaviors. Jackson's (1965) definition of norms as the
amount or quantity of behavior expected by relevant others
in a social situation provides a framework to dimensionalize
the degree to which situations may constrain behaviors.
Norms proscribe the degree to which certain behaviors in
certain settings are classed as appropriate or inappropriate
(Hare, 1976; Jackson, 1965). Thus recreation behaviors are
normatively constrained by the social definitions partici-
pants attribute to the situation in which they take place
(Price and Bouffard, 1974). Situations serve to influence
recreationist behavior to the extent that each person views
the situations' characteristic behaviors similarly, shares
the groups' expectations of behavioral appropriateness and
has incentives to abide by the groups' definitions (Mischel,

1976). "Weak" situations have less structured expectations with a greater likelihood that a variety of behaviors will all be judged as appropriate. In weak situations individual psychological differences have their greatest influence on behavior (Mischel, 1976). Situations can be further classed as to the latitude of behaviors each person views as acceptable (Goffman, 1963; Heberlein, 1977; Lee, 1972). Alternatively, persons can be categorized on the basis of the latitude of acceptable behavior they ascribe to particular situations (Price and Bouffard, 1974).

CHAPTER III

STUDY DESIGN AND METHODS

Study Goals

This study seeks to explore several factors that may explain differences in individual's recreation participation rates in the Rattlesnake backcountry. Two scale inventories measuring experience expectations were administered to Rattlesnake recreationists participating in two different activities. The first inventory presents 17 scale items modified from an item pool developed by B. L. Driver (1977). This inventory attempts to measure participants' perceptions of their immediate referents' motives for visiting the Rattlesnake. The inventory is viewed as a measure of one's social group's experience expectations (social group motives).

The second inventory is a parallel set of individual experience expectations items selected from Driver's item pool. The individual experience expectation items are paired with group experience expectation items drawn from the same motivational dimension (see Driver, 1977, for details).

Items measuring individual motivations have been extensively field tested and are expected to cluster into

previously established groups (Driver, 1977). Each of these item clusters are thought to indicate an underlying recreation motivation (Driver, 1976b). Item scores in each motive factor can be averaged to become a single value index of the underlying motivation factor. It is these indexed motivational scores upon which most of the analysis is based.

Measurement of group experience expectations is an initial attempt to define certain aspects of the social-psychological motivational environment influencing recreationists. In order to provide comparability with individual recreation motivations and because it is the immediate social environment which has the most significant influence on one's attitudes and motivation (Hare, 1976), Driver's experience expectations inventory items were modified to measure the recreationists perception of his or her closest recreational associates' motives for participation (Appendix A). By focusing on only two or three personal associates' motives, it is felt the diversity of experience expectations can be minimized and the individualistic focus of Driver's scales successfully expanded to include one's perception of one's immediate associates recreational motives.

In sociology and psychology it is established that one acts on the basis of one's perception of the consequences of one's actions both for one's self-image and one's social status (Brim and Wheeler, 1966). Therefore what is most influential in determining an individual's actions is not

the social reality of the situation but the individual's
perceptions of the social situation. Rather than attempting
to objectively measure the recreationist's social situation
by individually questioning each social referent, this study
measures the individual's perception of his social
environment by having the recreationist rate his immediate
associates on the reference group experience expectations
scale.

NORMATIVE INFLUENCES

An intervening variable modifying the influences of
individual motivations and group experience expectations
on behavior is the individual's perception of the recreational
environment, both its social psychological and physical
characteristics. It is this environment that contains the
attributes which define the range of acceptable behaviors
(Jackson, 1965; Price and Bouffard, 1974). Using an
inventory modified from Hendee et al. (1968), an index of
normative dimensions of recreational behavior can be
constructed.

Hendee et al.'s (1968) wilderness purism inventory
measures three types of values or attitudes. The 60-item
inventory requires respondents to indicate on a nine-point
(strongly favor to strongly dislike) scale their reactions
to 20 liked-disliked wilderness features, 20 appropriate-in-
appropriate wilderness activities, and 20 possible benefits

that may be obtained in wilderness areas. The 20 items
measuring appropriateness of selected activities in a
wilderness setting meet the specifications of an inventory
measuring normative definitions of place (Jackson, 1965).
Ten of the more discriminating items, as well as several
others suggested by the United States Forest Service
Missoula District Office and the author's interest are used
to measure Rattlesnake recreationists' normative definitions.
Using this inventory, recreationists may later be indexed
as to the breadth of their views regarding appropriate
recreational behaviors in the Rattlesnake.

Dependent variables in this study are the amount of
past participation (total number of visits to the Rattlesnake),
intended participation (number of expected visits in the
coming month), and an index of the above two variables. Use
of multiple behavioral criteria is strongly suggested by
Fishbein and Ajzen (1974).

HYPOTHESES

This study will meet its objectives by accepting or
rejecting the following hypotheses:

Hypothesis 1.   Rattlesnake recreationists have a variety of
                individual motives for visiting the area.

While the study cannot help but give face value
support for this intuitive statement, mathematical factoring
of these motive items must be accomplished. The individual

motive items have been widely tested and are expected to coalesce into previously identified motive dimensions when factor analyzed (Driver, 1977, 1978). These clustered scale items give indications of major motive factors. Motive factors can be compared to give a generalized portrait of Rattlesnake users or user subgroups.

Hypothesis 2. Rattlesnake recreationists have a variety of social group motives for visiting the area.

This hypothesis is similar to the first hypothesis concerning individual motives for participation. While it is intuitive that one views their social group as having a variety of motives for visiting an area, the relative importance and consistent clustering patterns of one's associates experience expectancies has not been established. Social group experience expectations (reference group motives) have not previously been incorporated into a theoretical framework and lack operational procedures. The use of modified individual experience motive scale items to measurement of one's perception of their preferred associates' motives for recreating must therefore be validated. Possible variations of perceived social group motive patterns across subpopulations can then be empirically examined.

Hypothesis 3. The individual recreation motives will vary significantly between hikers and motorcyclists.

By dividing the sample into subpopulations on the basis of method of travel, differences in recreationists

motive scale scores are expected to emerge. If the sample
is relatively uniform, with the activity subgroups lacking
distinctive variation in motives, the null hypothesis (that
variations in individual motives between recreational
subgroups are less than the motive variations within sub-
groups) will be accepted.

Based on previous research participants in different
activities are expected to have different scores on the
extracted individual motive dimensions (Knopf, 1972). Even
within particular activities, recreation subgroups may
differ when compared on the basis of amount of past experi-
ence, type of water craft used, use of outfitters and other
characteristics (Driver, 1976; Graefe, 1977; Schreyer et al.,
1976).

Hypothesis 4. Social group motives will vary significantly
between hikers and motorcyclists.

Similar to hypothesis 3 above, one's social group's
motive scores are expected to vary at a statistically
significant level between activity subgroups. Just as one
is able to rate the relative importance of a variety of
individual motives for recreation participation, one also
attributes to their associates variations in the importance
of their recreation motives. Individuals may tend to exag-
gerate the relative motive scores of their associates as
they often lack detailed knowledge of their associates'
motives. It is expected that with the opportunity to
average two or three associates' motives the respondent will

idealize their referents motive scores leading to greater
variations in social motive scores between subgroups than
observed in the individual's motive scale.

Hypothesis 5. Normative constraints will factor into
several clusters.

The normative constraints measurement scale is made
up primarily of items from a subgroup of a wildernism scale
developed by Hendee et al. (1968). Using correlational
measures a larger pool of scale items was coalesced into
five clusters by Hendee et al. Each cluster was deemed to
have a unifying construct on which the appropriate items
could be dimensionally arrayed. A later reanalysis by
Heberlein (1973) indicated a small number of items could
account for the great majority of the scale variance. The
18 items used in the present study measure the degree to
which recreationists view selected recreation behaviors as
normatively appropriate. It is thought these items will
factor into several dimensions representing underlying
constructs. This scale as applied, differs in several respects
from the subgroup of the scale items used by Hendee et al.
(1968) but emergence of similar dimensions is expected.
Dimensions extracted using this modified scale should be
considered tentative until further testing can be undertaken.

Hypothesis 6. Normative definitions will vary significantly
between hikers and motorcyclists.

The recreation activity subgroups are expected to

hold significantly different views of the appropriateness of selected behaviors. On the basis of previous research these differences are expected to indicate greater normative freedom on the part of motorized users, with users on foot displaying a narrower range of accepted behaviors (Heberlein, 1977). Users can be placed on an index on each dimension of their normative definitions.

Hypothesis 7. While controlling for normative definitions, social group motives will account for more of the variance in activity participation rates of motorcyclists than for hikers.

From previous research on off road vehicle users it is inferred that ORV users are more interested in social interaction than are nonmotorized users (see especially Nelson, 1976). Therefore motorized Rattlesnake recreationists participation rates are expected to be more influenced by their friends motives than are hikers.

Using regression methods, the social group motive scores as independent variables will predict the variance in the dependent variable (three measures of recreation participation). These social group motive regressions are expected to be more accurate for motorcyclists than for hikers. This would indicate motorized recreationists are more influenced by what they perceive as their friends' recreational motives than are hikers. There will be a step-wise regression in order to first control for the effects of differences in normative definitions between motorcyclists and hikers.

<u>Hypothesis 8</u>.   While controlling for the situations normative
            definitions, individual motives will account
            for more of the variance in activity partici-
            pation rates of hikers than for motorcyclists.

This is the converse of hypothesis 7. Hikers are

hypothesized to be more individualistic and less influenced

by their social associates' motives than motorized users

when normative definitions are accounted for.

From previous study on the Rattlesnake, hikers appear

to be more likely to travel alone and are more divergent in

their travel patterns than are motorcyclists (McCool and

Kelley, 1977; McCool and Philley, 1978a, 1978b, 1978c)

giving rise to the hypothesis that they are more self-moti-

vated than motorcyclists. While not tested in this research,

this hypothesis would suggest that hikers are more internally

oriented and motorcyclists more externally oriented in their

psychological reward expectancies and locus of control, as

defined by Rotter (1966).

STUDY METHODS

Setting

The Rattlesnake backcountry is a 70,000 acre area

located four miles north of Missoula, Montana. It is the

watershed for the city of Missoula supplying the water system

operated by Montana Power Company. The United States Forest

Service, in cooperation with Montana Power Company, manage

the area as a backcountry recreation area emphasizing
protection of the area's watershed qualities (McCool and
Kelley, 1977).

The first white men to see the Rattlesnake Creek
were members of the Lewis and Clark expedition. As Captain
Lewis wrote in his diary of July 4, 1806, while traveling
east upstream on what was to be named the Clark Fork River,
"we crossed a small stream fifteen yards wide" and entered
into the Hell Gate Canyon (Hartse, 1976).

When the Northern Pacific Railroad reached Missoula
in 1883, it constructed the first bridge across the
Rattlesnake Creek. The checkerboard land ownership pattern
of today is a result of the land grants made to the railroad
for construction of this first rail line (Reardon, 1976).
By 1900 scattered pioneer farms and ranches dotted the lower
Rattlesnake, along with four dairies. The Missoula Light
and Power Company diverted water from the Rattlesnake Creek
by means of a flume to waterworks hill where it supplied
the city of Missoula. Other companies holding water rights
constructed small dams in the upper drainage in order to
provide sufficient irrigation water for farmers. In 1929
Montana Power Company bought the water system and began
piecemeal acquisition of private lands in the Rattlesnake
draining into its water system (Reardon, 1976). By 1940
Montana Power Company owned over 40% of the watershed area
with most of the remainder being managed by the U.S. Forest

Service.

In 1930 Montana Power and the Forest Service established the first of a series of annual cooperative agreements to insure protection of the area as a municipal watershed. Following purchase of all remaining private occupancies in 1940, Montana Power sought to limit vehicle use of the watershed area (Reardon, 1976). From time to time vehicle closures were affected, but the Forest Service resisted permanently closing the area to public use. In 1958 logging operations began, extending the road system from the East Fork Rattlesnake Creek to the headwaters of the creek. These logging operations were not without substantial problems and were terminated in 1964.

The road system received increasing public use in the 1960's, bringing associated problems. In 1970 Montana Power placed a locked gate on its property at the Sawmill Gulch entrance, to which the Forest Service initially objected, considering it an illegal closure of public lands. The Forest Service and Montana Power are presently managing the area jointly, primarily as a watershed with recreational uses as a second goal. In 1975 motorcycle use was regulated, with areas designated for nonmotorized use and for general public use (Reardon, 1976). In following years, as part of the Lolo National Forest's annual travel plans, motorcycle use was limited to the Rattlesnake Road and several adjacent trails (Lolo National Forest, 1978).

Rattlesnake Area
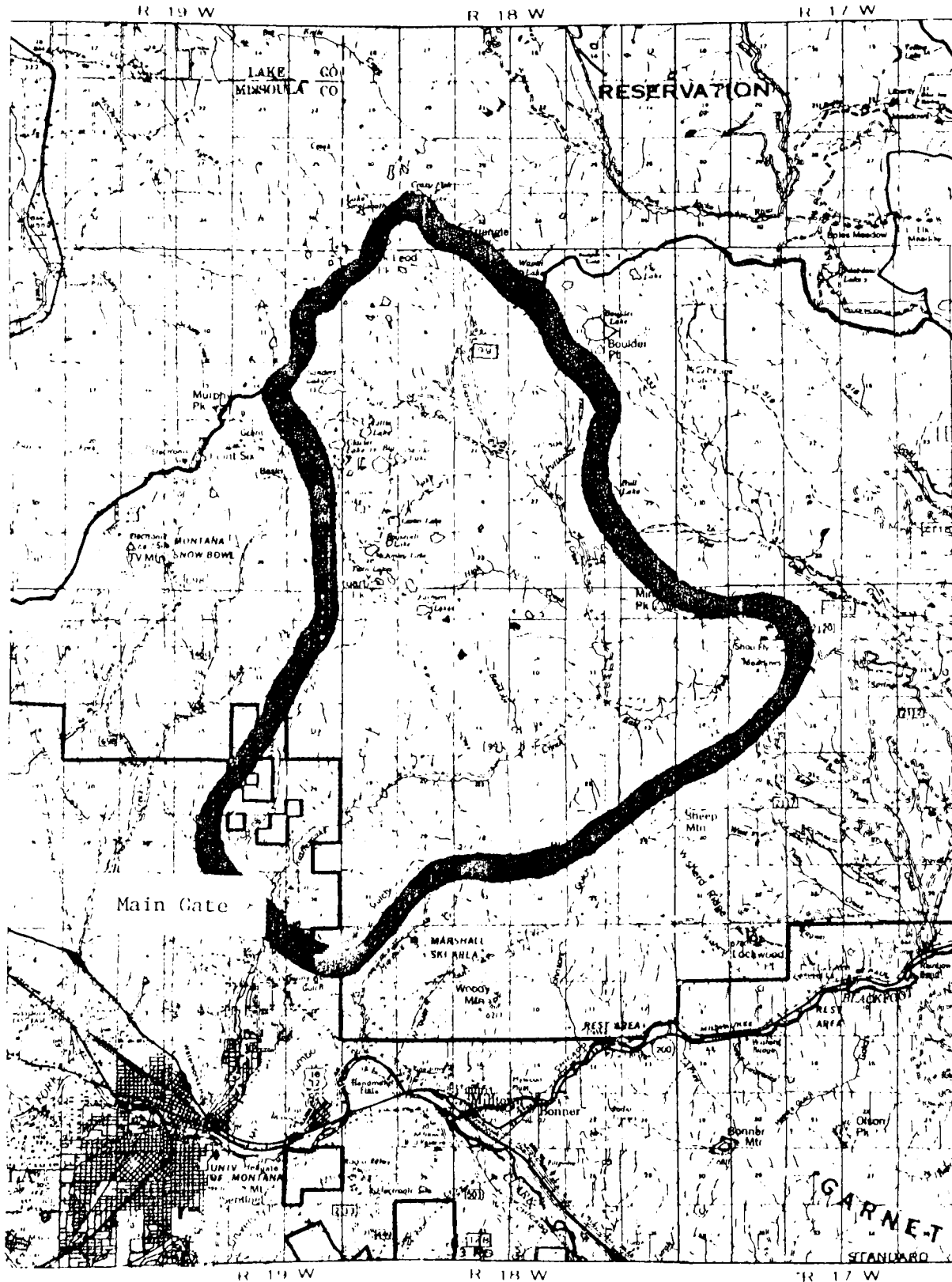
Figure 4

Estimated recreational use of the Rattlesnake was about 22,700 visits annually in 1974-1975, of which 41% were by motorized users, 59% by nonmotorized users (Reardon, 1976). Eighty-eight percent of the use was by day users with 12% by overnight campers. Over 40% of the annual total use occurred during June, July, and August.

In the 1977-78 period estimated recreation use was about 30,500 visits annually (McCool and Kelley, 1977; McCool and Philley, 1978a, 1978b, 1978c). Of this total, about 17% were motorized recreationists and 83% nonmotorized. Ninety-three percent of the use was by day users with less than 7% staying overnight. About 37% of the annual total occurred during June, July and August (11,100 visits).

Comparisons of the two sets of data indicate total use increased over 33% between 1975 and 1978 with nonmotorized use almost doubling and motorized use declining by over one-third. It appears the amount of overnight use remained about the same or perhaps even declined slightly.

Study Population

The population of interest in this study, the "target" population, is all individuals recreating in the Rattlesnake backcountry during the summer of 1978. Since it is impractical and uneconomical to contact all Rattlesnake recreationists, a more restricted "sampled population" is defined to represent the target population. This sampled

population, as is often the case in survey research, is more limited than the potentially available target population.

The first limitation relates to the extensive resources necessary to contact all visitors to the Rattlesnake. Therefore, only those visitors exiting between 8 a.m. and 8 p.m. from the main entrance gate were contacted and invited to participate in the study. Two further restrictions were made in order to insure the visitors had the ability to respond fully to the study's inquiries. Visitors under 16 years of age were excluded, as were those visitors spending less than three hours visiting the Rattlesnake. The rationale for not sampling persons under 16 years old was that they may not possess the level of reading comprehension necessary for usable responses to the moderately complex questions. Similarly it was felt that visitors who had stayed in the Rattlesnake for at least three hours are more articulate and discriminating in their responses than the casual visitor.

The final restrictions are more mundane. Repeat visitors were not resurveyed, persons aware of the study's purpose were excluded, and only half of the members of larger groups were asked to participate. It is estimated less than 5% of the exiting visitors were rejected on the basis of having previously obtained a survey. During development of the questionnaire the Montana Power Company, the Forest Service, Friends of the Rattlesnake and the

Wilderness Institute were consulted. These persons con-
sulted, including members of the thesis committee, were not
surveyed. Because of the size of the expected sample there
was concern if every member of larger groups were sampled,
this might distort or skew the sample.

A final note concerns the generalizability of the
Study conclusions from the "sampled" population to the wider
universe of the target population or all backcountry
recreationists. Any application of this study's results to
the wider universe can be made only if there is some
certainty that the sampled population in this study is
similar to the greater population (Babbie, 1973). It is
suggested that a variety of areas be sampled before drawing
any conclusions about any broader groups, such as the users
of Rocky Mountain backcountry areas.

Sampling Procedures

Sampling was carried out in order to obtain a
representative set of responses from several potential
subgroups of Rattlesnake recreationists. A two-stage
sampling procedure was utilized to adequately represent the
possible variations in the sample population. Based on
previous sampling in the Rattlesnake and other's experiences
it was expected recreational use would be highly variable
(Lucas et al., 1971). In particular, obtaining adequate
representation from sample periods with few visitors would

require an extremely large effort. Stratification is useful to capture appropriate numbers of items (visitors) drawn from reasonably homogeneous strata (Babbie, 1973).

Sampling frames of 4 hours apiece were used as the basis for sampling. Three sample frames constituted each sample day (8-12 a.m., 12-4 p.m., 4-8 p.m.). Everyday of the week was included in the sample plan. The overall sample pool was all sample periods from June 12 to July 30. All Rattlesnake recreationists leaving from the main entrance during the selected sample periods were contacted and, if qualified, invited to participate.

Two stratifications of the sample periods were made: weekend vs. weekday and high use vs. low use. From previous sampling (McCool and Kelley, 1977) it was expected that the two weekend days combined use would approximately equal the total use on the remaining five weekdays. Further, that one of the three four-hour daily sample periods would have as much use as the remaining two periods combined. Therefore, sample periods were stratified on the basis of weekend-weekday, allocating sampling periods 50% to each strata. The second stratification was high-low use. To insure adequate representation from low use periods, they were sampled twice as frequently as high use periods.

In order to obtain 240 returned surveys, assuming a 75% return rate, a goal of distributing 320 surveys was established. During the survey period 30 of the potential

Table 2

Planned Sampling Effort

Strata	Potential Frames	Sampled Frames	Sample Intensity (Percent of Strata Sampled)
Weekday			
Low Use	60	10	16%
High Use	30	5	16%
Weekend			
Low Use	24	10	41%
High Use	12	5	41%

126 frames were sampled in order to distribute the desired number of questionnaires. Fifteen sample frames were allocated to each weekend and weekday strata (Appendix B). Within each strata 10 samples were randomly distributed among the respective high use periods.

Because of a special organized event (Rattlesnake Marathon) one sample frame was altered from a low use period to a higher use period (Appendix B), and the final sample frame was cancelled following distribution of 319 surveys. The actual sampling distribution is shown in Table 3.

Table 3

Actual Sampling Effort

Strata	Potential Frames	Sampled Frames	Sample Intensity
Weekday			
Low Use	60	10	16%
High Use	30	5	16%
Weekend			
Low Use	24	8	33%
High Use	12	6	50%

The differences in sample intensity between strata require a weighting procedure (Nie et al., 1975). All strata were adjusted to the intensity of the most heavily sampled strata.

Data Collection

All of the data was collected by means of a questionnaire handed out on site to exiting visitors. A cover letter and postpaid envelope was included (Appendix D).

When leaving the Rattlesnake through the main entrance gate visitors were greeted by the author, who identified himself, explained he was part of a study and, if

the visitor was eligible, asked the visitor to participate in the study (Appendix C). About 695 visitors were contacted, of which 319 (46%) were eligible and accepted the survey. Five visitors refused to cooperate in the study (.7%). Those agreeing to participate were asked to supply their name, address and five other pieces of information (Appendix E) and were given the questionnaires. Virtually all of the visitors cooperating in the study chose to take the questionnaire home rather than fill it out at the site. Visitors not returning their questionnaires were later sent a follow-up post card (Appendix F).

Questionnaire Response

A total of 240 surveys, 75.2% of those distributed, were returned by participants in the study. This is above the 67 to 70 percent rate expected using Heberlein and Baumgartner's (1978) regression equation. While it is unlikely with this high response rate that nonresponse bias would significantly affect the study's findings, certain comparisons were made. Using information supplied by exiting visitors, response rates were compared across several visitor characteristics. The first is a comparison of the day of the week sampled. In particular, weekday users are compared to weekenders. Both subgroups returned about 75% of their surveys (Table 4). Tests of those recreating during high recreational use sample frames with

Table 4

Tests of Return Rate Differences

Attributes of Recreationists	Attribute Class	Percent of Category Returning Question- naire	Chi-square Level of Signifi- cance
Weekday-Weekend	weekday	76.6	.87
	weekend	74.7	
Use period	low	72.1	.61
	high	76.7	
Age	15-20 years	66.2	.57
	21-25 years	73.5	
	26-30 years	77.8	
	31-35 years	87.9	
	36-40 years	86.4	
	41-50 years	56.3	
	51-60 years	87.5	
	61-75 years	75.0	
Group size	alone	83.7	.83
	2 persons	74.5	
	3 persons	64.1	
	4 persons	87.1	
	5 persons	50.0	
	8 persons	100.0	
	9 or more persons	75.8	
Sex	female	84.6	.02
	male	70.0	
Overnight	overnight	74.1	.77
	day use	75.3	
Group type	family	72.3	.79
	family and friends	73.7	
	friends	71.8	
	club	90.9	
	alone	83.7	
	other (generally organized groups)	76.2	

those during low use frames showed 77% of the high use
period recreationists responded compared to 72% from low use
times (Table 4). Return rates broken down by age indicates
only random fluctuations in responses for differing age
groups (Table 4). Tests for response bias by group size
were similarly inconclusive. The response rates of females
and males to the questionnaire were 85% and 70%, respectively,
indicating females responded significantly more than males.
Overnight users returned 74% of their survey compared to
75% of the day users. Finally, the type of group one was
with had no significant effect on response rate. In summary,
the only significant nonresponse effect observed was the
different response rates of males and females. This
difference is not thought to substantially influence study
conclusions.

Missing Data

Most of the questionnaires returned were completely
filled out. However, as commonly is the case in survey
research, several respondents skipped questions or even
whole sections of the questionnaire. Only three respondents
skipped more than a whole section.

The possibility of differing numbers of responses
to questions leads to the problem of how to handle missing
data. Three possible strategies are considered. The first
is to use only those questionnaires on which every question

is answered. The advantage of this strategy is that all analysis is based on the same data set. The major drawback is that the data pool is substantially reduced and quite possibly introduces additional unknown biases.

A second strategy is to utilize all the answers supplied. Each variable would be tabulated over all its usable answers, thus utilizing all of the data collected. Differential response patterns may also serve to give insight into the meanings visitors assign to the questions (Cohen and Cohen, 1975). A disadvantage is that different data sets are tabulated unless dummy variable replacements are used (as per Cohen and Cohen, 1975).

A third alternative is to use the average response to the question to replace or "plug" for the value of the missing variable. This strategy allows the maximal use of questionnaire information. However, it creates new data (the plugged data) on the assumption nonrespondents are similar to the respondents. This assumption is generally open to question.

In processing the data, strategies one, two and three were used in early analyses. When it became apparent that strategy one unnecessarily reduced the data pool there-fore reducing the validity of the conclusions that could be drawn, it was discontinued. Strategy three was also discontinued as it is felt the assumption of normality is unjustified. All results reported use strategy two,

utilizing all the data recorded from the questionnaires without use of dummy variables.

CHAPTER IV

DESCRIPTION OF RATTLESNAKE VISITORS

This chapter presents the questionnaire results
providing a general description of sampled Rattlesnake
recreationists. With the exception of certain previously
mentioned qualifications, these results should be applicable
to all recreationists visiting the Rattlesnake backcountry
during June and July of 1978.

Over half of the visitors use the Rattlesnake on
weekends (54%) with most of the use (58%) during the high
use sampling frames (12-4 p.m. on weekdays, 4-8 p.m. on
weekends). This is similar to the 1977 summer use distribu-
tion (McCool and Kelley, 1977).

Most of the visitors travel with others (81%) while
about one-fifth are alone (19%). This compares to the
25% of the observed groups who were persons alone during the
summer of 1977 (McCool and Kelley, 1977). This difference
is probably due to differences in sample design and the
unit of analysis (visitors vs. groups). The most common
group type is friends (36%) or families (24%) which together
make up over half the visitors (Table 5). The "other"
category is made up primarily of visitors who were

56

Table 5

Group Type

Category	Number of Visitors	Frequency	Cumulative Frequency
Alone	74	18.5%	18.5%
Family	97	24.2%	42.7%
Friends	143	35.7%	78.3%
Family & Friends	38	9.4%	87.7%
Club	40	10.0%	97.7%
Other	9	2.3%	100.0%
	400	100.0%	

with larger organized groups that did not consider themselves to be a club.

The average visitor is in a group of two or three persons with a mean size of 2.6 persons, but the mean is probably skewed by the presence of several large groups. Over half (56%) of the visitors were by themselves or with only one other person (Table 6).

The dominant travel method is walking and hiking (70%) with motorcycle travel (21%) the second most common method. Because of the 3 hour minimum length of visit requirement, there are very few joggers included in the sample (Table 7). This compares to 5% jogging, 59% walking,

Table 6

Group Size

Category	Number of Visitors	Frequency	Cumulative Frequency
1-2 persons	225	56.2%	56.2%
3-4 persons	112	27.9%	84.1%
5-6 persons	12	2.9%	87.0%
7-10 persons	7	1.8%	88.7%
11 or more persons	45	11.3%	100.0%
	400	100.0%	

Mean group size = 2.6 persons

Table 7

Travel Method

Category	Number of Visitors	Frequency
Jogging	5	1.1%
Walking and hiking	278	70.1%
Motorcycle	84	21.2%
Horseback	21	5.2%
Bicycle	10	2.4%
	398	100.0%

25% on motorcycle, 5% on horseback, and 5% bicycling found
in the 1977 study.

The minimum stay requirement also may affect computa-
tions of travel distance from the entrance gate. Only a few
(4%) of the visitors staying over 3 hours travel less than
3/4 mile from the entrance gate, with 50% traveling over
4 miles (Table 8).

Table 8

Distance Travelled from Entrance Gate

Category	Number of Visitors	Frequency	Cumulative Frequency
less than 3/4 mile	12	3.9%	3.9%
1-2 miles	73	18.3%	22.2%
3-4 miles	116	29.1%	51.3%
5-7 miles	53	12.4%	63.7%
Over 7 miles	144	36.3%	100.0%
	397	100.0%	

Socio-demographic Characteristics

With only visitors over 16 years of age included in
the survey, the average respondent age was 29 years, about
two years above the national average. Persons up to 72 years
of age visited the Rattlesnake (Figure 5).

Figure 5 – Ages of Rattlesnake Visitors

60
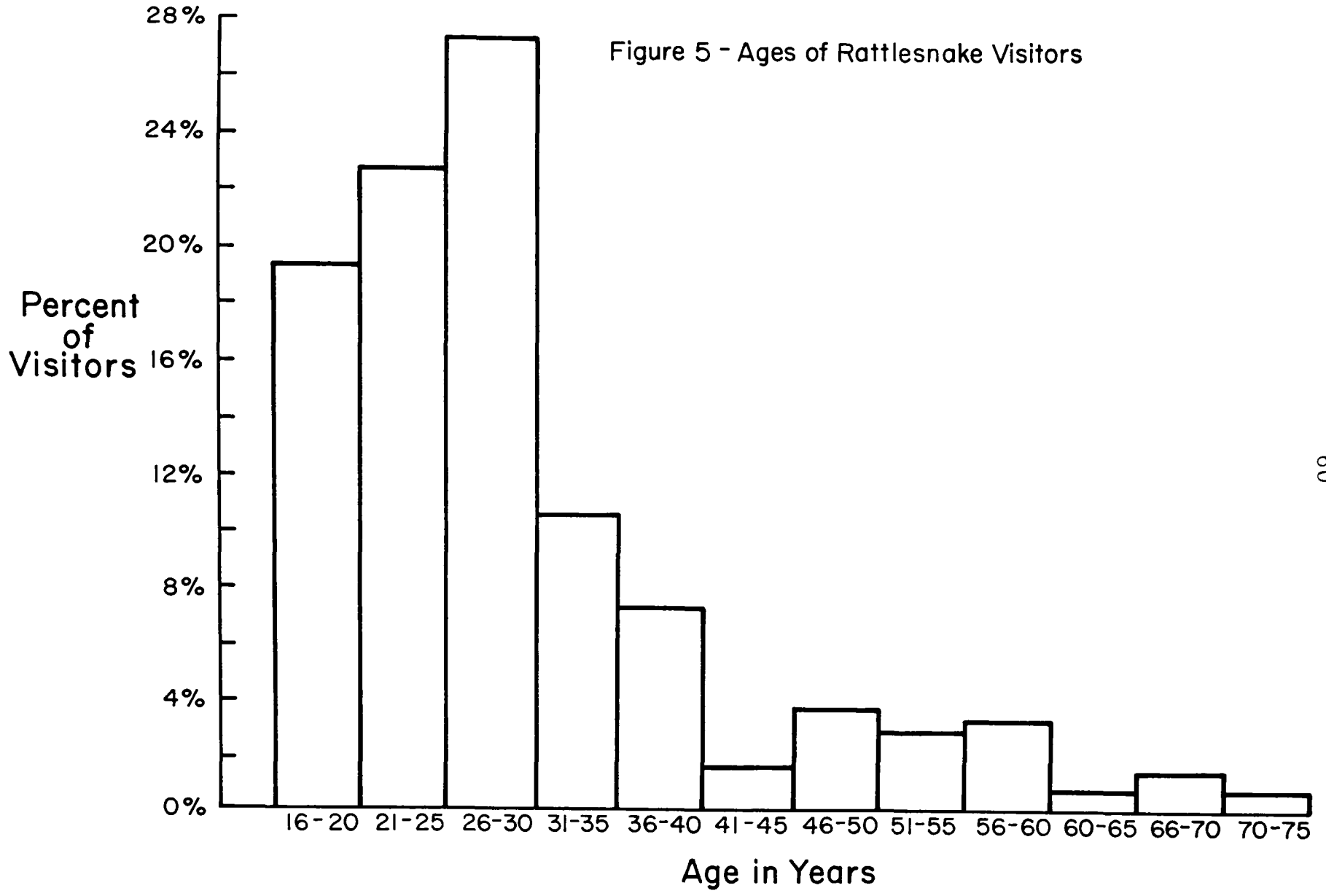
There were more males visiting the area than females
(Table 9). The exact percentages are open to question
because of the differential response rates of females and
males.

Table 9

Sex

Category	Number of Visitors	Frequency
Female	163	41.2%
Male	234	58.9%
	397	100.0%

As regards the occupations of Rattlesnake visitors,
the two largest groups represented are professional-technical
workers and students. This perhaps reflects the influence
of nearby housing patterns, the University of Montana and
the young age of some visitors (Table 10).

Often related to occupation is education. The mean
education level is about 15 years of schooling (almost
three years of post high school training). Not surprisingly,
the largest single group were those with more than a
college degree (Table 11).

In recreation research, the opportunities in the
area adjacent to one's residence often strongly influence
the type and amount of recreational activities engaged in

Table 10

Occupation

Category	Number of Visitors	Frequency
Professional and technical	119	29.9%
Managers and administrators	16	3.9%
Sales workers	13	3.2%
Clerical and kindred workers	23	5.8%
Craftsmen and kindred workers	16	3.9%
Operatives	2	0.5%
Transport equipment	2	0.5%
Laborers, except farm	19	4.7%
Service workers	23	5.7%
Unemployed	14	3.3%
Student	110	28.3%
Homemaker	30	7.6%
Retired	11	2.8%
	395	100.0%

(Kelly, 1974; Mercer, 1976). As the Rattlesnake is located in Montana where there are no metropolitan cities having a population of over 250,000 people, very few visitors were expected to be from very large cities. That is the case, with less than 2% of the visitors being from metropolitan

Table 11

Years of Education

Category	Number of Visitors	Frequency	Cumulative Percentage
8 years	1	0.3%	0.3%
9 years	5	1.3%	1.5%
10 years	15	3.8%	5.3%
11 years	28	6.9%	12.2%
High school graduate	34	8.5%	20.7%
13 years	32	7.9%	28.6%
14 years	50	12.6%	41.2%
15 years	40	10.1%	51.3%
College graduate	66	16.6%	67.8%
More than college graduate	128	32.2%	100.0%
	398	100.0%	

cities. The vast majority, 67%, live in urban areas having populations of 25,000 to 250,000 people. Most of this urban group is probably from Missoula. Despite an expected abundance of alternative recreation areas nearer their homes, almost 10% of the visitors were from rural areas outside Missoula (Table 12).

Table 12

Population of Visitors Area of Residence

Category	Number of Visitors	Frequency
Metro, over 250,000 people	6	1.4%
Urban, 25,000-250,000 people	266	66.8%
City, 10,000-25,000 people	74	18.5%
Town, less than 10,000 people	15	3.6%
Rural	39	9.7%
	398	100.0%

Activities

The following table gives a general idea of the types of activities visitors engaged in, providing insights into the activities visitors selected in order to obtain their desired experiences (Table 13). Less demanding activities are more easily and commonly engaged in, with lesser participation in the more specialized pursuits.

To a separate question, 22% of the respondents indicated they had stayed overnight in the Rattlesnake (Table 14). In another question that serves as a cross check on the activities checklist, visitors were asked if they had seen any wildlife while on their visit. Sixty-three

Table 13

Activities Participated In

Activity	% of Total Visitors Participating in Activity
Viewing scenery	95%
Relaxing	88%
Hiking and walking	85%
Looking at rocks and geological formations	54%
Exploring	53%
Watching wildlife	46%
Nature study	45%
Swimming	29%
Camping	23%
Photography	21%
Other specified activities	20%
Fishing	12%
Rock climbing	11%
Playing games, sports	7%
Hunting	2%

percent reported seeing wildlife (Table 15). This compares to 46% who indicated they had actively participated in the activity termed "watching wildlife."

Table 14

Stayed Overnight

Category	Number	Frequency
Yes	90	22.4%
No	310	77.6%
	400	100.0%

Table 15

Observed Wildlife

Category	Number	Frequency
Yes, saw wildlife	247	62.8%
No, didn't see wildlife	147	37.2%
	394	100.0%

Density, Crowding and Satisfaction

The Rattlesnake, as can be seen by the monthly use totals, receives a large amount of recreational use. Most people enter through the main gate and travel on a single trail for one-half mile before side trails branch off. Thus most visitors see several other visitors. From the data collected, it is estimated the average visitor encounters

ten other persons during their visit. Interestingly, about
the same number of visitors see no other recreationists (2%)
as see more than 40 other recreationists (2%) (Table 16).

Table 16

Number of Others Seen

Category	Respondents	Frequency	Cumulative Frequency
None	6	1.5%	1.5%
1-5 persons	96	24.1%	25.6%
6-10 persons	114	36.2%	61.8%
11-20 persons	115	28.8%	90.6%
21-40 persons	31	7.7%	98.2%
Over 40	7	1.8%	100.0%
	398	100.0%	

Less than 1% of the visitors feel they saw far too few
people while 7% feel they saw far too many (Table 17). The
median response is between "about the right number" and
"somewhat too many." Over 16% of the visitors had no opinion
on the number of recreationists encountered.

Visitors generally are very satisfied with their
overall experience (Table 18). Less than 1% had a terrible
time, while 27% viewed their visit as "exceptional." The
average level of satisfaction was "very good."

Table 17

Feel About Number of Others Seen

Category	Number	Frequency
Far too few	3	0.8%
Somewhat too few	4	0.9%
About right number	208	53.1%
Somewhat too many	84	21.5%
Far too many	27	6.8%
No opinion	66	16.9%
	392	100.0%

Table 18

Overall Satisfaction Level

Category	Number	Frequency	Cumulative Frequency
Terrible	3	0.8%	0.8%
Fair	9	2.1%	2.9%
Good	81	20.4%	23.3%
Very good	196	49.4%	72.7%
Exceptional	109	27.3%	100.0%
	397	100.0%	

Past and Future Visits

About 20% of those surveyed were visiting the Rattlesnake for the first time. The largest portion of visitors had been there over twelve times (Table 19).

Table 19

Number of Previous Visits

Category	Number	Frequency	Cumulative Frequency
First visit	80	20.2%	20.2%
1-3 visits	57	14.2%	34.4%
4-7 visits	43	10.7%	45.1%
8-12 visits	41	10.2%	55.3%
Over 12 visits	178	44.7%	100.0%
	397	100.0%	

The tendency of visitors to return again and again is shown in the number of years they have been visiting the area. One visitor surveyed had first visited the area in 1929; in fact had lived there on a homestead later purchased by Montana Power Company. At the other extreme 30% of those surveyed first visited the area during 1978 (Table 20).

Related to the number of past visits is the expected number of future visits. An individual's prediction of his

Table 20

Year First Visited Rattlesnake

Year First Visited	Number	Frequency[1]	Cumulative Frequency[1]
1929	1	.3%	.3%
1930-1939	4	1.0%	1.0%
1940-1949	1	.3%	2.0%
1950-1959	14	3.0%	5.0%
1960-1964	20	6.0%	11.0%
1965-1969	38	9.0%	20.0%
1970	13	3.0%	23.0%
1971	11	3.0%	26.0%
1972	13	3.0%	29.0%
1973	16	4.0%	33.0%
1974	18	5.0%	38.0%
1975	31	8.0%	45.0%
1976	38	10.0%	55.0%
1977	58	15.0%	70.0%
1978	118	30.0%	100.0%
	390	100.0%	

[1]May not be exact due to rounding

recreation participation is often not achieved but is a
useful indicator of one's interest in the experiences provided

by recreating in an area. Visitors were asked how many times they expected to visit the Rattlesnake in the coming month. The answers generally seem reasonable. Visitors who had poor experiences or who do not live in the immediate area are likely to expect few or no upcoming visits. Visitors also recognize that it is unlikely they will make over 12 visits in the coming month (over three times per week). Most visitors are occasional visitors with the average expected number of visits during the coming month being about four visits (Table 21).

Table 21

Expected Number of Visits to the
Rattlesnake in the Coming Month

Category	Number	Percent	Cumulative Percent
None	49	13	13
1-3 visits	200	51	64
4-7 visits	91	23	87
8-12 visits	26	6	93
More than 12 visits	27	7	100
	392	100	

Facility Preferences

Visitors ranked four possible levels of facility

development. From the rankings and comments later directed
at the question the preferences of the visitors are evident
(Table 22). The overwhelming choice is to "keep all areas
as natural as possible" while developed sites with "running
water, picnic tables, toilets and fire grates" is by far the
least favored choice. Though not unequivocable, visitors
tend to prefer "pit toilets and fire grates" compared to
"cleared camping and picnic sites."

Table 22

Recreation Facility Preferences

| | Percent ranking alternatives as their: | | | | |
	1st Choice (1)	2nd Choice (2)	3rd Choice (3)	Last Choice (4)	Median Rating
No development, keep all areas as natural as possible	85%	8%	4%	3%	1.09
Primitive facilities, pit toilets and fire grates	9%	50%	36%	5%	2.31
Cleared camping and picnic sites and no formal facilities	5%	37%	49%	9%	2.66
Developed sites with running water, picnic tables, toilets and fire grates	2%	1%	3%	94%	3.97

MOTIVES AND NORMS

This section reviews visitor ratings of their

individual reasons for visiting the area, their preferred
associates' reasons for visiting and their rating of the
appropriateness of selected recreation behaviors.

Individual Experience Expectations

Twenty possible experiences thought to be available
from recreation engagements in the Rattlesnake are rated as
to their importance, ranging from 1, not at all important,
to 6, extremely important. Later analysis will attempt to
simplify the expectations into clusters relating to
particular desired experiences.

The item ranking highest is "to observe the scenic
beauty," while "because something exciting is always happen-
ing here" has the lowest ranking (Table 23). It should be
noted that two items, "to make a lot of noise" and "to pick
up litter left by others" were used primarily as validity
check items and served to break up possible response set
patterns. The item "to understand the world better" is an
inadvertent contraction of the item "to understand the
natural world better."

Group Experience Expectations

Visitors also rated seventeen possible experiences
as to their importance as they believe their friends would
do. As the first step in rating their associates' experi-
ence expectations, recreationists were asked to focus on
two or three persons they would most like to have with them

Table 23

Individual Ratings of Experience Importance

Percent Responding as:[1]

I visit the Rattlesnake for the opportunity:	Not at all important 1	Slightly important 2	Somewhat important 3	Moderately important 4	Very important 5	Extremely important 6	Mean Score
To observe the scenic beauty	1	*	3	8	34	55	5.4
So I can be with my friends	16	9	16	25	18	16	3.7
So I can take in some natural surroundings	*	1	4	10	34	52	5.3
To make a lot of noise[2]	97	2	2	*	*	*	1.1
For the adventure	11	16	18	17	23	14	3.7
To improve my physical health	4	7	15	30	26	18	4.2
So I could do something with my companions	12	11	20	22	18	17	3.7
To enjoy the smells and sounds of nature	*	2	4	7	31	56	5.3
To get away from some of the expectations people have of me back home	30	16	10	11	12	21	3.2
To pick up litter left by others[2]	25	20	21	16	12	7	2.9
To get away from other people	9	17	9	20	19	27	4.0
Because something exciting is always happening here	37	15	17	14	10	7	2.7
To understand the world better	17	18	10	23	18	14	3.5

*Less than .5 percent.

[1]Percentages may not add to 100 percent due to rounding.

[2]Items included primarily as validity check and response set break items.

Table 23 (continued)

Percent Responding as:

I visit the Rattlesnake for the opportunity:	Not at all important 1	Slightly important 2	Somewhat important 3	Moderately important 4	Very important 5	Extremely important 6	Mean Score
So my mind could move at a slower pace	13	8	16	19	19	25	4.0
To have fun	7	3	8	25	26	34	4.7
To learn more about nature	2	7	10	26	30	24	4.6
For the solitude	2	4	7	15	31	42	5.0
To help reduce or release some built-up tensions	8	13	12	21	22	24	4.1
To be with others who enjoy the same things I do	9	8	16	22	23	22	4.1
To help keep me in shape	7	8	18	30	23	19	4.2

when they visit the Rattlesnake and then to write down their initials (Appendix A). Then they rated the importance of the seventeen possible experiences to their friends whose initials they had written down. Each possible experience was rated from 1 (not at all important) to 6 (extremely important) in the manner the respondent believed their specific friends would do.

The item receiving the highest rating is "to take in the scenic beauty" and the item "because of the thrills" is

the lowest (Table 24). Examining some of the low-scoring
items indicates there may be some social desirability
biases decreasing the ratings of "because of the thrills"
and "because it is stimulating and exciting" and possibly
other items.

Table 24

Rating of Experience Importance
to One's Friends

Percent[1] Responding as:

My friends visit the Rattlesnake for the opportunity:	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Extremely important	Mean Score
	1	2	3	4	5	6	
To study nature	3	11	16	26	26	18	4.2
For the exercise	2	8	15	24	33	18	4.3
To be with people having similar values	6	9	8	19	34	24	4.4
For a rest from being too busy mentally	5	6	12	19	29	29	4.5
To find out more about natural settings	6	9	18	27	21	20	4.1
Because it is stimulating and exciting	3	7	12	25	23	33	4.6
To take in the scenic beauty	1	1	3	10	37	49	5.3
Because of the thrills	27	19	12	14	13	15	3.1
To get away from the demands of other people	7	13	13	19	19	30	4.2
To have a good time	2	1	5	15	30	46	5.1
To be close to nature	*	2	3	15	35	44	5.1

*Less than .5 percent.

[1]Percentages may not add to 100 due to rounding.

Table 24 (continued)

Percent[1] Responding as:

My friends visit the Rattlesnake for the opportunity:	Not at all important 1	Slightly important 2	Somewhat important 3	Moderately important 4	Very important 5	Extremely important 6	Mean Score
To do things with friends	1	9	9	25	27	30	4.6
To be in a natural setting	*	2	3	14	37	44	5.2
To be away from other people	3	9	8	19	25	37	4.7
To help get rid of some anxieties	4	8	12	27	24	25	4.3
To be with people who are enjoying themselves	4	13	13	23	25	23	4.2
To help keep physically fit	4	8	11	26	30	21	4.3

*Less than .5 percent.

[1]Percentages may not add to 100 due to rounding.

Normative Definitions

The final scale is made up of 18 possible recreational behaviors. Each person rated the degree to which the activity is viewed as appropriate in the Rattlesnake. Actions are rated from 1 (totally appropriate) to 5 (not at all appropriate). The most appropriate activity is hiking with a score of 1.2. The least appropriate activity is automobile touring with a score of 4.9 (Table 25).

Table 25

Rating of Normative Appropriateness
of Selected Recreation Behaviors

Percent[1] Rating Behavior as:

	Totally ap-propriate	Generally appropriate	Somewhat appropriate	Appropriate only in limited areas	Not at all appropriate	Mean
	1	2	3	4	5	Rating
Automobile touring	1	1	*	7	91	4.9
Getting physically tired	36	26	21	7	10	2.3
Viewing naturalist exhibits	23	15	18	31	13	3.0
Hiking	88	9	2	1	0	1.2
Motorcycling	14	5	6	24	51	3.9
Cutting Christmas trees	1	2	3	22	73	4.6
Riding horses	27	29	16	24	4	2.5
Studying pioneer history	18	22	30	20	12	2.8
Bicycling	24	21	21	25	8	2.7
Camping (with car)	2	2	1	16	80	4.7
Mountain climbing	62	23	7	6	2	1.6
Beer parties	2	*	3	21	74	4.6
Picking wildflowers	16	10	21	18	35	3.4
Camping (backpacking)	86	8	3	3	*	1.2
Hunting	20	10	11	20	40	3.5
Fishing	35	28	17	16	4	2.3
Cutting firewood	2	3	11	32	53	4.3
Target practice	2	3	2	16	77	4.6

*Less than .5 percent.

[1]May not add to 100 percent due to rounding.

SUMMARY

From their socio-demographic characteristics
visitors to the Rattlesnake appear to share similar charac-
teristics with other backcountry and wilderness recreationists
(see Hendee et al., 1968; Schreyer et al., 1976; Stankey,
1973). Because of the unique restrictions of this study,
particularly the 16 year old minimum age and the 3 hour
minimum length of stay requirements, the study's results
must be used with some caution.

Recreationists visit the Rattlesnake in very small
groups, generally with their family and/or a few close
friends. A unique characteristic of the Rattlesnake is the
frequency of recreationists traveling by themselves (McCool
and Kelley, 1977). Almost one-fifth of all visitors were
alone and this would be an even larger percentage if based
on the total number of groups visiting. Nonmotorized
methods are the dominant means of travel, with motorcyclists
making up slightly over one-fifth of the recreationists
sampled. Almost one-half of the users reported they had
traveled five or more miles from the entrance gate.
Recreationists' ages ranged from 16 to 72 years with a median
age of 27. Although the relative percentages of male and
female recreationists may be inflated due to differential
response rates, this study reports a significantly larger
percentage of female recreationists than previous studies.

Occupationally and educationally the Rattlesnake attracts
users that are similar to many western United States
wilderness type areas. Aside from having a larger proportion
of day users, Rattlesnake recreationists participate in
expected wildland recreation activities and have typical
wildland attitudes toward management activities.

The next section explores visitor motives for recrea-
tion, their perception of their friends' motives and
normative influences on participation.

CHAPTER V

RESULTS

This chapter examines the eight hypotheses and comments briefly on the results.

Hypothesis 1. Rattlesnake recreationists have a variety of individual motives for visiting the area.

Eighteen scale items from Driver's item pool tapping seven expected motivational dimensions were used (Table 26). Two validity check items were also included.

Table 26

Hypothesized Individual Motive Dimensions

Motive Dimension	Number of Items
Learning about nature	2
Solitude-privacy	2
Escape personal-social pressures	3
Action-excitement	3
Being with similar people	3
Scenery-nature experience	3
Exercise-physical fitness	2
	18
Validity check items	2
	20

A factor analysis (Nie et al., 1975) was performed on the 20 individual motive items in order to accomplish three goals: explanation, confirmation and measurement. This analysis accomplishes several things. First, the factor analysis probes for similar patterns of response indicating unifying theoretical constructs that later may be used to reduce the number of variables to a more compact number. Second, though the seven motive constructs have been extensively tested, it is necessary to confirm their applicability to western Montana and to identify any possible locally unique response variations (Driver, 1977). Third, factor analysis is used to reduce the data to a smaller set of motive factors which are new variables upon which later analysis is based.

Factor analysis is a general classification for a variety of related statistical procedures. It can be viewed as a method by which a minimum number of newly created variables are specified in a manner that after extraction of these new variables the partial correlations between the remaining original variables are zero (Nie et al., 1975). There are three customary steps in factor analysis. These are 1) preparation of a correlation matrix between all the relevant items, 2) extraction of initial factors, creating possible new variables useful for data reduction, and 3) rotation to a terminal solution, making most evident patterns in the data (Nie et al., 1975).

The first step is the calculation of measures of association between variables. This requires definition of variables and the specification of the measure of association. The variables can be attributes of objects or the objects themselves. Correlation between characteristics of individuals (R-type) is the method used in this study rather than correlations between individuals (Q-type). Most factor analysis programs require product-moment correlation coefficients so this is the input used.

The second step is exploration of data-reduction possibilities by construction of new variables incorporating correlational interactions in the data. New variables are constructed so as to reduce the data to fewer variables. These extracted factors generally are assumed to be orthogonal, relatively uncorrelated with each other.

The final step is rotation of the factor axes so as to obtain maximum explanation of the data using a minimum number of factors. The first factor to be rotated is the factor that when extracted can explain the greatest amount of the variation in the data. The second unrotated factor has the second largest explainability and so on. Rotation of the factors operates so as to maximize the common covariance of the original individual variables that can be accounted for by the rotated factors. This serves to simplify the factor structure so item partial correlations will be minimized on all but the dominant factors. These

rotated factors maximize the mathematical explainability of the factors thus tend to be more stable across sampling variations.

The output of a factor analysis is a correlation matrix of items against the extracted factors. Items are evaluated on their correlation or "loading" on the factors. All variables load to some degree on each factor but most items load most highly on one or two factors with relatively low loadings on the remainder. Those items loading most heavily on a factor are viewed as the primary components making up a factor. These primary items making up the factor are used in this study to mathematically define a factor.

Because interpretation of factor matrixes is a subjective art the factor matrix is presented in Appendix H for the reader to examine. Before a factor (as defined by its principle item components) could be viewed as a motivational construct it must meet certain mathematical and conceptual tests. First, do the principal items have a minimum loading of .50 on the factor dimension and contribute to the factor's overall reliability? Second, does it make theoretical sense to include each item with the existing items thought to represent a single underlying motivational construct? With few exceptions, items meeting both criteria are used to construct indexes defining each individual's and

their associates' recreational motives.[1]

Individual motive 1 (Table 27) combines the hypothe-sized solitude-privacy and escape personal-social pressures dimensions into one factor. These two dimensions have not been mathematically distinct in much of the previous research in the western United States (Schreyer et al., 1976; Nelson, 1976). This motive, involving escape from social stresses and from outgroup contact, is labelled stress release-solitude motive.

The second motive made up of the three items from Driver's social contact domain concerns one's desire to be with one's friends who hold similar values. This motive is named affiliation.

Motive three is drawn from the nature experience dimension and relates to the experiences derived from natural environments. This motive is labelled nature experience.

The fourth factor is made up of only two items involving physical health. This factor clearly involves physical fitness and is so named.

Motive five displays a decline in mathematical rigor. Its three items revolve around the concept of stimulation and excitement. The item "to have fun" seems to relate to

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[1]In this study, factors are defined as combinations of items meeting mathematical criteria while motives have both mathematical and theoretical justification.

Table 27

Motive Dimensions Derived From 20-item Scale
Measuring Individual Experience Expectations

Individual Motive Scale and Items	Factor Loadings	Factor Relia-bility[1]	Percent Variance Explained
Individual Motive 1:			
STRESS RELEASE-SOLITUDE		.83	46.8%
- to get away from some of the expectations people have of me back home	.6954		
- to get away from other people	.6957		
- so my mind could move at a slower pace	.6815		
- for the solitude	.4588		
- to help reduce or release some built up tensions	.7206		
Individual Motive 2:			
AFFILIATION		.88	18.6%
- so I can be with my friends	.8311		
- so I could do things with my companions	.9083		
- to be with others who enjoy the same things I do	.7575		
Individual Motive 3:			
NATURE EXPERIENCE		.83	12.0%
- to observe the scenic beauty	.7224		
- so I can take in some natural surroundings	.8143		
- to enjoy the smells and sounds of nature	.7019		
Individual Motive 4:			
PHYSICAL FITNESS		.90	10.7%
- to improve my physical health	.9254		
- to help keep me in shape	.8074		

Table 27 (continued)

Individual Motive Scale and Items	Factor Loadings	Factor Relia- bility[1]	Percent Variance Explained
Individual Motive 5:			
ACTION-EXCITEMENT		.70	7.4%
- for the adventure	.6529		
- because something exciting is always happening here	.5269		
- to have fun	.5854		
Individual Motive 6:			
NATURE STUDY		.66	4.5%
- to understand the world better	.6898		
- to learn more about nature	.5225		
Unfavored items (validity check items)		.09	
- to make a lot of noise			
- to pick up litter left by others			

[1]Reliability calculated by the formula,

$$r = \frac{NK}{1 + (N - 1)K}$$ (from Nunnally, 1967)

where r = reliability coefficient
 N = number of items in the factor
 K = average Pearson product moment correlation coefficient among scale items

having stimulating experiences. This motive borrows its label from Schreyer et al. (1976) who termed a similar construct "Action-excitement."

The final motive is made up of two items from the "learn about nature" domain. One item was inadvertently abbreviated, contributing to the motive's lower reliability.

The two unfactored items were both validity check items. Overall it appears that the hypothesized motives emerged from the factor analysis as expected, however the conceptual differing stress release-solitude motive was not separated into the two differing subdimensions.

By averaging the item scores making up a motive dimension, individual motive indexes are constructed (Table 28).

Table 28

Individual Motive Index Scores of
Rattlesnake Recreationists

Individual Motive	Mean	Standard Deviation	Number of Items
Stress release-solitude	4.1	1.26	5
Affiliation	3.8	1.43	3
Nature experience	5.3	.78	3
Physical fitness	4.2	1.27	2
Action-excitement	3.7	1.20	3
Nature study	4.1	1.26	2

Hypothesis 2. Rattlesnake recreationists have a variety of social group motives for visiting the area.

Seventeen scale items measuring seven hypothesized

motive dimensions comprise the item pool used for rating the importance of the particular experiences to one's preferred recreation associates (Table 29).

Table 29

Hypothesized Social Group Motive Dimensions

Motive Factor	Number of Items
Learning about nature	2
Solitude-privacy	1
Escape personal-social pressures	3
Action-excitement	3
Being with similar people	3
Scenery-nature experience	3
Exercise-physical fitness	_2_
	17

Using factor analysis techniques (Nie et al., 1975) to simplify the data, underlying patterns in the data were identified. Appendix I presents the rotated factor matrix. Again, before items making up a factor could be termed a social group motive, it generally had to meet both the criteria of at least .50 factor loading and of theoretical soundness. Table 30 presents the extracted group motives. Indexes representing the average score on the items making

Table 30

Motive Dimensions Derived from 17 Item Scale Measuring
One's Associates' Experience Expectations

Social Group Motive Scale and Items	Factor Loading	Factor Relia- bility[1]	Percent Variance Explained
Social Group Motive 1:			
AFFILIATION		.77	49.8%
- to be with people having similar values	.5503		
- to do things with friends	.6999		
- to be with people who are enjoying themselves	.8807		
Social Group Motive 2:			
STRESS RELEASE-SOLITUDE		.83	21.0%
- for a rest from being too busy mentally	.5811		
- to get away from the demands of other people	.8113		
- to be away from other people	.7085		
- to help get rid of some anxieties	.7062		
Social Group Motive 3:			
NATURE EXPERIENCE		.76	12.5%
- to take in the scenic beauty	.4824		
- to be close to nature	.8690		
- to be in a natural setting	.6273		
Social Group Motive 4:			
PHYSICAL FITNESS		.83	10.0%
- for the exercise	.8408		
- to help keep physically fit	.7636		
Social Group Motive 5:			
NATURE STUDY		.70	6.7%
- to study nature	.5327		

Table 30 (Continued)

Social Group Motive Scale and Items	Factor Loading	Factor Relia- bility[1]	Percent Variance Explained
- to find out more about natural settings	.8356		
Unfactored items		.67	
- because it is stimulating and exciting			
- because of the thrills			
- to have a good time			

[1]Reliability calculated by: $r = \dfrac{NK}{1 + (N - 1)K}$

where r = reliability coefficient
       N = number of items in factor
       K = average Pearson product moment correlation
           coefficient among scale items

(from Nunnally, 1967)

up a factor are then computed (Table 31). These group motive indexes represent motivations for visiting the Rattlesnake that sampled recreationists attribute to their preferred recreation associates.

The first social motive is made up of three items relating to doing things with one's friends. This social motive involves the individual recreationists' perception of the importance that his or her friends place on participating in recreation engagements with their friends (which includes the person doing the rating). This motive, similar in item composition to the individual affiliation

Table 31

Social Group Motive Index Scores of
Rattlesnake Recreationists

Group Motive	Mean	Standard Deviation	Number of Items
Stress release-solitude	4.4	1.19	4
Affiliation	4.4	1.16	3
Nature experience	5.2	.77	3
Physical fitness	4.3	1.21	2
Action-excitement	4.3	1.11	3
Nature study	4.1	1.21	2

motive, is labeled social group affiliation motive.

The second social group motive is made up of four items revolving about a concept viewed as escape from social pressures and from other people. This social motive is viewed as group motive for stress release-solitude.

Three items relating to nature experiences make up social group motive three. This motive is labeled social group nature experience.

Physical fitness is the focal point of social group motive four and provides its name. Motive five revolves around nature study but has a lower reliability coefficient than the other motives extracted in the analysis.

The remaining three items were not extracted by the

factor analysis. They include "because it is stimulating and exciting" which loads moderately on the nature experience and nature study group motives, "because of the thrills" which loads slightly on the group affiliation and stress release-solitude motives, and "to have a good time" which loads moderately on the group affiliation motive (Appendix I). All three items were excluded from the five identified factors for mathematical and theoretical reasons. These three items are from the hypothesized action-excitement social group motive and serve to define this experience dimension. The interitem correlations range from .4799 to .3257, with a mean correlation of .4059. With a reliability coefficient of .67 this group action-excitement motive should be used with caution, but is felt to be useful in further analyses.

Again the items making up a motive were averaged to come up with a group motive index score (Table 31).

A comparison of the individual and social group motivation factors indicates there is a great deal of similarity. This similarity is a welcome affirmation of the face validity of using experience expectations items to define usable and reliable means of describing recreationists' individual and social group motives. The reference group motives reliability coefficients are slightly lower than those of the individual motives, while the group motive scores are generally higher.

Hypothesis 3. Individual recreation motives will vary significantly between hikers and motor- cyclists.

Using an analysis of variance approach differences between the mean scores on individual motives of hikers and motorcyclists were tested (Table 32). The groups differed significantly on two of the six individual motives.

Table 32

Individual Motive Scores by Travel Method

Individual Motive	Mean Scores	95% Confidence Interval for Mean	Standard Deviation	F Probability
Stress release-solitude				
Hikers	4.0	3.89-4.19	1.24	.062
Motorcyclists	4.3	4.05-4.62	1.32	
Affiliation				
Hikers	3.6	3.46-3.83	1.50	.0002
Motorcyclists	4.3	4.08-4.52	.99	
Nature experience				
Hikers	5.3	5.22-5.41	.80	.963
Motorcyclists	5.3	5.15-5.48	.72	
Physical fitness				
Hikers	4.2	4.01-4.32	1.30	.661
Motorcyclists	4.1	3.83-4.35	1.19	
Action-excitement				
Hikers	3.4	3.29-3.56	1.14	.0000
Motorcyclists	4.3	4.07-4.58	1.19	
Nature study				
Hikers	4.1	3.95-4.26	1.25	.310
Motorcyclists	3.9	3.67-4.22	1.26	

The relative importance of the stress release-solitude motive differed substantially between hikers and motorcyclists but large standard deviations reduces the significance level to below .05. Motorcyclists score 4.3 (moderately important) on the stress release-solitude motive while hikers score 4.0.

Motorcyclists were higher on the affiliation motive than hikers, who rated the affiliation motive between somewhat and moderately important. The difference between the motorcyclists 4.3 and the hikers 3.6 is significant beyond the .001 level.

Hikers and motorcyclists are indistinguishable in their scores on the nature experience motive which is the most important single motive with a rating of 5.3. The confidence interval and standard deviation of motorcyclists are greater than hikers on this motive as well as most of the others because there were fewer motorcyclists sampled than hikers. Hikers indicate the physical fitness motive is slightly more than a moderately important reason for visiting the Rattlesnake, which is similar to motorcyclists' ratings.

On the action-excitement motive the differences are enormous with the motorcyclists score of 4.3 almost a full unit above the hikers 3.4. This difference in motive levels is significant at greater than .001.

The hikers' score is slightly higher on the nature

Figure 6
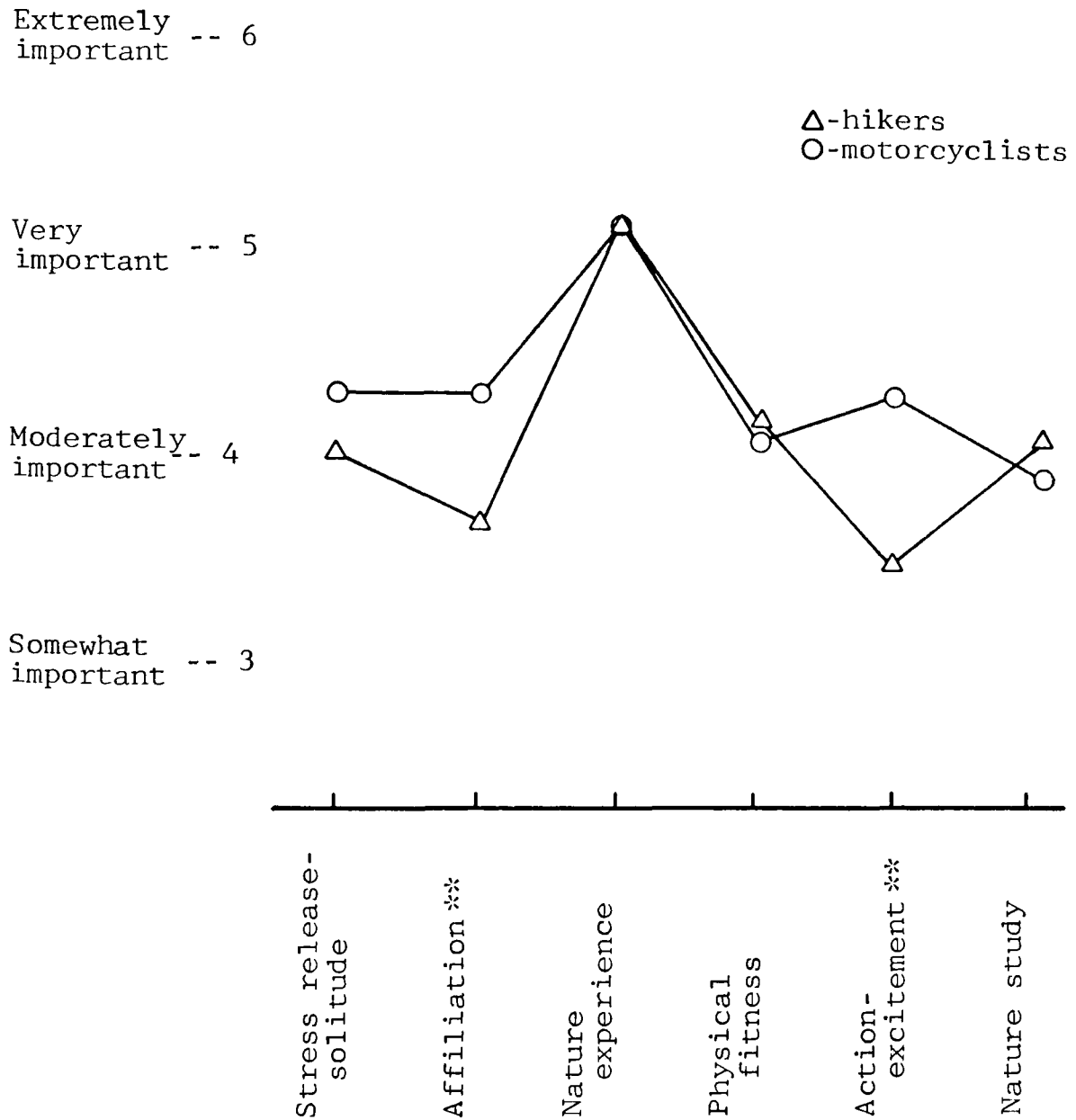
Mean Individual Motive Scores for
Hikers and Motorcyclists

* significant at .05
** significant at .01

study motive with a 4.1 score compared to the motorcyclists' 3.9 but the difference is not significant.

Hypothesis 4. Social group motives will vary significantly between hikers and motorcyclists.

Using the same sample of Rattlesnake recreationists, differences in reference group motive scores between motorcyclists and hikers were tested by means of analysis of variance. Motorcyclists and hikers differed significantly on four of the six social group motives for visiting the Rattlesnake (Table 33).

The social group motive labeled stress release-solitude has an average response of approximately very important providing a rating of 4.7 for motorcyclists. Hikers feel their friends' motives for stress release is somewhat more than moderately important (4.4) in their friends' selection of the Rattlesnake as a place to recreate. The greater importance of motorcyclists' social group stress release-solitude motive is significantly greater than that of hikers at a .02 level.

Similarly motorcyclists rate their friends' affiliation motivations of greater importance than do hikers, with ratings of 4.6 and 4.3 respectively. Both groups feel their friends place more than moderate importance on recreating with their social group. This social group presumably includes the person doing the rating. It can be noted that the social group affiliation motive is rated about half a

Table 33

Social Group Motive Scores
by Travel Method

Social Group Motive	Group Mean	95% Confidence Interval for Mean	Standard Deviation	F Probability
Stress release-solitude				
Hikers	4.4	4.22-4.51	1.22	.016
Motorcyclists	4.7	4.50-4.93	.98	
Affiliation				
Hikers	4.3	4.16-4.45	1.22	.017
Motorcyclists	4.6	4.47-4.85	.85	
Nature experience				
Hikers	5.2	5.09-5.29	.81	.652
Motorcyclists	5.1	4.98-5.31	.74	
Physical fitness				
Hikers	4.4	4.28-4.36	1.16	.025
Motorcyclists	4.1	3.83-4.35	1.18	
Action-excitement				
Hikers	4.1	3.92-4.19	1.09	.0000
Motorcyclists	4.8	4.57-5.01	1.01	
Nature study				
Hikers	4.2	4.01-4.30	1.21	.142
Motorcyclists	3.9	3.65-4.20	1.24	

level more important to one's friends than for the individual

doing the rating.

The most important social group motive is one's

associates' desire for a natural experience. Both hikers and

motorcyclists felt this was more than very important in

their associates' recreational expectations for visiting

the Rattlesnake.

Hikers felt that physical fitness was of more than moderate importance to their associates. It was of moderate importance to motorcyclists associates. The difference between hikers associates' rating of 4.4 and those of motorcyclists was significant at a .05 level.

The biggest social group motive difference is on the social group action-excitement motive. While this motive was manually composed rather than extracted by the factor analysis, this group motive serves to most strongly differentiate motorcyclists and hikers. Hikers ratings of this motive as moderately important to their associates differs from the motorcyclists very important rating at a significance level beyond .0001.

Nature study is the least important social group motive for motorized recreationists receiving an average rating of below moderate importance. Hikers felt their friends desire to study nature was of lesser importance giving it an importance rating slightly above moderate. Figure 7 presents the mean reference group motive scores for motorcyclists and hikers.

Hypothesis 5. Normative constraints will factor into several clusters.

As was undertaken with the individual and social group experiences items, a principle component factor analysis with iterations was applied to the 18 normative ratings of recreation behavior appropriateness (Nie et al.,

Figure 7
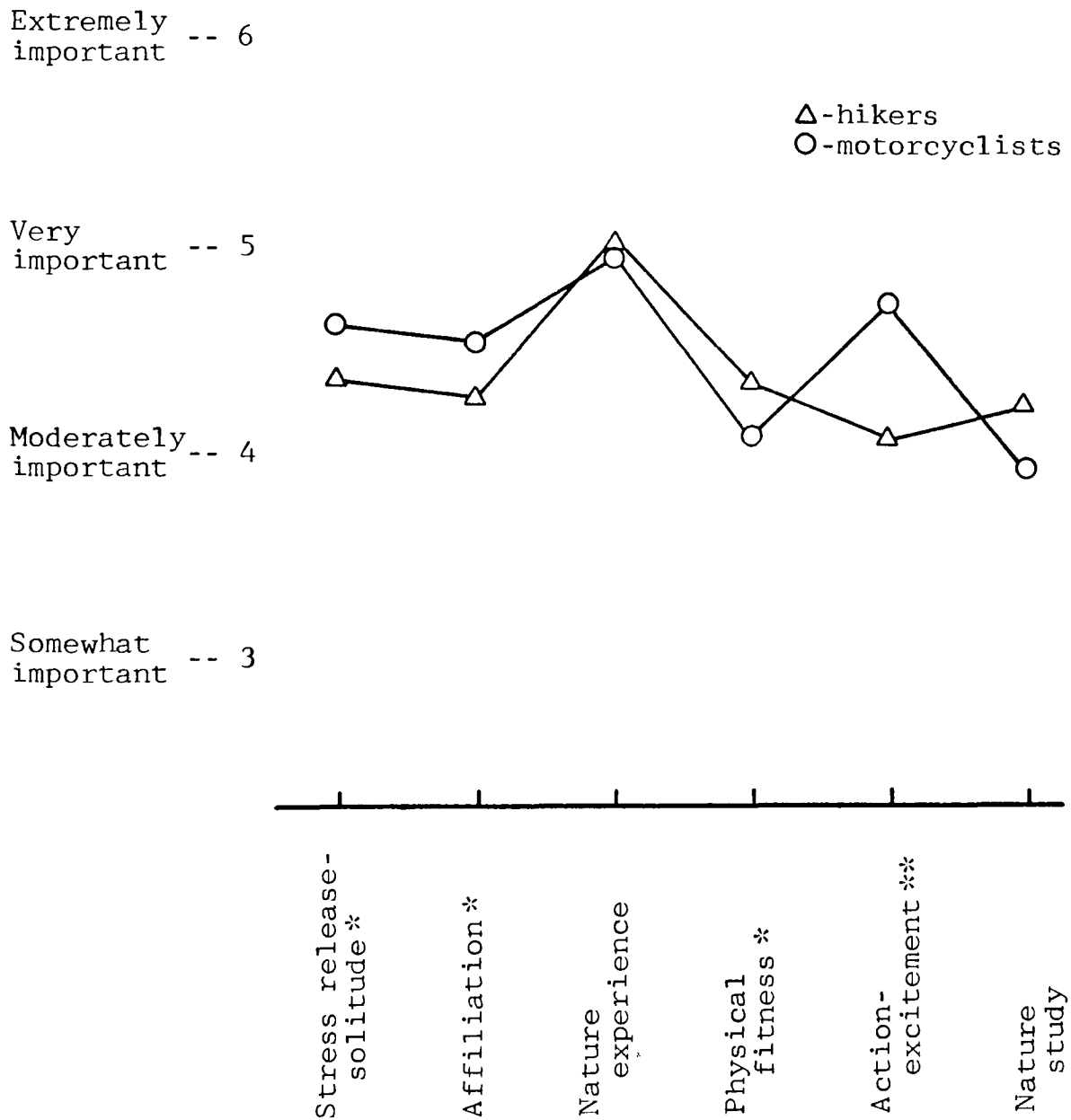
Mean Social Group Motive Scores for
Hikers and Motorcyclists

* significantly different at .05
** significantly different at .01

1975). The recreational activities were rated on a scale from totally appropriate (1) to not at all appropriate (5). The factor analysis attempts to identify certain underlying constructs that influence patterns of visitor responses. The method assumes that scale items having similar response patterns are related to each other because they both describe an underlying construct. Items comprising a normative dimension are examined from both mathematical and theoretical perspectives.

With six extracted normative dimensions, the first factor is made up of two items, automobile touring and camping with car (Table 34). Both of these activities are prohibited by the Lolo National Forest travel plan which recreational users appear to strongly support in this case. This first factor, labeled automobile travel, has a reliability of .65 and accounts for 40% of the scales variance (Table 34).

The second factor, made up of the activities of motorcycling, riding horses and bicycling, focuses on alternative travel methods to hiking, the dominant travel method. These alternative travel methods are rated somewhat appropriate, with motorcycling receiving a rating of appropriate only in limited areas. This alternative travel method factor accounts for 22% of the scales' variance and has a reliability of .61.

Viewing naturalist exhibits and studying pioneer

Table 34

Normative Appropriateness Dimensions Derived
from 18 Item Scale Measuring
Normative Appropriateness

Normative Dimension and Items	Factor Loading	Factor Relia-bility[1]	Percent Variance Explained
Normative Factor 1:			
AUTOMOBILE TRAVEL		.65	40.0%
- automobile touring	.4681		
- camping (with car)	.9061		
Normative Factor 2:			
ALTERNATIVE TRAVEL METHODS		.61	22.2%
- motorcycling	.5476		
- riding horses	.4871		
- bicycling	.4504		
Normative Factor 3:			
OUTDOOR EDUCATION		.57	16.3%
- viewing naturalist exhibits	.5221		
- studying pioneer history	.7405		
Normative Factor 4:			
EXTRACTING ANIMALS		.62	9.3%
- hunting	.7928		
- fishing	.5165		
Normative Factor 5:			
BACKCOUNTRY RECREATION		.51	6.7%
- mountain climbing	.5783		
- camping (backpacking)	.5842		
Normative Factor 6:			
CONSUMPTIVE USES		.49	5.5%
- picking wildflowers	.4197		

Table 34 (continued)

Normative Dimension and Items	Factor Loading	Factor Relia- bility[1]	Percent Variance Explained
- cutting firewood	.5382		
- target practice	.4442		

Unfactored items

- getting physically tired
- hiking
- cutting Christmas trees
- beer parties

[1]Reliability calculated according to Nunnally, 1967.

history are the normative activities comprising the third normative dimension which is labeled outdoor education. Both items are from Hendee et al. (1968) wildernism scales' aversion to social interaction dimension. However, in this application the emphasis is on learning about the area that one is recreating in. With a reliability of .57 this normative dimension could probably benefit from additional items or refinement of existing items.

Extracting animals is the name given to the fourth normative factor made up of hunting and fishing. Two additional activities, motorcycling and target practice, have moderate loadings on this factor (Appendix L). This two item factor has a reliability of .62 and accounts for a bit over 9% of the scale variance (Table 34).

The last two factors exhibit lower levels of reliability and conceptual unity than the first four factors. The fifth factor is composed of the activities mountain climbing and camping (backpacking). This factor is termed backcountry recreation. Several other activities often thought to be equally appropriate in backcountry areas have surprisingly low loadings on this factor. Hiking loads at a .30 level, followed by bicycling (.30), horseback riding (.28) and fishing (.37) (Appendix L). The reliability of the primary two item factor is .51, right at the mathematical levels thought necessary for usable factors.

The sixth factor is composed of three consumptive activity items: picking wildflowers, cutting firewood and target practice. This factor does not have strong conceptual justification, and with a reliability of .47, lacks mathematical backing. Automobile touring has .33 loading on this factor leading to further questions. The consumptive uses normative factor is felt to be weak and in need of revision.

Four normative activities did not load significantly on any of the six extracted factors (Appendix L). Getting physically tired, is the first activity that does not load on any factor. Similarly, hiking, though it had a negative loading on the automobile touring factor, is judged to be unfactored, perhaps due to its virtually unanimous acceptance by Rattlesnake recreationists. Cutting Christmas trees loads slightly on several factors though no loading is above .28.

Beer parties as an activity loads at a .43 level on the
alternative travel methods dimension but is unacceptable for
conceptual reasons.

Overall the activity normative appropriateness
scale produced several usable factors though all factors are
mathematically less robust than desired, due to lower
interitem correlation than anticipated. From a theoretical
viewpoint it is interesting there are so many dimensions
to recreationists norms. Rather than being one or two
normative dimensions on which recreationists can be arrayed,
this analysis has identified at least six possible normative
dimensions.

An alternative view of the normative influence scale
would relate the normative items to the recreationist
behavior model (Figure 3) using a normative constraints
perspective. This perspective suggests it is not the total
universe of possible normative dimensions that influences
recreation behaviors, but only the particular normative
dimensions on which there is a lack of agreement. Therefore,
it is not the shared recreational norms that influence
participation rates but only the divergent normative defini-
tions that will differentially influence participation by
various user groups.

Individuals may hold a set of normative definitions
that strictly proscribes the types of behaviors viewed as
appropriate or conversely they may have a wide open anything

goes normative viewpoint. From the 18 normative activities
items, items on which there are wide variations in appropri-
ateness ratings and are not at the normative extremes were
examined in order to identify the most influential norms.
Three criteria were used to screen the normative items:
first, is the standard deviation 1.25 or greater, and second,
is the item mean score close to the scale midpoint of 3.0,
generally appropriate, as measured by means between 2.0,
generally appropriate and 4.0, appropriate only in limited
areas, third is it an unambiguous item which clearly
represents a specific norm. Using these guidelines the
following items were selected: viewing naturalist exhibits,
motorcycling, picking wildflowers and hunting (Table 35).
Four possible additional items were not included for the
following reasons. "Getting physically tired" is felt to
be an ambiguous item leading to unreliable results.
Bicycling and riding horses both suffer from the possibility
of being physically as well as normatively constrained.
Though this criticism is also applicable to the motorcycling
item, it is retained in light of its controversy and impact
on recreationists' experiences. The studying pioneer history
item is felt to duplicate the viewing naturalist exhibits
item already selected.

Each of the four selected normative items are con-
sidered to represent a possible normative dimension constrain-
ing one's selection of obtaining experiences through

Table 35

Normative Items Ratings

Item	Standard Deviation	Mean
Hunting *	1.56	3.50
Picking wildflowers *	1.45	3.45
Motorcycling *	1.42	3.94
Viewing naturalist exhibits *	1.38	2.96
Getting physically tired	1.30	2.28
Bicycling	1.30	2.71
Riding horses	1.23	2.51
Studying pioneer history	1.25	2.86
Fishing	1.22	2.26
Mountain climbing	1.00	1.64
Cutting firewood	.94	4.29
Target practice	.83	4.63
Beer parties	.75	4.64
Cutting Christmas trees	.74	4.62
Camping, with car	.72	4.71
Camping, backpacking	.65	1.23
Automobile touring	.57	4.85
Hiking	.47	1.16

* Items selected as normative constraints

engaging in Rattlesnake backcountry recreation activities. In later analysis the four constraint items can also be averaged into a single value index of overall recreational normative constraint.

<u>Hypothesis 6</u>. Normative definitions will vary significantly between hikers and motorcyclists.

Using analysis of variance techniques, normative rating differences between hikers and motorcyclists are examined. The appropriateness of 12 of the 18 behaviors differ between the two groups (Table 36).

Table 36

Normative Definitions of Behavior Appropriateness
By Travel Method

Behavior	Mean[1]	95% Confidence Interval for Mean[1]	Standard Deviation	F Probability
Automobile touring				
Hiker	4.88	4.82-4.95	.53	.012
Motorcyclist	4.70	4.53-4.86	.77	
Getting physically tired				
Hiker	2.17	2.03-2.32	1.20	.0009
Motorcyclist	2.72	2.39-3.05	1.55	
Viewing naturalist exhibits*				
Hiker	3.02	2.86-3.19	1.38	.737
Motorcyclist	2.97	2.69-3.25	1.32	
Hiking				
Hiker	1.13	1.09-1.19	.44	.346
Motorcyclist	1.19	1.08-1.30	.51	
Motorcycling*				
Hiker	4.50	4.41-4.60	.65	.0000
Motorcyclist	1.81	1.54-2.09	1.61	
Cutting Christmas trees				
Hiker	4.71	4.64-4.77	.55	.0004
Motorcyclist	4.40	4.16-4.63	1.08	
Riding horses				
Hiker	2.75	2.62-2.89	1.28	.0000
Motorcyclist	1.87	1.59-2.16	1.73	

Table 36 (continued)

Behavior	Mean[1]	95% Confidence Interval for Mean[1]	Standard Deviation	F Probability
Studying pioneer history				
Hiker	2.87	2.72-3.02	1.26	.646
Motorcyclist	2.94	2.68-3.20	1.21	
Bicycling				
Hiker	3.00	2.85-3.16	1.28	.0000
Motorcyclist	2.18	1.93-2.44	1.19	
Camping, with car				
Hiker	4.76	4.68-4.84	.66	.0008
Motorcyclist	4.43	4.19-4.66	1.08	
Mountain climbing				
Hiker	1.71	1.60-1.84	1.02	.008
Motorcyclist	1.39	1.19-1.59	.95	
Beer parties				
Hiker	4.71	4.63-4.79	.65	.0000
Motorcyclist	4.30	4.08-4.52	1.02	
Picking wildflowers*				
Hiker	3.37	3.19-3.54	1.46	.594
Motorcyclist	3.47	3.15-3.79	1.46	
Backpack camping				
Hiker	1.26	1.18-1.34	.66	.150
Motorcyclist	1.14	1.02-1.27	.58	
Hunting*				
Hiker	3.79	3.62-3.95	1.37	.0000
Motorcyclist	2.50	2.12-2.87	1.75	
Fishing				
Hiker	2.47	2.33-2.61	1.18	.0000
Motorcyclist	1.58	1.34-1.81	1.09	
Cutting firewood				
Hiker	4.34	4.24-4.44	.84	.362
Motorcyclist	4.23	3.99-4.48	1.13	
Target practice				
Hiker	4.75	4.66-4.83	.72	.0000
Motorcyclist	4.26	4.04-4.48	1.03	

Table 36 (Continued)

*Selected as normative constraints items.

[1]Values range from 1--totally appropriate to
5--not at all appropriate.

The 18 activities can subjectively be divided into three categories. First are those activities that hikers, motorcyclists or both feel strongly are not appropriate in the Rattlesnake. The second category is those activities which are not felt to be fully appropriate but are not totally excluded. The final category is those activities which are widely accepted by Rattlesnake visitors (Figure 8).

In the first category of normatively inappropriate activities, automobile touring is the least appropriate recreation activity for both motorcyclists and hikers (Table 36). Hikers find it virtually totally inappropriate though motorcyclists are not quite as strong in their rejection of automobile tours. This difference is significant at a .012 level. Not surprisingly car camping displays similar recreationist evaluations with hiker's rejection significantly stronger than motorcyclists beyond the .001 significance level. Target practice, which is presently prohibited within three miles of entrance gate is strongly opposed by hikers while motorcyclists find it appropriate in limited areas, the difference significant beyond the .0001 level. Cutting

Figure 8

backpack camping
hiking

auto. touring
camping with car
cutting Christmas trees
beer parties
target practice
cutting firewood

mountain climbing
fishing
study pioneer history
riding horses
bicycling
getting physically tired
viewing naturalist exhibits*
motorcycling*
picking wildflowers*
hunting*

| 2 | 3 | 4 | 5 |

1
totally
appropriate

2
generally
appropriate

3
somewhat
appropriate

4
only in
limited areas

5
not at all
appropriate

*- activities selected as normative constraints
●- mean

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Means and Standard Deviations of Behavioral Normative Appropriateness Ratings

Christmas trees and beer parties are rejected more strongly
by hikers than by motorcyclists. Hikers strong objections
to these activities is shown in their 4.71 rating (5.0
equals not at all appropriate). Many motorcyclists suggest
both activities may be appropriate in limited areas though
cutting Christmas trees is rated almost midway between of
limited appropriateness and not at all appropriate. These
differences between motorcyclists and hikers are significant
beyond the .0005 level. Despite widespread regional
interest in obtaining firewood for home heating, recreation-
ists suggest cutting of firewood should be done only in
limited areas in the Rattlesnake or not at all. Motor-
cyclists score of 4.2 is similar to hikers 4.3 and is not
significantly different at the .05 level.

The final activity in the normatively restrictive
category is probably the most controversial recreational
activity in the Rattlesnake. Hikers generally have much
stricter norms regarding motorcycling than do the motor-
cyclists. Motorcyclists rate their activity as generally
appropriate while hikers feel motorcycling is of limited or
no appropriateness. From the volume and tone of comments
directed to this question it is clear many recreationists
strongly hold to divergent judgments about the value of
motorcycling in the Rattlesnake. This difference is
significant at beyond the .0001 level. In summary motorcy-
clists are statistically less restrictive in their normative

rating of six of the seven normatively restrictive recreation behaviors.

There are seven activities with ratings midway between totally appropriate and not at all appropriate. The first is picking wildflowers which both motorcyclists and hikers rate as somewhat appropriate. They do not differ in their ratings at .05. Hikers are significantly more restrictive in their norms concerning hunting than are motorcyclists. Hikers generally rate hunting as appropriate only in limited areas while motorcyclists feel it is just about generally appropriate. This large difference is significant beyond the .0001 level. On viewing naturalist exhibits hikers and motorcyclists are virtually identical in their somewhat appropriate ratings, with no significant differences. Similarly they hold shared norms on studying pioneer history with somewhat appropriate ratings the average response.

Motorcyclists do not feel bicycling in the Rattlesnake is as appropriate as motorcycling is but give it a generally appropriate rating. However, bicycling is rated only somewhat appropriate by hikers, significantly different beyond the .0001 level.

The only activity on which motorcyclists hold significantly more restrictive norms than hikers is the activity termed getting physically tired. Hikers rate getting tired as generally appropriate while motorcyclists

rate it as somewhat appropriate. Apparently, hikers are less averse to getting physically tired than motorcyclers. These normative differences are significant at beyond the .001 level. The last activity in the middle of the normative spectrum is riding horses. Hikers are significantly less accepting of horses than are motorcyclists at a .0001 level.

The final group of activities are those that are generally accepted and impose only slight normative constraints on Rattlesnake visitors. Of this group only fishing has any notable normative restraints with hikers rating it midway between generally and somewhat appropriate. At a .001 level motorcyclists were less restrained, rating fishing between generally and totally appropriate. Motorcyclists also differed at beyond a .01 level from hikers' norms in giving mountain climbing a totally appropriate rating compared to a generally appropriate rating from hikers.

Motorcyclists and hikers showed no differences in rating hiking and backpack camping as totally appropriate.

Of the 18 potential recreation activities rated on their normative acceptance, hikers and motorcyclists hold differing values on 12 of them. On 11 of the 12 normatively differing recreation activities, hikers hold more restrictive normative definitions. Except for the activity of getting physically tired, motorcyclists view the Rattlesnake

as more wide open to a variety of activities than do hikers.

<u>Hypothesis 7</u>. While controlling for normative definitions,
social group motives will account for more of
the variance in activity participation rates
of motorcyclists than for hikers.

This hypothesis involves two portions, first, while
using separate regression equations for motorcyclists and
hikers, the relative influences of the normative constraints
will be controlled for, and second the regression will
measure the effects of the six social group motives on
recreation participation rates after the variance due to
normative factors is removed.

For reasons explained in hypothesis 5, calculations
of the normative constraints effect in the regression
equation will not involve the entire pool of normative
items, only the 4 normative constraint items on which
recreation visitors display substantial disagreement as to
their normative appropriateness. The four activities on
which there are normative differences are hunting, picking
wildflowers, motorcycling and viewing naturalist exhibits.
It should be noted motorcyclists and hikers differ signifi-
cantly on two of these four normative constraints. This
hypothesis examines the relative influence normative con-
straints have on recreation participation. A normative con-
straints index was created by averaging the four normative
constraint items and was used in early portions of this
analysis but was discontinued when all regressions produced

R^2 values below .01. The three dependent variables are number of visits in past year, number of intended visits in the coming month and a single value index combining the measures of last year's visits with the intended visits in the coming month. Use of three dependent behavioral measures follows Ajzen and Fishbein's (1977) suggestion that multiple behavioral measures are needed in research on attitude-behavior relationships.

As can be seen in Table 37 the relative effects of the normative constraint items on the 3 measures of recreation participation vary considerable. Motorcyclists participation rates appear to be more associated with the area's norms than are hikers. This would suggest that motorcyclists are more differentially influenced by their norms than hikers, and as a result are more likely than hikers to decrease their rate of visitation as a result of differences in their normative perceptions. Fourteen percent of motorcyclists' past visitation variance can be predicted by the four norms held by motorcyclists. In planning future visits motorcyclists' norms account for over one-third of their intended participation (Table 37). About 21% of the variance in the recreation participation index variable can be accounted for by the regression of the four normative constraint items.

Hiker participation rates are only slightly influenced by their perceptions of the normative environment of

Table 37

Normative Constraints Regressions On Participation

Normative Constraint Variables	Multiple R	Multiple R^2	R^2 change	Beta co-efficient	Dependent Variable
Hikers					
hunting	.18	.03	.032	-.139	Visits to the
viewing naturalist exhibits	.19	.04	.004	.035	Rattlesnake in
motorcycling	.19	.04	.002	.083	the past year
picking wildflowers	.19	.04	.000	.005	
Motorcyclists					
viewing naturalist exhibits	.34	.12	.115	.554	
motorcycling	.36	.13	.017	.556	
picking wildflowers	.37	.14	.005	.003	
hunting	.37	.14	.002	-.019	
Hikers					
hunting	.11	.01	.012	-.118	Recreation
viewing naturalist exhibits	.15	.02	.009	.029	participation
motorcycling	.17	.03	.007	.060	index of past
picking wildflowers	.17	.03	.000	.006	and planned visits to the
Motorcyclists					Rattlesnake
viewing naturalist exhibits	.43	.18	.183	.386	
hunting	.45	.20	.015	-.049	
motorcycling	.45	.21	.008	.160	
picking wildflowers	.46	.21	.000	.073	

Table 37 (continued)

Normative Constraint Variables	Multiple R	Multiple R^2	R^2 change	Beta co-efficient	Dependent Variable
Hikers					
viewing naturalist exhibits	.13	.02	.017	.080	Intended number
motorcycling	.17	.03	.010	.034	of visits in
hunting	.17	.03	.002	.027	the coming
picking wildflowers	.17	.03	.000	.017	month
Motorcyclists					
motorcycling	.45	.21	.207	-.049	
viewing naturalist exhibits	.55	.30	.098	.364	
hunting	.58	.33	.028	-.118	
picking wildflowers	.59	.35	.013	.130	

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the Rattlesnake. The highest percentage of participation variance predicted by normative measures is the number of past visits, of which only 4% can be accounted for. This figure drops to 3% when the recreation participation index or future visits are the dependent variables.

Controlling for the partial correlation effects of the four normative constraints, the percentage of the recreation participation predicted by the six social group motives range from 21% to 25% for hikers. The social group motives predict from 44 to 53% of the motorcyclists' recreation participation in the Rattlesnake when normative constraints are controlled (Table 38).

The past participation of hikers is predicted over one-fifth of the time by the five social group motives. The affiliation group motive predicts 18% of the past visitation with the other four social group motives predicting an additional 3% of past visits. Physical fitness did not meet the minimum requirements of the SPSS regression package and was excluded from the calculations.

The affiliation social group motive predicted 20% of the hiker's variation in the multibehavior index of past and future visitation to the Rattlesnake. As is the case when past visits is the dependent variable, affiliation is negatively related to amount of recreation participation. The six social group motives together predict about 24% of the variation in hikers' recreation index scores.

Table 38

Regression of Six Social Group Motives on Participation
with Normative Constraints Controlled

Group Motive	Multiple[1] R	Multiple[1] R^2	R^2 im- provement	Beta co- efficients	Dependent Variable
Hikers					
affiliation	.18	.03	.031	-.147	Visits in the
nature experience	.18	.03	.003	.129	past year
action-excitement	.20	.04	.006	-.081	
stress release-solitude	.21	.04	.003	-.065	
nature study	.21	.04	.000	.023	
physical fitness[2]	---	---	----	----	
Motorcyclists					
physical fitness	.25	.06	.064	-.406	
action-excitement	.39	.16	.095	.319	
nature experience	.43	.18	.031	.199	
stress release-solitude	.44	.19	.004	-.067	
nature study	.44	.19	.001	-.035	
affiliation	.44	.19	.000	-.017	
Hikers					
affiliation	.20	.04	.039	-.177	Recreation
nature experience	.22	.05	.008	.151	participation
stress release-solitude	.23	.05	.006	-.085	index of past
action-excitement	.24	.06	.003	-.073	and planned
physical fitness	.24	.06	.001	.038	visits to the
nature study	.24	.06	.001	-.010	Rattlesnake
Motorcyclists					
action-excitement	.24	.06	.059	.473	
physical fitness	.41	.17	.109	-.324	
nature experience	.44	.19	.024	.211	

Table 38 (continued)

Group Motive	Multiple[1] R	Multiple[1] R^2	R^2 im- provement	Beta co- efficients	Dependent Variable
affiliation	.47	.22	.028	-.204	
nature study	.47	.22	.003	-.058	
stress release-solitude	.47	.22	.000	.012	
Hikers					
physical fitness	.16	.03	.025	.136	Intended number
affiliation	.22	.05	.023	-.148	of visits in the
nature experience	.24	.06	.008	.133	coming months
action-excitement	.24	.06	.003	-.064	
stress release-solitude	.25	.06	.002	-.045	
nature study	.25	.06	.001	.036	
Motorcyclists					
action-excitement	.32	.10	.103	.553	
affiliation	.46	.22	.113	-.379	
physical fitness	.50	.25	.031	-.156	
nature experience	.52	.27	.023	.180	
stress release-solitude	.53	.28	.009	.104	
nature study	.53	.29	.006	-.073	

[1]Effects of 4 normative constraints items controlled for using Nie et al. (1975) equation:

$$R^2_{y \cdot 23} = \frac{R^2_{y \cdot 123} - R^2_{y \cdot 12}}{1 - R^2_{y \cdot 12}}$$

where $R_{y \cdot 23}$ = correlation after other partial correlations components are controlled for

$R_{y \cdot 123}$ = full model regression correlation

$R_{y \cdot 12}$ = partial model regression correlations

[2]Below regression minimum cutoff.

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For predicting hikers' recreation participation in the coming month the best independent variable is one's social groups' motive for physical fitness, followed by the social motive for affiliation. One's groups' motive for nature experiences is the third most important motive influencing intended recreation behavior. Together these three social group motives predict almost one-quarter of hikers' intended visitations to the Rattlesnake. In a casual sense, however, these three social motives explain only 6% of the future visitation, with virtually no additional explanation provided by the remaining three social motives. Again, the social group motive affiliation is inversely related to increases in visits to the Rattlesnake.

Motorcyclists visits to the Rattlesnake in the past year are predicted one-quarter of the time by their social groups' physical fitness motive (Table 38). The action-excitement motive increases the prediction rate to almost 40%. Using all six social associates' motive scores, 44% of the variance in motorcyclists past participation can be accounted for.

The social group action-excitement and physical fitness motives are the two best predictors of the motorcyclists recreation participation index predicting 24 and 17% of the recreation index, respectively. The combined six group motives can predict 47% of the variance in motorcyclists recreation index scores.

Action-excitement, affiliation and physical fitness are the group motives accounting for one-half of the variation in motorcyclist intended recreational visits. The action-excitement motive alone accounts for almost one-third of the variance in future visits remaining after motorcyclists norms are accounted for.

Overall, the social group motives do an acceptable job of predicting participation by hikers and an excellent job in predicting motorcyclist participation. Hikers' visitation rates seem to be most related to their associates' desire for affiliation, probably including affiliation with the person completing the questionnaire. This relationship is negative, indicating the more active hikers are more likely to be solitary hikers. Nature experience is the hikers' second most influential group motive, with an average beta coefficient of .137.

Motorcyclist participation is best predicted by their social groups' motivation for action-excitement experiences. This relationship is strongly positive indicating higher participation by individuals whose friends are challenge and thrills oriented. Surprisingly, motorcyclist's associates' desire for affiliation is negatively related to motorcyclist rates of participation. This would indicate active motorcyclists believe their friends desire to travel alone or in small intimate groups.

In general there are two social motives that perform

poorly for predicting recreation participation. These are one's reference groups' desire for stress release-solitude experiences and for nature study.

As hypothesized, the social group motives are much better predictors of motorcyclist participation rates than they are in predicting hiker participation. The six social motives account for 44% of the variance in motorcyclist past visits compared to 21% for hikers. In predicting recreation participation index scores, the social motives accounted for 47% of the variance of motorcyclist participation compared to the hikers' 24% accounted for. The six social group motives predicted over one-half of motorcyclists planned visits (53%) while accounting for 25% of the intended future visits by hikers.

Hypothesis 8.   While controlling for the situations normative definitions, individual motives will account for more of the variance in activity participation rates of hikers than for motorcyclists.

This hypothesis is the converse of hypothesis 7 in suggesting hikers visitation is more accurately predicted by hikers individual motives than motorcyclists participation is from their individual motives. Again, the effects of normative constraint is removed before calculating the effects of the individual motives. The six individual motives will be regressed on the three measures of recreation participation to assess individual motives influences.

Because the same normative effects items are

controlled for in this regression as in hypothesis 7, the normative effects partial correlations are the same as presented in Table 37.

The first regression uses hikers' individual motives as independent variables predicting the number of visits in the past year as the dependent variable (Table 39). The six individual motives predict past participation at a .27 level. The best predictor of hikers' past visits is the affiliation motive at a .21 level which is inversely related to past visitation.

Affiliation is the best predictor of hikers' recreation participation index, accounting for 26% of index variance. The other five motives add only slightly to the variance attributed to the affiliation motive, with a total of 29% of the indexes variance predicted. Hiker individual motives are much better predicters than the social group motives which predict 17% of the hiker recreation participation.

The amount of future hiker visitation is predicted 27% of the time using the six individual motives. Affiliation is the most influential motive predicting 20% of future participation variations followed by physical fitness with an additional 5%. Again, higher affiliation scores are related to decreasing levels of visitation. Surprisingly, nature experience motive scores are also inversely related to amount of planned visitation.

Table 39

Regression of Six Individual Motives on Participation
with Normative Constraints Controlled

Individual Motive	Multiple R	Multiple[1] R^2	R^2 im-provement	Beta co-efficients	Dependent Variable
Hikers					
affiliation	.21	.04	.042	-.171	Visits in the
stress release-solitude	.25	.06	.020	-.137	past year
nature experience	.27	.07	.008	-.127	
nature study	.27	.07	.002	.042	
action-excitement	.27	.07	.001	.039	
physical fitness	.27	.07	.000	.022	
Motorcyclists					
action-excitement	.19	.03	.034	.354	
affiliation	.22	.05	.014	.221	
nature study	.26	.07	.019	.449	
physical fitness	.35	.12	.052	-.308	
stress release-solitude	.36	.13	.009	-.139	
nature experience[2]	---	---	----	----	
Hikers					
affiliation	.26	.07	.067	-.244	Recreation
stress release-solitude	.27	.08	.008	-.113	participation
nature experience	.28	.08	.007	-.099	index of past
nature study	.29	.08	.004	.063	and planned
physical fitness	.29	.09	.002	.059	visits to the
action-excitement	.29	.09	.000	.033	Rattlesnake
Motorcyclists					
nature study	.31	.10	.098	.489	
action-excitement	.39	.15	.054	.381	

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Table 39 (Continued)

Individual Motive	Multiple R	Multiple R^2	R^2 improvement	Beta coefficients	Dependent Variable
physical fitness	.41	.17	.017	-.184	
affiliation	.43	.18	.012	.136	
stress release-solitude	.43	.18	.002	-.066	
nature experience	.43	.19	.001	-.051	
Hikers					
affiliation	.20	.04	.041	-.235	Intended num-
physical fitness	.25	.06	.022	.159	ber of visits
nature study	.26	.07	.006	.102	in the coming
nature experience	.27	.07	.003	-.056	month
stress release-solitude	.27	.07	.000	-.035	
action-excitement	.27	.07	.000	.010	
Motorcyclists					
nature study	.48	.23	.234	.437	
action-excitement ·	.56	.32	.084	.331	
nature experience	.57	.33	.009	-.112	
stress release-solitude	.57	.33	.000	.035	
affiliation	.57	.33	.000	.012	
physical fitness[2]	---	---	----	----	

[1]Effects of 4 normative constraints items controlled for using Nie et al. (1974) equation.

$$R^2_{y \cdot 23} = \frac{R^2_{y \cdot 123} - R^2_{y \cdot 12}}{1 - R^2_{y \cdot 12}}$$

where $R_{y \cdot 23}$ = correlation after other partial correlations components are controlled for

$R_{y \cdot 123}$ = full model regression correlation

$R_{y \cdot 12}$ = partial model regression correlations

[2]Below regression minimum cutoff.

Motorcyclists past visitation is most accurately predicted by their action-excitement scores (r = .19). The five usable motive scores predict past motorcyclist participation at a .36 rate (Table 39). Stress release-solitude is inversely, though weakly, related to motorcyclist past participation, while the physical fitness motive is stronger in its negative relationship to participation.

The six individual motives predict 43% of the variance in motorcyclists recreation participation index scores. Unexpectedly, the single best motive predictor is the motorcyclists' motivation for nature study experiences. The more they wish to learn about the Rattlesnake the more likely they are to visit the Rattlesnake. Action-excitement experiences are the motorcyclists' second most influential individual motive. Motorcyclists' desires for physical fitness, stress release-solitude and nature experiences are all negatively related to their indexes of participation.

In predicting motorcyclists' future visits, the nature study and action-excitement motives account for 56% of variation in the number of future visits. The nature experience, stress release-solitude, and affiliation motives together add only an additional 1% to predicted participation variation.

Overall, motorcyclist participation rates are more accurately predicted by their six individual motives for recreation than are the hiker participation rates predicted.

Therefore, the hypothesis that hikers are more individually motivated in their recreation participation than motor-cyclists is not accepted. Motorcyclist participation is almost twice as predictable from their six individual motives than is hiker participation from their six individual motives.

CHAPTER VI

SUMMARY

It is possible to divide this study's findings into three parts. The first concerns the extraction of identifiable groups of individual and social group motives for visiting the Rattlesnake, and identification of several norms concerning appropriate recreation behaviors. The individual motives factored into six mathematically and conceptually useful motive dimensions (Table 27). These motive dimensions are labeled as the stress release-solitude, affiliation, nature experience, physical fitness, action-excitement and nature study motives. Motorcyclists rate themselves significantly higher than hikers do on the affiliation and action-excitement motives.

The reference group motive items factored on five possible motive dimensions (Table 30). A sixth reference group motive, action-excitement, was created from the three remaining unfactored items. The six social group motives are labeled as the affiliation, stress release-solitude, nature experience, physical fitness, nature study and action-excitement social group motives. The individual and social group motives emerged as useful instruments for classifying recreationists and for other types of study.

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The first normative factor, automobile travel, is
made up of the items automobile touring and camping with
car. This compares to the next factor, alternative travel
methods, made up of the activities of motorcycling, riding
horses and bicycling. The third normative factor made up
of the activities of viewing naturalist exhibits and
studying pioneer history is termed the 'outdoor education'
normative dimension. A fourth factor labeled 'extracting
animals' is comprised of hunting and fishing activities.
Normative factor five involves the well-recognized 'backcoun-
try recreation' activities of mountain climbing and backpack
camping. The final normative factor is made up of the
'consumptive activities' of picking wildflowers, cutting
firewood and target practice. Four activities, including
hiking, did not factor acceptably on any normative dimension.
The mathematical strength and conceptual unity of the
extracted factors indicate further development would be
useful.

The second part of this study uses the individual
motives, reference group motives and normative dimensions
to examine differences between Rattlesnake hikers and
motorcyclists. Motorcyclists differ significantly from
hikers on two of the six individual motives (affiliation and
action-excitement). On both of these motives motorcyclists
rate themselves higher than do hikers. For both hikers and
motorcyclists nature experiences are by far the most important

personal motivation for venturing into the Rattlesnake.
Motorcyclists rate four of their social associates' six
motives for visiting the Rattlesnake significantly
differently than do hikers. Stress release-solitude,
affiliation and action-excitement are given higher social
group motive ratings by motorcyclists than hikers.
Hikers' social group motive of physical fitness is the only
motive on which hikers rate their friends significantly
higher than do motorcyclists.

Hikers rate the appropriateness of 12 of 18 selected
recreation behaviors significantly different than motor-
cyclists do (Table 36). Of the 12 activities, hikers hold
more restrictive definitions as to their appropriateness
for 11 of the activities than do motorcyclists. Except for
the behavior described as getting physically tired, motor-
cyclists view the Rattlesnake as open to a greater variety
of activities than do hikers. The 11 behaviors that
motorcyclists find significantly more appropriate than do
hikers are automobile touring, motorcycling, cutting
Christmas trees, riding horses, bicycling, car camping,
mountain climbing, beer parties, hunting, fishing, and
target practice.

The third portion of the study utilizes four selected
normative items that appear to constrain some recreation
activities, with the six social group motives and later the
six individual motives in regression equations predicting

three measures of recreation participation. Separate
regressions were done for hikers and motorcyclists in
predicting their respective participation.

The four normative constraints predict from 17 to
19% of the variation in hiker participation rates. They
predict from 37 to 59% of motorcyclists variations on three
dependent measures of visitation to the Rattlesnake.

Controlling for the effect of normative constraints
on participation, the six social group motives predict 21%
of hikers past visits and 44% of the motorcyclists. Twenty-
four percent of the hikers' recreation participation index
score variance is attributable to these six social motives
compared to 47% of the motorcyclists. Exactly one-quarter
of hikers' intended visits to the Rattlesnake are predicted
by the six social group motives, while 53% of the future
motorcyclists visits are predictable.

Using the six individual motives in regression
equations produces similarly accurate predictions (Table 40).
The hikers' six individual motives predict 27% of the past
visitation, 29% of the recreation participation index and
27% of their intended visits. For motorcyclists, the six
individual motives predict 36% of the variance in past
visits, 43% of the recreation participation index and 57%
of the future visits (Table 40).

Table 40

Proportion of Participation Variance Predicted Using
Six Social Group Motives and Six Individual Motives
with Normative Constraints Controlled

Dependent Variable	Social Group Motives		Individual Motives	
	Hikers r	Motorcyclists r	Hikers r	Motorcyclists r
Past visits	.21	.44	.27	.36
Recreation participation index	.24	.47	.29	.43
Intended visits	.25	.53	.27	.57

DISCUSSION

The individual motives were easily extracted in the
factor analysis and were very similar to those hypothesized.
As is the case in several other studies in the western
United States the stress release motive fused with the
solitude motive (Schreyer et al., 1976; Nelson, 1976). The
six extracted individual motives are generally theoretically
and statistically sound. This is a useful expansion in
their application to the northern Rockies.

The social group motives scale is an adaptation of
the individual motives scale to measure recreationists'
perceptions of their preferred recreational associates'
motivations. This adaption overall appears to be rather

successful. Of the seven hypothesized motives for visiting

the Rattlesnake, five were extracted in the factor analysis,

while the sixth social group motive, solitude, fused with

the stress-release motive. The action-excitement motive

was not identified as a factor in this process but was mathe-

matically identifiable in that its three component items

all remained unfactored through successive iterations of

the factor analysis. With the possible exception of the

action-excitement motive, the five social group motives

represent useful social psychological variables for measuring

and categorizing recreationists. All six reference group

motives are useful in regression equations predicting

participation. It is expected that further refinement will

allow for widespread application of reference group motive

scales in recreation research and recreation planning efforts.

The normative definition scale proved to be useful

in differentiating recreation subgroups. The crying need

for measuring situational effects on behavior mandates

further development of a whole host of situation descriptors,

of which normative descriptors are only one portion. The

factor analysis of normative definitions revealed several

unified normative dimensions. While the six useful factors

display moderate reliability scores, extensive development

of normative definitions scales is strongly urged. The

widespread applicability of a scale measuring several

dimensions of humanly ascribed environmental characteristics is an important step in classifying environments as suggested by Fredrickson (1972). Recreational environments are critical components in the design and management of recreation areas, particularly in the assessment of settings capabilities to provide specific recreational experiences (Brown et al., 1978).

The individual motives scale shows hikers and motorcyclists differ on two of the scale's six motives: affiliation and action-excitement. Motorcyclists rated both of these motives significantly more importantly than did hikers, leading to the conclusion that motorcyclists are more gregarious as well as more adventurous in their recreation activities than Rattlesnake hikers. The overwhelming motivation for visiting the Rattlesnake is the desire to experience a natural setting offering scenic beauty and unaltered biological processes.

The social group motives did a much better job differentiating hikers and motorcyclists on the basis of motivational characteristics than did the individual motives. Hikers and motorcyclists differ on four of the six social group motives: stress release-solitude, affiliation, physical fitness and action-excitement. This scale appears to be a more idealized measure of social-psychological motives than the individual motives scale. It should be pointed out that the average scores on the six social group

motives are more extreme than the individual motives means (Tables 28 and 31). In classifying recreation visitors to the Rattlesnake on the basis of psychological motivations, the social group motives scale is somewhat more discriminating than the individual motives scale (Tables 32 and 33).

There are several sharp divisions in the behavioral norms ratings of hikers and motorcyclists. Generally hikers hold more restrictive definitions as to appropriate activities than do motorcyclists. This is particularly the case with the activity of motorcycling which is strongly resented by many of the hikers. Motorcyclists strongly support the appropriateness of their activity.

The final portion of this study attempts to predict hiker and motorcyclist participation while controlling for the effects of normative constraints. Other recreation researchers have obtained correlations between socio-demographic information and recreation participation of approximately .23 (Field and O'Leary, 1973). Field and O'Leary (1973) review socio-demographic recreation research and go on to say "Once nonparticipants are removed from the analysis the major source of variation is removed." This study compares two participant groups. In laboratory settings the correlations between attitudes and intended recreation behavior ranged from .42 to .65 (Ajzen and Fishbein, 1969). In a controlled consumer behavior experiment the average correlation of attitudes and norms to

behavioral intentions was .46 (Harrell and Bennett, 1974).
In this study, while controlling for normative constraints,
hiker behaviors have average correlations of .23 to their
social group motive scores regressions (Table 39). Hikers'
individual motives predict Rattlesnake visitation rates at
a .28 average correlation. The social group motives of
motorcyclists yield group motive to behavior prediction
correlations ranging from .53 to .44. The motorcyclists
individual motive behavior correlations range from .57 to
.36. This study's behavioral predictions are substantially
better than previous recreational research, yielding
correlation coefficients approaching those obtained in
highly structured laboratory studies.

Reviewing the recreation behavior model presented
in Figure 3 shows there are three major components
influencing recreational intentions and on site recreation
behavior. These are psychological characteristics, social
expectations and normative factors. Using this study's
measurements of all three components yields average predic-
tion correlations of .38 for hikers and .72 for motorcyclists
on the three dependent participation variables (Table 41).
This full battery of four normative constraint items, six
individual motives and six social group motives predicts 39%
the past participation of hikers, 39% of the recreation index,
and future intended visitation is predicted 36% of the time.
Using the full 16 independent variables of the model, 61% of

Table 41

Regression of Six Social Group Motives, Six Individual Motives and Four Normative Constraints on Participation

Norms and Motives	Multiple R	Multiple R^2	R^2 im-provement	Beta co-efficients	Dependent Variable
Hikers					
hunting	.18	.03	.031	-.165	Visits in the
viewing naturalist exhibits	.19	.04	.003	.023	past year
motorcycling	.19	.04	.002	.064	
picking wildflowers	.19	.04	.000	.047	
individual affiliation	.28	.08	.041	-.069	
individual stress release-solitude	.31	.10	.019	-.214	
individual nature experience	.32	.11	.007	-.251	
social group nature experience	.35	.12	.018	.262	
social group action-excitement	.37	.13	.011	-.236	
individual action-excitement	.38	.14	.007	.144	
social group stress release-solitude	.38	.15	.004	.112	
social group affiliation	.39	.15	.003	-.073	
social group physical fitness	.39	.15	.001	.099	
individual physical fitness	.39	.15	.002	.077	
social group nature study	.39	.15	.002	.085	
individual nature study	.39	.15	.002	.067	
Motorcyclists					
viewing naturalist exhibits	.34	.12	.115	.479	Visits in the
motorcycling	.36	.13	.017	.502	past year
picking wildflowers	.37	.14	.005	-.049	
hunting	.37	.14	.003	-.110	
social group physical fitness	.44	.19	.055	-.534	
social group action-excitement	.53	.28	.081	.131	
social group nature experience	.55	.30	.027	.349	

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Table 41 (Continued)

Norms and Motives	Multiple R	Multiple R^2	R^2 im-provement	Beta co-efficients	Dependent Variable
individual action-excitement	.58	.33	.021	.455	
social group stress release-solitude	.59	.35	.014	-.066	
individual nature study	.59	.35	.005	.121	
individual nature experience	.60	.36	.007	-.187	
individual physical fitness	.61	.37	.007	.122	
individual stress release-solitude	.61	.37	.005	-.164	
individual affiliation	.61	.37	.001	.105	
social group affiliation	.61	.37	.001	-.077	
individual nature study	.61	.37	.001	.093	
Hikers					
hunting	.11	.01	.012	-.110	Recreation
viewing naturalist exhibits	.15	.02	.009	.041	participation
motorcycling	.17	.03	.007	.086	index of past
pick wildflowers	.17	.03	.000	.022	and planned
individual affiliation	.31	.09	.065	-.154	visits to the
individual stress release-solitude	.32	.10	.008	-.110	Rattlesnake
social group physical fitness	.33	.11	.009	.138	
individual nature experience	.34	.12	.006	-.225	
social group nature experience	.36	.13	.012	.248	
social group action-excitement	.37	.14	.008	-.195	
individual action-excitement	.38	.15	.008	.129	
social group affiliation	.38	.15	.001	-.055	
individual physical fitness	.38	.15	.001	-.064	
social group nature study	.39	.15	.001	-.078	
individual nature study	.39	.15	.002	.075	

Table 41 (Continued)

Norms and Motives	Multiple R	Multiple R^2	R^2 improvement	Beta coefficients	Dependent Variable
Motorcyclists					
viewing naturalist exhibits	.43	.18	.183	.537	Recreation
hunting	.45	.20	.015	-.196	participation
motorcycling	.45	.21	.008	.396	index of past
picking wildflowers	.46	.21	.001	-.014	and future
individual nature study	.53	.29	.078	.189	visits to the
individual action-excitement	.57	.33	.043	.475	Rattlesnake
social group physical fitness	.62	.38	.054	-.502	
social group nature experience	.66	.44	.057	.346	
individual nature experience	.68	.46	.020	-.229	
social group action-excitement	.69	.47	.013	.238	
individual physical fitness	.69	.48	.009	.205	
social group nature study	.70	.49	.004	.097	
individual stress release-solitude	.70	.49	.004	-.153	
social group affiliation	.70	.49	.006	-.208	
individual affiliation	.71	.50	.003	.092	
Hikers					
viewing naturalist exhibits	.13	.02	.017	.071	Intended number of visits
motorcycling	.17	.03	.009	.047	ber of visits
hunting	.17	.03	.002	.041	in the coming
individual affiliation	.26	.07	.040	-.157	month
social group physical fitness	.32	.10	.032	.133	
individual nature study	.32	.10	.003	.069	
social group stress release-solitude	.33	.11	.003	-.107	
individual nature experience	.33	.11	.002	-.176	
social group nature experience	.34	.12	.007	.204	
picking wildflowers	.34	.12	.000	.021	

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Table 41 (Continued)

Norms and Motives	Multiple R	Multiple R^2	R^2 im-provement	Beta co-efficients	Dependent Variable
social group action-excitement	.35	.12	.004	-.113	
individual action-excitement	.35	.12	.004	.077	
individual stress release-solitude	.35	.12	.001	.060	
social group affiliation	.35	.13	.001	-.057	
individual physical fitness	.36	.13	.001	.046	
social group nature study	.36	.13	.000	-.015	
Motorcyclist					
motorcycling	.45	.21	.207	.182	Intended num-
viewing naturalist exhibits	.55	.30	.100	.487	ber of visits
hunting	.58	.33	.028	-.259	in the coming
picking wildflowers	.59	.35	.013	.026	month
individual nature study	.71	.50	.153	.248	
individual action-excitement	.74	.55	.055	.399	
social group physical fitness	.75	.57	.015	-.361	
social group action-excitement	.77	.59	.026	.317	
social group affiliation	.80	.64	.042	-.313	
social group nature experience	.81	.66	.019	.266	
individual physical fitness	.81	.66	.009	.265	
individual nature experience	.82	.68	.012	-.226	
social group nature study	.82	.68	.003	.054	
individual stress release-solitude	.82	.68	.001	-.095	
social group stress release-solitude	.82	.68	.001	.061	
individual affiliation	.83	.68	.001	.051	

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motorcyclists past participation, 71% of their recreation participation index and 83% of the future participation can be predicted (Tables 41 and 42). The full recreation behavior model using normative constraints, individual motives and social group motives is a sizable improvement over the partial model using normative constraints with either the social group motives or with the individual motives.

Table 42

Full Model Regression Correlations Using
Six Individual Motives and Six Social
Group Motives and Four Normative
Constraints on Three Dependent
Measures of Rattlesnake
Recreation Participation

Dependent Variables	Hikers	Motorcyclists
Past visits	.39	.61
Recreation participation index	.39	.71
Intended visits	.36	.83

There appear to be sizable differences between the rated importance of particular motives and the particular motives influence on recreation participation. For example, the nature experience motive is by far the most desired experience for the sampled Rattlesnake recreationists and their preferred recreation associates, but consistently has a low or even negative relationship to amount of participation. On the other hand, the action-excitement motive is

not an important motive overall but is one of the best
individual and social group motive predictors of motorcy-
clists participation. Thus simply because a particular
motive is important does not necessarily imply that the
motive strongly influences one's rate of participation.
Some motives, possibly nature experience and nature study,
are widely anticipated and their high performance in terms
of actually providing satisfactory experiences may have
little differential effect on participation. This could
serve to extend some of Graefe's (1977) conclusions that
motives differential effects on satisfaction does not
necessarily reflect their importance to the recreationist.
The motives that are highly important but have little
influence on participation rates might be termed baseline
motives, on which there are widely shared importance ratings.
Because most recreationists share these baseline motives
and these particular experiences are generally satisfactorily
provided, they do little to influence participation rates.
These primary motives for participation do not serve to
increase participation as they are strongly expected. How-
ever, if the baseline motives are not fulfilled they probably
will strongly decrease subsequent participation. Thus, it
may be that the secondary motives have a greater differential
effect overall on participation when primary motives are
satisfied.

This two factor theory of recreational motivational

effects on participation draws heavily from theories of
industrial psychology in which certain factors are thought
merely to be maintenance conditions which serve only to
decrease worker motivation but do not increase motivation
beyond an established baseline. To increase worker efforts,
a different set of psychological motivators must be
involved. These positive motivators serve to increase
efforts above the maintenance baseline. Similarly, it may
be hypothesized that the primary motives for recreation
participation may only be motivational baselines whose
underperformance serves only to dissatisfy and decrease
recreationist participation. The higher order motivators
serve to heighten recreation participation and therefore are
expected to have greater influence in predicting recreation
participation differences.

IMPLICATIONS

The 1962 Outdoor Recreation Resources Review Commis-
sion's report established guideposts on which the Bureau of
Outdoor Recreation has erected its requirements for Statewide
Comprehensive Outdoor Recreation Plans. Unfortunately,
these state recreation plans have done little to advance
recreation demand forecasting beyond its early 1960's
methodology. Continuing use of socio-demographic information
in the 1970's changing value systems is making increasingly
evident these methods many shortcomings. Outdoor recreation

planners have been tardy in tapping psychological and
sociological theories to develop broader, more humanistic
perspectives in their planning. This study taps only a few
dimensions of individual motives, social group motives
and normative constraints, yet achieves significantly better
results than much more statistically sophisticated socio-demo-
graphic planning efforts.

This study identified several individual and refer-
ence group motives thought to be linked to participation
rates in the Rattlesnake backcountry. Hikers show a negative
relationship between their motives for affiliation and their
rates of participation. Greater desires for stress release-
solitude result in lower levels of hiker visitation. Hikers
reference group motives for nature experiences are positively
related to participation while their individual nature
experience motives are negatively related. This suggests
that the importance of solitude, affiliation and nature
experiences to backcountry hikers probably has been over-
rated. Hikers have a far wider set of motivations than this
study could examine and, as a group, are more heterogeneous
in the degree to which particular motives influence their
behavior than are motorcyclists.

Motorcyclists in the Rattlesnake appear to be more
homogeneous having action-excitement as their most important
influence on participation. The more motorcyclists desire
thrilling types of experiences the more likely they are to

visit the Rattlesnake. However, the physical fitness motive
has an inverse relationship to participation for motor-
cyclists. The individual nature study motive is a signifi-
cant positive influence on motorcyclist participation in
contrast to their reference group nature study motives which
are negatively related to increases in participation. These
differences suggest that at times one's references group
values may conflict with one's own values and that in these
cases motorcyclists individual motives more strongly
influence their behavior than do their referents motives.

A third finding of this study is the differences the
two activity subgroups ascribe to the environmental character
of the Rattlesnake. Motorcyclists and hikers differ on
two-thirds of the eighteen normative activities examined.
This would suggest they hold significantly different value
systems which serve to strongly influence their perception
and evaluation of recreation behaviors and management
actions. It is also probably true that there are subgroups
within these two user groups that have their own unique set
of values and perspectives concerning use of the Rattlesnake.

A final point is the degree to which the full combin-
ation of individual motives, reference group motives and
normative appropriateness scales proved useful in predicting
hiker participation and the even greater accuracy they have
in predicting motorcyclist participation. Individual motives,
reference group motives and normative factor each provide

additional predictive accuracy beyond that provided by either of the other two model components. In this particular setting and with one particular subgroup, perhaps one component will be the most influential, but even in this case, the other two components provide additional predictive accuracy. In short, all three components used in this study are useful in recreation demand predictions.

APPENDIX A

SOCIAL GROUP MOTIVES SCALE

PART II

Group Experiences

Many visitors to the Rattlesnake go with a few close associates. Think of two or three people you would like to have with you when you visit the Rattlesnake. Please place the initials of the two of these persons here:

1) _____ 2) _____

These persons probably have a variety of reasons for visiting the Rattlesnake. Below is a list of reasons given by others. Please check how important you feel each of the following reasons would be to your friends listed above if they were visiting the Rattlesnake area:

11. My friends visit the Rattlesnake for the opportunity:	not at all important	slightly important	somewhat important	moderately important	very important	extremely important
to study nature	( )	( )	( )	( )	( )	( )
for the exercise	( )	( )	( )	( )	( )	( )
to be with people having similar values	( )	( )	( )	( )	( )	( )
for a rest from being too busy mentally	( )	( )	( )	( )	( )	( )
to find out more about natural settings	( )	( )	( )	( )	( )	( )
because it is stimulating and exciting	( )	( )	( )	( )	( )	( )
to take in the scenic beauty	( )	( )	( )	( )	( )	( )
because of the thrills	( )	( )	( )	( )	( )	( )
to get away from the demands of other people	( )	( )	( )	( )	( )	( )
to have a good time	( )	( )	( )	( )	( )	( )
to be close to nature	( )	( )	( )	( )	( )	( )
to do things with friends	( )	( )	( )	( )	( )	( )
to be in a natural setting	( )	( )	( )	( )	( )	( )
to be away from other people	( )	( )	( )	( )	( )	( )
to help get rid of some anxieties	( )	( )	( )	( )	( )	( )

to be with people who are enjoying

APPENDIX B

SAMPLE PLAN--RATTLESNAKE RECREATION STUDY

June and July 1978

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	19	20	21	22	23	24	25
8 a.m.			Lo			Lo[1]	Lo
12 a.m.				Hi	Hi		
4 p.m.						Hi[1]	Hi
	26	27	28	29	30	1	2
8 a.m.						Lo	
12 a.m.						Lo	
4 p.m.					Lo		
	3	4	5	6	7	8	9
8 a.m.	Lo						Lo
12 a.m.		Hi	Hi			Lo	Lo
4 p.m.				Lo			Hi
	10	11	12	13	14	15	16
8 a.m.		Lo					Lo
12 a.m.							
4 p.m.	Lo						Hi

Appendix B, continued

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	17	18	19	20	21	22	23
8 a.m.					Lo		
12 a.m.	Hi						
4 p.m.		Lo	Lo			Hi	
	24	25	26	27	28	29	30
8 a.m.				Lo			
12 a.m.						Lo	Lo[2]
4 p.m.						Hi	

[1]Saturday June 24 sample from 8-12 a.m. was shifted to 2-5 p.m. because of the Rattlesnake Marathon.

[2]Sunday, July 30 was not sampled as 319 questionnaires had been handed out and the supply was exhausted.

APPENDIX C

VISITOR PARTICIPATION REQUEST

Hello, I'm Mark Kelley from the University of Montana and we're working with the U.S. Forest Service and Montana Power trying to improve the quality of the Rattlesnake. We are asking selected Rattlesnake recreationists to take home, fill out and return this 10 minute questionnaire. Would you be willing to cooperate in our study?

Could we please have your name and address so we can provide you with another questionnaire if you cannot return this one?

Thank you for your cooperation.

APPENDIX D

University of Montana
Missoula, Montana 59812

SCHOOL OF FORESTRY

Dear Visitor:

As you may know, the School of Forestry at the University of Montana is cooperating with the Montana Power Company and U.S. Forest Service in a study of the Rattlesnake Watershed.

Our study involves a look at visitor use patterns -- where people go in the watershed and how many -- as well as an investigation of visitor attitudes and preferences for management. You have been randomly selected for participation in this study and we certainly appreciate your gracious cooperation.

Attached is a questionnaire which will take about 10-15 minutes to complete. Your responses will not only help us in our work, but may also be used in making overall decisions concerning the future of the Rattlesnake Watershed. Please be assured that your responses will be tabulated in such a manner that no one individual can be identified. After you have completed the questionnaire, enclose it in the postpaid envelope and drop in any convenient mailbox.

If you have any questions concerning this study, please contact us.

Sincerely,

Stephen F. McCool
Assistant Professor

Mark Kelly
Research Assistant

SFMc/cab
Enclosure

Equal Opportunity in Education and Employment

APPENDIX D
UNIVERSITY OF MONTANA

School of Forestry
Missoula, MT 59812

Rattlesnake Recreation Study

Please answer all questions as they relate to your most recent visit to the Rattlesnake watershed.

PART I
Describing Your Visit

1. Was this your first visit to the Rattlesnake watershed?

___ Yes (if yes, please go to Question 2)

___ No (if no, please answer the following)

a) In what year did you first visit the Rattlesnake? 19 ___

b) Including your recent visit about how many times have you visited the Rattlesnake?

___ 1-3   ___ 8-12

___ 4-7   ___ over 12

2. During your recent visit to the Rattlesnake, what type of group were you with?

___ alone   ___ club or organized group
                   (please give name or type) _____
___ family
                   ___ other (please describe) _____
___ friends

___ family & friends

3. About how many people were in your group including yourself?

___ 1-2   ___ 7-10

___ 3-4   ___ 11 or more

___ 5-6

4. Did you camp overnight in the Rattlesnake on this visit?

___ yes   ___ no

5. During your most recent visit what was your primary method of travel?

___ jogging/running   ___ horseback riding

___ walking/hiking   ___ bicycling

___ motorcycle   ___ other _____

6. Please check each of the following activities you participated in during your most recent visit to the Rattlesnake. Please check all the activities you participated in.

___ looking at rocks &   ___ camping   ___ playing games, sports
    geological formations
___ swimming   ___ hunting   ___ hiking and walking

___ rock climbing   ___ fishing   ___ photography

___ nature study   ___ relaxing   ___ watching wildlife

___ viewing scenery   ___ exploring   ___ other, please specify _____

7. During your last visit did you observe any wildlife?

___ no   ___ yes -- if yes, please list _____

8. About how many other people did you see during your most recent visit to the Rattlesnake?

___ none   ___ 11-20

___ 1-5   ___ 21-40

___ 6-10   ___ over 40

9. How do you feel about the number of people you saw?

____ far too few people   ____ somewhat too many

____ somewhat too few   ____ far too many

____ about the right number   ____ no opinion

10. During your recent visit to the Rattlesnake watershed what was your maximum trail distance from the entrance gate?

____ less than 1/4 mile   ____ 3-4 miles

____ 1/4-3/4 mile   ____ 5-7 miles

____ 1-2 miles   ____ over 7 miles

PART II
Group Experiences

Many visitors to the Rattlesnake go with a few close associates. Think of two or three people you would like to have with you when you visit the Rattlesnake. Please place the initials of the two of these persons here:

1) _____ 2) _____.

These persons probably have a variety of reasons for visiting the Rattlesnake. Below is a list of reasons given by others. Please check how important you feel each of the following reasons would be to your friends listed above if they were visiting the Rattlesnake area:

11. My friends visit the Rattlesnake for the opportunity:

	not at all important	slightly important	somewhat important	moderately important	very important	extremely important
to study nature	( )	( )	( )	( )	( )	( )
for the exercise	( )	( )	( )	( )	( )	( )
to be with people having similar values	( )	( )	( )	( )	( )	( )
for a rest from being too busy mentally	( )	( )	( )	( )	( )	( )
to find out more about natural settings	( )	( )	( )	( )	( )	( )
because it is stimulating and exciting	( )	( )	( )	( )	( )	( )
to take in the scenic beauty	( )	( )	( )	( )	( )	( )
because of the thrills	( )	( )	( )	( )	( )	( )
to get away from the demands of other people	( )	( )	( )	( )	( )	( )
to have a good time	( )	( )	( )	( )	( )	( )
to be close to nature	( )	( )	( )	( )	( )	( )
to do things with friends	( )	( )	( )	( )	( )	( )
to be in a natural setting	( )	( )	( )	( )	( )	( )
to be away from other people	( )	( )	( )	( )	( )	( )
to help get rid of some anxieties	( )	( )	( )	( )	( )	( )
to be with people who are enjoying themselves	( )	( )	( )	( )	( )	( )
to help keep physically fit	( )	( )	( )	( )	( )	( )

PART III
Your Opinion on Use and Management

12. The following is a list of recreational activities. Please indicate how appropriate or inappropriate you feel each of the following activities would be in the Rattlesnake.

	totally appropriate	generally appropriate	somewhat appropriate	appropriate only in a few limited areas	not at all appropriate
automobile touring	( )	( )	( )	( )	( )
getting physically tired	( )	( )	( )	( )	( )
viewing naturalist exhibits	( )	( )	( )	( )	( )
hiking	( )	( )	( )	( )	( )
motorcycling	( )	( )	( )	( )	( )
cutting Christmas trees	( )	( )	( )	( )	( )
riding horses	( )	( )	( )	( )	( )
studying pioneer history	( )	( )	( )	( )	( )
bicycling	( )	( )	( )	( )	( )
camping (with car)	( )	( )	( )	( )	( )
mountain climbing	( )	( )	( )	( )	( )
beer parties	( )	( )	( )	( )	( )

APPENDIX D

APPENDIX D

picking wildflowers	( )	( )	( )	( )	( )
camping (backpacking)	( )	( )	( )	( )	( )
hunting	( )	( )	( )	( )	( )
fishing	( )	( )	( )	( )	( )
cutting firewood	( )	( )	( )	( )	( )
target practice	( )	( )	( )	( )	( )

13. Below are four alternative facility development levels that could be provided in the Rattlesnake Creek valley beyond the junction with Spring Gulch. Would you please rank them from one through four, placing a "1" next to the option you favor most, a "2" next to your second choice, a "3" next to your third choice and a "4" next to the option you favor least.

_____ developed sites (running water, picnic tables, toilets and fire grates)

_____ no development, keep all areas as natural as possible

_____ primitive facilities (pit toilets and fire grates)

_____ cleared camping and picnic sites and no formal facilities.

14. How many times do you expect to visit the Rattlesnake during the coming month?

_____ none   _____ 8-12

_____ 1-3   _____ over 12

_____ 4-7

- -

PART IV
About Your Visit

15. Each person has many individual reasons for visiting the Rattlesnake. Below is a list of reasons given by recreationists for their visits. Try to recall how important each of the following reasons were to you in your most recent visit to the Rattlesnake area.

I visit the Rattlesnake for the opportunity:	not at all important	slightly important	somewhat important	moderately important	very important	extremely important
to observe the scenic beauty	( )	( )	( )	( )	( )	( )
so I can be with my friends	( )	( )	( )	( )	( )	( )
so I can take in some natural surroundings	( )	( )	( )	( )	( )	( )
to make a lot of noise	( )	( )	( )	( )	( )	( )
for the adventure	( )	( )	( )	( )	( )	( )
to improve my physical health	( )	( )	( )	( )	( )	( )
so I could do things with my companions	( )	( )	( )	( )	( )	( )
to enjoy the smells and sounds of nature	( )	( )	( )	( )	( )	( )
to get away from some of the expectations people have of me back home	( )	( )	( )	( )	( )	( )
to pick up litter left by others	( )	( )	( )	( )	( )	( )
to get away from other people	( )	( )	( )	( )	( )	( )
because something exciting is always happening here	( )	( )	( )	( )	( )	( )
to understand the world better	( )	( )	( )	( )	( )	( )
so my mind could move at a slower pace	( )	( )	( )	( )	( )	( )
to have fun	( )	( )	( )	( )	( )	( )
to learn more about nature	( )	( )	( )	( )	( )	( )
for the solitude	( )	( )	( )	( )	( )	( )
to help reduce or release some built-up tensions	( )	( )	( )	( )	( )	( )
to be with others who enjoy the same things I do	( )	( )	( )	( )	( )	( )
to help keep me in shape	( )	( )	( )	( )	( )	( )

16. Which of the following best describes your overall feeling of satisfaction about your recent visit to the Rattlesnake?

_____ terrible   _____ good

_____ poor   _____ very good

_____ fair   _____ exceptional

—

PART V
Background Information

Finally, we have a few questions about you personally which provide information usefun in management. Remember, you will not be identified with your answers, so please be frank.

17. What is your present age? ___ _____

18. Are you female?_____ male? ____ (check one)

19. What best describes the area in which you live?

_____ metropolitan area, over 250,000 people

_____ urban area, 25,000 to 250,000 people

_____ city, 10,000 to 25,000 people

_____ town under 10,000 people

_____ rural

20. What is the highest level of education you have completed so far? (circle one number)

1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   16+
        elementary   high school   college

21. What is your occupation? (Please indicate what kind of work you do, not for whom you work. If you are a homemaker, student, or retired, please so indicate.)

_____

_____

22. Do you have any additional comments or suggestions on how to improve the management of the Rattlesnake area? Any general comments?

_____

_____

_____

_____

_____

_____

PLEASE PLACE YOUR COMPLETED QUESTIONNAIRE IN THE STAMPED, SELF-ADDRESSED ENVELOPE PROVIDED AND DROP IN

ANY CONVENIENT MAILBOX.

THANK YOU FOR YOUR HELP.
School of Forestry
University of Montana

* *

APPENDIX   D

APPENDIX E

VISITOR REGISTRATION SHEET

Name and Address:	Age:	Sex:	Overnight Camp:
_____	_____yrs.	___M ___F	___Yes ___No
_____			
_____	**Group Size:**	**Group Type:**	
_____		___Family ___Club	
	_____	___Family & Friends ___Alone	
		___Friends ___Other	

Name and Address:	Age:	Sex:	Overnight Camp:
_____	_____yrs.	___M ___F	___Yes ___No
_____			
_____	**Group Size:**	**Group Type:**	
_____		___Family ___Club	
	_____	___Family & Friends ___Alone	
		___Friends ___Other	

Name and Address:	Age:	Sex:	Overnight Camp:
_____	_____yrs.	___M ___F	___Yes ___No
_____			
_____	**Group Size:**	**Group Type:**	
_____		___Family ___Club	
	_____	___Family & Friends ___Alone	
		___Friends ___Other	

Name and Address:	Age:	Sex:	Overnight Camp:
_____	_____yrs.	___M ___F	___Yes ___No
_____			
_____	**Group Size:**	**Group Type:**	
_____		___Family ___Club	
	_____	___Family & Friends ___Alone	
		___Friends ___Other	

APPENDIX F
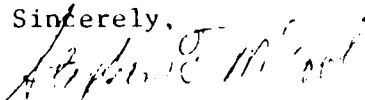
Reminder

Dear Rattlesnake Visitor:

Several days ago when you were leaving the Rattlesnake
watershed we contacted you and asked you to take home
a questionnaire concerning your reasons for visiting
the Rattlesnake and preferences for its management.
The success of the study and the quality of the resulting
management decisions depend on the complete response of
visitors like yourself.

We appreciate your cooperation in the study and look
forward to receiving your completed questionnaire soon.

Sincerely,

Stephen F. McCool
Assistant Professor

APPENDIX G

CORRELATION COEFFICIENT MATRIX OF INDIVIDUAL EXPERIENCE EXPECTATIONS

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
1.to observe the scenic beauty	1.00000	.15490	.64414	-.03769	.21937	.29088	.14845	.55721	.15936	.35909
2.so I can be with my friends	.15490	1.00000	.14035	-.01535	.16375	.12803	.78786	.10281	.13547	.12283
3.so I can take in some natural surroundings	.64414	.14036	1.00000	-.23027	.20578	.26443	.11287	.64725	.19214	.35008
4.to make a lot of noise	-.03769	-.01535	-.23027	1.00000	.07062	-.01089	.06296	-.13128	-.30	-.04944
5.for the adventure	.21937	.16375	.20578	.07062	1.00000	.26118	.20141	.21104	.27891	.36513
6.to improve my physical health	.29088	.12803	.26443	-.01089	.26118	1.00000	.21525	.29154	.23616	.21575
7.so I could do things with my companions	.14845	.78786	.11287	.06296	.20141	.21525	1.00000	.19091	.13359	.19145
8.to enjoy the sights and sounds of nature	.58721	.10281	.64725	-.13128	.21104	.29154	.19091	1.00000	.25173	.25257
9.to get away from some of the expectations people have of me back home	.15886	.13547	.19114	.08230	.27891	.23616	.19359	.25173	1.00000	.35695
10.to pick up litter left by others	.30909	.12283	.35088	-.04944	.36513	.21575	.19145	.25257	.35695	1.00000
11.to get away from other people	.23069	.10169	.24071	.00519	.30791	.33730	.15913	.26555	.5727	.30249
12.because something exciting is always happening here	.09842	.11905	.09877	-.01978	.41667	.12444	.18838	.15540	.25533	.31149
13.to understand the world better	.15920	-.10499	.24024	-.00417	.26439	.21595	-.07057	.27734	.23154	.34577
14.so my mind could move at a slower pace	.15134	.11474	.20817	-.00661	.11210	.25494	.12180	.29938	.49090	.24792
15.to have fun	.25528	.37764	.19949	.04521	.46382	.16035	.46265	.24044	.3917	.32695
16.to learn more about nature	.36402	-.01423	.41689	-.02962	.23264	.19548	.03900	.44298	.12777	.39584
17.for the solitude	.43714	.04193	.40310	-.04608	.26090	.21675	.05360	.47952	.30151	.32298
18.to help reduce or release some built-up tensions	.20997	.07906	.20945	.04385	.21388	.34212	.15642	.34332	.3379	.24221
19.to be with others who enjoy the same things I do	.11260	.64778	.16196	.01917	.16488	.13425	.70572	.17021	.15915	.15419
20.to help keep me in shape	.27908	.11601	.26089	-.02578	.13321	.82640	21811	.30544	.17694	.23789

	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18	Item 19	Item 20
1.to observe the scenic beauty	.23069	.09842	.15920	.15134	.25528	.36402	.43714	.20997	.11260	.27905
2.so I can be with my friends	.10169	.11905	-.10499	.11474	.37764	-.01423	.04193	07906	.64778	.11601
3.so I can take in some natural surroundings	.24071	.9877	.24024	.20817	.19949	.41689	.40310	.20945	.16196	.26099
4.to make a lot of noise	.00519	-.01978	-.00417	-.00661	.04521	-.02962	-.04508	.04385	.01917	-.02578
5.for the adventure	.30791	.41667	.26439	.11210	.46382	.23264	.26090	.21398	.16488	.13321
6.to improve my physical health	.33730	.12444	.21595	.25494	.16035	.19548	.21675	.34212	.13425	.82640
7.so I could do things with my companions	.5913	.18838	-.07057	.12180	.46285	.03900	.05360	.15642	.70572	.21811
8.to enjoy the sights and sounds of nature	.26555	.15540	.27734	.29938	.24044	.44298	.47952	.34332	.17021	.30544
9.to get away from some of the expectations people have of me back home	.57427	.25533	.23154	.49090	.34917	.12777	.30151	.53790	.15915	.17694
10.to pick up litter left by others	.30249	.31149	.34577	.24792	.32695	.39584	.32298	.24221	.15419	.23739
11.to get away from other people	1.00000	.31132	.33120	.50797	.32997	.21022	.47292	.57346	.14927	.31772
12.because something exciting is always happening here	.31132	1.00000	.46305	.18271	.43539	.34833	.27503	.24357	.13164	.14257
13.to understand the world better	.33120	.46305	1.00000	.38663	.11567	.49269	.35633	.40742	-.01809	.25167
14.so my mind could move at a slower pace	.50797	.18271	.38663	1.00000	.16602	.28593	.41375	.53369	.14682	.29749
15.to have fun	.32997	.43539	.11567	.16602	1.00000	.27703	.26520	.26956	.40339	.18984
16.to learn more about nature	.21022	.34833	.49269	.28593	.27703	1.0000	.38258	.23659	.07458	.24552
17.for the solitude	.47292	.27503	.35633	.41375	.26520	.38258	1.00000	.48202	.08624	.27505
18.to help reduce or release some built-up tensions	.57346	.24357	.40742	.55366	.26956	.28659	.48202	1.00000	.22775	.36997
19.to be with others who enjoy the same things I do	.14927	.13164	-.01809	.14682	.40339	.07458	.09624	.22775	1.00000	.15579
20.to help keep me in shape	.31772	.14257	.25167	.29749	.19084	.24552	.27505	.36997	.15579	1.00000

Determinant of correlation matrix = 0.0000716 (0.71561774E-04)

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INDIVIDUAL EXPERIENCE EXPECTATIONS ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
to observe the scenic beauty	.11913	.07523	.72248	.14539	.21100	-.02837
so I can be with my friends	.02923	.83113	.05545	.03314	.09936	-.06584
so I can take in some natural surroundings	.13519	.08052	.81436	.09768	.12706	.06682
to make a lot of noise	.05413	.01819	-.19915	.00253	.07819	-.03751
for the adventure	.13471	.09747	.08542	.09976	.65290	.10931
to improve my physical health	.18933	.07331	.14041	.92549	.14259	.01439
so I could do things with my companions	.05831	.90832	.02342	.12190	.16171	-.01700
to enjoy the sights and sounds of nature	.25579	.10759	.70194	.12572	.09469	.13520
to get away from some of the expectations people have of me back home	.69543	.10245	.02302	.04118	.29584	-.04120
to pick up litter left by others	.22247	.09337	.25425	.08990	.38616	.23406
to get away from other people	.69574	.04814	.08600	.16147	.27940	.06320
because something exciting is always happening here	.15411	.10218	-.02587	.01552	.52690	.45727
to understand the world better	.30389	-.13478	.13151	.11335	.17908	.66980
so my mind could move at a slower pace	.68148	.09190	.11055	.11131	-.05173	.24958
to have fun	.19476	.39821	.10221	.02161	.58537	.06864
to learn more about nature	.13179	-.00909	.42007	.07788	.22124	.52247
for the solitude	.45877	-.01306	.41566	.07130	.19435	.20615
to help reduce or release some built-up tensions	.72062	.09514	.10613	.18660	.07801	.20648
to be with others who enjoy the same things I do	.12736	.75755	.05807	.03661	.08614	.02200
to help keep me in shape	.20951	.11228	.17244	.80739	.02895	.14714

Factor	Eigenvalue	% of var	Cum %
1	5.50714	46.8	46.8
2	2.18835	18.6	65.3
3	1.40790	12.0	77.3
4	1.26486	10.7	88.0
5	0.87568	7.4	95.5
6	0.53420	4.5	100.0

Factor Matrix	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1	.57453	.30743	.45370	.33282	.41021	.30087
Factor 2	-.19365	.90525	-.23405	-.05824	.09966	-.27371
Factor 3	.52030	-.06996	-.78217	-.18905	.20667	.18480
Factor 4	-.12627	.02026	.27286	-.84541	.37121	.23806
Factor 5	-.58305	-.09939	-.22715	.36627	.55118	.40079
Factor 6	-.07631	.26613	-.03920	-.03493	-.58094	.76361

SOCIAL GROUP EXPERIENCE EXPECTATION CORRELATION COEFFICIENT MATRIX

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
1 to study nature	1.00000	.46881	.10883	.14715	.53877	.19936	.13569	.07477	.00443	-.09044
2 for the exercise	.46881	1.00000	.13031	.24807	.30490	.16794	.16327	.10649	.11337	-.02878
3 to be with people having similar values	.10883	.13031	1.00000	.27527	.31361	.32157	.19122	.22263	.18989	.21394
4 for a rest from being too busy mentally	.14715	.24807	.27527	1.00000	.24045	.22068	.24295	.27268	.49316	.24153
5 to find out more about natural settings	.53877	.30490	.31361	.24045	1.00000	.51602	.34755	.29888	.09241	.08468
6 because it is stimulating and exciting	.19936	.16794	.32157	.22068	.51602	1.00000	.40683	.47994	.16214	.32567
7 to take in the scenic beauty	.13569	.16327	.19122	.24295	.34755	.40683	1.00000	.19825	.23583	.23271
8 because of the thrills	.07477	.10649	.22263	.27268	.298888	.47994	.19825	1.00000	.45960	.41216
9 to get away from the demands of other people	.00443	.11337	.18989	.49316	.09241	.16214	.23583	.45960	1.00000	.43389
10 to have a good time	-.09044	-.02878	.21394	.24153	.08468	.32567	.23271	.41216	.43389	1.00000
11 to be close to nature	.18241	.18871	.13086	.13745	.39261	.42648	.47787	.34636	.31805	.39445
12 to do things with friends	-.10483	-.14190	.41770	.20180	.06334	.14280	.16679	.30966	.31036	.49649
13 to be in a natural setting	.22081	.30860	.21519	.14577	.35581	.28968	.42037	.23932	.19968	.24069
14 to be away from other people	.04768	.20461	.13831	.42314	.11940	.24898	.32444	.30884	.63880	.35088
15 to help get rid of some anxieties	.07350	.22645	.22966	.52030	.14972	.22814	.23671	.36981	.61882	.32910
16 to be with people who are enjoying themselves	.07974	.06702	.51777	.26349	.14199	.34433	.13207	.40050	.33802	.45833
17 to help keep physically fit	.25762	.70863	.15665	.22111	.26007	.18698	.21396	.15029	.17675	.00439

	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17
1 to study nature	.18241	-.10483	.22081	.04768	.07350	-.07974	.25762
2 for the exercise	.18871	-.14190	.30860	.20461	.22645	.06702	.70863
3 to be with people having similar values	.13086	.41770	.21519	.13831	.22965	.51777	.15665
4 for a rest from being too busy mentally	.13745	.20180	.14577	.42314	.52030	.26349	.22111
5 to find out more about natural settings	.39261	.06334	.35581	.11940	.14972	.14199	.26007
6 because it is stimulating and exciting	.42648	.14280	.28968	.24898	.22814	.34433	.18698
7 to take in the scenic beauty	.47787	.16679	.42037	.32444	.23671	.13207	.21396
8 because of the thrills	.34636	.30966	.23932	.30884	.36981	.40050	.15029
9 to get away from the demands of other people	.31805	.31086	.19968	.63880	.61882	.33802	.17675
10 to have a good time	.39445	.49649	.24069	.35088	.32910	.45833	.00439
11 to be close to nature	1.00000	.18055	.62770	.31767	.31383	.18328	.28042
12 to do things with friends	.18055	1.00000	.13845	.23844	.34843	.65419	-.00410
13 to be in a natural setting	.62770	.13845	1.00000	.27610	.20701	.18133	.31386
14 to be away from other people	.31767	.23844	.27610	1.00000	.59630	.26246	.17056
15 to heop get rid of some anxieties	.31383	.34843	.20701	.59630	1.00000	.43256	.37176
16 to be with people who are enjoying themselves	.18328	.65419	.18133	.26246	.43256	1.00000	.17143
17 to help keep physically fit	.28042	-.00410	.31385	.17056	.37176	.17143	1.00000

APPENDIX J

SOCIAL GROUP EXPERIENCE EXPECTATIONS ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
to study nature	-.11655	.01369	.08466	.33231	.53269
for the exercise	-.05536	.13220	.09559	.84083	.23459
to be with people having similar values	.55030	.09737	.04982	.10735	.26406
for a rest from being too busy mentally	.17033	.58110	-.00547	.15331	.21935
to find out more about natural settings	.11726	.04347	.28624	.13542	.83565
because it is stimulating and exciting	.29379	.14454	.38745	.01186	.45498
to take in the scenic beauty	.08753	.20675	.48239	.07104	.22689
because of the thrills	.33795	.36397	.27586	-.02741	.20843
to get away from the demands of other people	.17441	.81130	.17714	.00868	-.03107
to have a good time	.43772	.34296	.36313	-.15253	-.05591
to be close to nature	.08018	.17192	.86904	.09499	.12088
to do things with friends	.69990	.21812	.12335	-.12513	-.08079
to be in a natural setting	..0497	.08996	.62733	.24528	.14907
to be away from other people	.08760	.70854	.24578	.07424	.00902
to help get rid of some anxieties	.26983	.70619	.12961	.22590	.00715
to be with people who are enjoying themselves	.88068	.21172	.07487	.08883	-.00545
to help keep physically fit	.07306	.15137	.18299	.76358	.08773

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Factor	Eigenvalue	% of var	Cum %
1	4.88558	49.8	49.8
2	2.06263	21.0	70.9
3	1.22241	12.5	83.4
4	0.97679	10.0	93.3
5	0.65390	6.7	100.0

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	.47957	.59339	.50468	.26333	.30635
Factor 2	-.50185	-.29503	.20073	.60016	.51051
Factor 3	.32891	-.59871	.41279	-.47385	.37208
Factor 4	.60380	-.26110	-.60418	.39454	.21757
Factor 5	-.21307	.36635	-.41180	-.43710	.67805

APPENDIX K

CORRELATION COEFFICIENT MATRIX OF ACTIVITY NORMATIVE APPROPRIATENESS

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
1.automobile touring	1.00000	-.07762	.12297	-.19281	.20483	.29956	.18237	.18455	.13168	.47889
2.getting physically tired	-.07762	1.00000	-.01009	.05985	-.20049	.02896	-.03745	.04900	.04824	.01852
3.viewing naturalist exhibits	.12297	-.01009	1.00000	-.00902	-.05145	.05421	.04802	.40338	.20476	.11686
4.hiking	-.19281	.05985	-.00902	1.00000	-.08037	-.13763	.17941	.08407	.15603	-.34900
5.motorcycling	.20483	-.20049	-.05145	-.08037	1.00000	.21358	.29823	.00149	.27304	.16997
6 cutting christmas trees	.29956	.02896	.05421	-.13763	.21358	1.00000	.07239	.16332	.13190	.31670
7 riding horses	.18237	-.03745	.04802	.17941	.29823	.07239	1.00000	.24069	.45666	-.02717
8 studying pioneer history	.18455	.04900	.40338	.08407	.00149	.16332	.24069	1.00000	.35073	.10490
9 bicycling	.13168	.04824	.20476	.15603	.27304	.13190	.45666	.35073	1.00000	.05669
10 camping (with car)	.47889	.01852	.11686	-.34900	.16997	.31670	-.04717	.10490	.05669	1.00000
11 mountain climbing	-.03655	.09602	.02052	.21984	.14833	-.13713	.21345	.07543	.24566	-.11077
12 beer parties	.28923	-.07466	-.02586	-.09922	.36035	.36654	.13392	-.00348	.08231	.25823
13 picking wildflowers	.11948	-.02073	-.04914	-.01805	.05166	.04681	.19114	-.00585	.04100	-.00528
14 camping (backpacking)	-.12053	.00679	.09724	.22073	.02803	-.10682	.13719	.01547	.16683	-.02837
15 hunting	.21810	-.10535	-.05312	-.15822	.40324	.32047	.12398	.04417	.17810	.16657
16 fishing	.07182	-.00779	.05800	-.00757	.29304	.12688	.15949	.00325	.22167	.14232
17 cutting firewood	.32658	-.08838	.15134	-.08957	.14744	.25832	.20126	.13799	.06284	.14115
18 target practice	.25688	-.08445	-.11859	-.11078	.37337	.34397	.16594	-.03343	.12554	.11790

	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18
1 automobile touring	-.03655	.28923	.11948	-.12053	.21810	.07182	.32658	.25688
2.getting physically tired	.09602	-.07466	-.02073	.00679	-.10535	-.00779	-.08838	-.08445
3.viewing naturalist exhibits	.02052	-.02586	-.04914	.09724	-.05312	.05800	.15134	-.11859
4 hiking	.21984	-.09922	-.01805	.22073	-.15822	-.00757	-.08957	-.11078
5 motorcycling	.14833	.36035	.05165	.02803	.40324	.29304	.14744	.37337
6 cutting Christmas trees	-.13713	.36654	.04681	-.10682	.32047	.12688	.25832	.34397
7 riding horses	.21345	.13392	.19114	.13719	.12398	.15949	.20126	.16594
8 studying pioneer history	.07543	-.00348	-.00585	.01547	.04417	.00325	.13799	-.03343
9 bicycling	.24566	.08231	.04100	.16683	.17810	.22167	.06284	.12554
10 camping (with car)	-.11077	.25823	-.00528	-.02837	.16657	.14232	.14115	.11790
11 mountain climbing	1.00000	-.01686	.09952	.34600	.00739	.21816	.03568	.04256
12 beer parties	-.01686	1.00000	.08769	-.12204	.20142	.22726	.21398	.45185
13 picking wildflowers	.09952	.08769	1.00000	.07351	.15850	.09617	.19903	.24996
14 camping (backpacking)	.34600	-.12204	.07351	1.00000	.00941	.15219	-.05143	-.13788
15 hunting	.07739	.20142	.15850	.00941	1.00000	.45084	.16586	.44895
16 fishing	.21816	.22726	.9617	.15219	.45084	1.00000	.11028	.25275
17 cutting firewood	.03568	.21398	.19903	-.05143	.16586	.11028	1.00000	.29376
18 target practice	.04256	.45185	.24995	-.13788	.44895	.25275	.29376	1.00000

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APPENDIX L

ACTIVITY NORMATIVE APPROPRIATENESS ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
automobile touring	.46807	.23257	.20227	.04512	-.11304	.32617
getting physically tired	-.00414	-.09020	.06649	-.07652	.07956	-.07009
viewing naturalist exhibits	.10778	-.09569	.52209	-.02211	.06280	.02378
hiking	-.37065	.09124	.08635	-.13722	.29545	-.04380
motorcycling	.13532	.54756	-.06536	.36416	.08021	.06650
cutting Christmas trees	.28159	.24284	.15993	.24787	-.24512	.19920
riding horses	-.11865	.48713	.25544	.01646	.27593	.22264
studying pioneer history	.01261	.09157	.74050	-.00940	.00271	.04564
bicycling	-.04617	.45036	.44695	.15088	.29996	-.04831
camping (with car)	.90612	.06622	.10857	.08614	-.01493	-.01583
mountain climbing	-.11256	.12446	.03462	.04728	.57828	.09341
beer parties	.25978	.43367	-.08232	.17789	-.14378	.23947
picking wildflowers	-.02125	.03848	-.04578	.08963	.12304	.41968
camping (backpacking)	-.04252	-.06992	.05637	.05894	.58421	-.02725
hunting	.09658	.14978	.02606	.79279	-.04664	.16429
fishing	.10096	.15041	.01317	.51653	.27205	.07642
cutting firewood	.14998	.11452	.17282	.06683	-.05758	.53817
target practice	.08100	.39848	-.13804	.38848	-.15447	.44420

Factor	Eigenvalue	% of var	Cum %
1	2.99264	40.0	40.0
2	1.66190	22.2	62.3
3	1.21740	16.3	78.5
4	.69408	9.3	87.8
5	.49921	6.7	94.5
6	.41138	5.5	100.0

Factor Matrix	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1	.42616	.55427	.20723	.53501	-.01222	.42643
Factor 2	-.49978	.24423	.41782	.01400	.71797	-.01803
Factor 3	.44007	-.15348	.77268	-.40911	-.08577	-.10497
Factor 4	.52028	-.25237	-.18334	.32167	.53612	-.49103
Factor 5	.31960	.16157	-.37160	-.61557	.40669	.43513
Factor 6	-.04586	-.72095	.11727	.25260	.15556	.61349

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