

Socio-Psychological Model Integrated Evaluations of Forest Recreation Values^{1,*}

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통합된 산림휴양기능의 평가를 위한 사회 심리적 평가 모델의 개발과 응용^{1,*}

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ABSTRACT

The objectives of this study were to (a) describe and quantify the socio-psychological outcomes of forest recreationists, (b) to describe the setting attributes facilitating the outcomes, and (c) to identify which attributes were most important to visitors. During the spring of 1995, 426 visitors from the Worak-san National Park selected for this study.

This study identified nine resource attributes (physical, social and managerial), and twelve socio-psychological outcomes on the forest recreation values. This study also determined that a significant linear relationship exists between resource attributes and visitors' experience outcomes.

Use of information on the socio-psychological outcomes sought by recreationists is discussed. Such information would aid in the developing recreation inventory, selecting management tools and techniques, and in the differential economic valuation of recreation resources.

Key words: recreation values, setting attributes, socio-psychological outcomes.

요 약

본 연구는 산림 휴양객의 휴양경험에서 얻는 사회·심리적 이익을 규명하고 수량화 하며 또한 산림 휴양지의 각 속성들이 이들 휴양경험과 어떠한 관계를 갖는가를 알아보기 위하여 수행되었다. 426명의 월악산 국립공원 방문객을 대상으로 직접 설문에 의하여 1995년 5월과 6월에 걸쳐 자료가 수집되었다. 자료의 분석결과 9개의 자원 속성과 12개의 사회·심리적 휴양이익이 규명되었다. 또한 이들 자원 속성 변수와 휴양 이익간에는 큰 연관 관계를 가지고 있었다.

본 연구에서 얻은 결과는 휴양자원의 설계 및 관리에 큰 도움을 가져올 것으로 사료되며 특히 휴양 자원의 목록화, 관리 기법의 선택, 그리고 휴양자원의 가치 평가에 있어서 통합된 개념으로서의 가치를 인식하는데 큰 역할을 할 것이다.

INTRODUCTION

One of the basic but, critical problems in forest

recreation planning, management, and research is a lack of information of what is being benefitted by recreationists. Given the documentation available on forest recreation use, and the sizable

¹ 접수 1995년 7월 12일 Received on July 12, 1995.

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* 이 논문은 1994년도 한국학술진흥재단의 공모과제 연구비에 의하여 연구되었음

amount of time and money that individuals allocate to forest recreation, there must be sizeable personal and societal benefits from forest use. Little systematic research has focused directly on these benefits, however. Difficulty in defining values of benefits may be one of the causes for the lack of systematic research on forest recreation benefits. Driver (1990) argued that there has been considerable confusion about the difference between the separate research tasks of specifying the benefits and measuring the relative values of the benefits.

The value of benefits from forest recreation can be expressed in monetary and non monetary metrics. There might be a direct correspondence between the magnitude of benefit and its relative value and there may not be. Values of social and psychological benefits from forest recreation are difficult to convert into monetary values. However, almost all studies on forest recreation user mention these are the main benefits from forest recreation experiences. Driver (1972) stated that forest areas provide opportunities for coping with urban stress. He postulates that crowding, duty and responsibility in working and home environments contribute to the environmental stress felt in everyday urban living, and that forest experiences become an important means of temporary escape and recovery for people under stress. He reported that about 50 to 70 percent of forest recreationists generally mentioned 'peace and tranquility', 'get away from city', or 'from it all', and 'change from routine' as desired benefits for visiting forest recreation settings. Even though many studies used different terms such as 'solitude' (Hammit and Brown, 1984), 'get away from the crowds and congestion of the city' (Knopf, 1982), 'escape from routine, the familiar, and urban stress' (Hollender, 1977), all of these findings were highly consistent and seemed to support Driver's idea.

Therefore, identifying values – whether these can be readily converted into monetary unit or not – from forest recreation is a very important tool in resource planning and management. Previous research has shown that forest recreationists within a particular area can be classified or typed

based on their response to experience outcomes (Driver et. al., 1987; Hautaluoma and Brown, 1978). These different types of recreationists have different objectives for visiting to the same tracts of land. These different outcomes or benefits of experiences can be measured and quantified, and are important inputs for the recreational planning and management processes. Also, recreationists' benefits and types are important in the consumer analysis, demand analysis and priority ranking of demands.

Recreationists select specific environments and these selected environmental settings can influence which outcome or benefits are realized by the recreationists (Knopp, 1972; Shin, 1994). Previous studies have suggested that resource attributes can be measured and identified (Peterson, 1974; Manfredo et. al., 1978; Hendee et. al., 1968). Knowledge of how people perceive the resource and what resource attributes are important would be very useful to managers as a basis for inventory, planning, and management. It is important for understanding the interaction among the three types of attributes (physical, social and managerial) as well as interaction with the experience outcomes. The particular combinations of attributes that enhance the realization of benefits are important for practical as well as theoretical reasons. Practically, better understanding of recreation products can facilitate more effective and equitable management decisions. Managers can effectively employ their efforts in developing those attributes that most recreationists require for realizing their desired benefits. Theoretically, combinations of attributes in conjunction with experience outcomes give a more accurate description of the product of forest recreation.

Therefore, the objectives of this study are: (1) to describe and quantify the socio-psychological benefits of forest recreationists from a forest recreation setting; (2) to describe the setting of the dispersed recreation experience in terms of the physical, social, and managerial attributes in which the benefits can be realized; and (3) to identify which type of attribute is most important to the realization of benefits for recreationists.

METHODS

1. Study Area

The study area for this study is Worak-san National Park. The park was established in 1984 to protect a significant landscape of the area and to provide for recreational opportunities and nature appreciation. Worak-san is located approximately 83 km north-east of Seoul. The area of parkland encompasses some 286 km² of rugged mountains and valleys.

Worak-san National Park has a wide range of physical and social attributes. These varieties may explain the substantial variation in the response to forest to the recreationists—one of reasons for selecting this park. However, this study area is not entirely ideal.

2. Subjects

The population of this study consisted of visitors in Worak-san National Park. There were 426 respondents in this study: 66 percent were males and 34 percent were females. Most of them were categorized into 20s (63 percent) in age and highly educated (37 percent of them were university graduated).

3. Procedure

The questionnaire was administrated by trained assistants between May and June of 1995. The five-page questionnaires were distributed to the subjects at trail-heads. Contacts were initially screened to determine whether or not the visitor was on a recreation excursion. For those recreationists, such information as engaged-in activities, time and location of engagement, length of stay, previous experience, recreation experience relating to social, physical, and managerial attributes of the park, etc. were collected. The procedure for contacting visitors was to approach one member of each party. The sampling scheme for this study was stratified by contacting sites, weekday-weekend strata, and time strata throughout the day.

4. Instruments

The selection of experience outcome items was taken from a list of outcome scales developed by Driver and Brown (1975) and modified for this study. The outcome scale was initially obtained through "brain-storming" and literature review to identify domains or general themes of what people gained from their forest recreation experience. A panel experts evaluated whether each item of the original lists could be adapted to the respondents in this study. With screening processes, a set of outcome statements which comprehensively describe each of the domains from forest recreation experience was developed.

The outcome items were rated on a 5-point adds to—detract from scale in terms of what effect that item have on a Worak-san experience. A bi-polar scale which used in this study was strongly recommended by Fishbein and Ajzen (1975) for dealing with concepts of attitude.

The purpose of the attribute items on the questionnaire was to get respondents to indicate which of the attribute domains (social, physical, and managerial) was most important to them in the study area. Attribute items were also developed through "brain-storming" and review of literature (e.g., Kim, 1991, Shin, 1994) to identify domains of significant attributes. The attribute items were also rated on a 5-point adds to—detract from scale in terms of what effect that item have on a Worak-san experience.

RESULTS

1. Visitor Characteristics

Two sections of the questionnaire were used to collect data on visitor characteristics. Section I asked for demographic information from respondents, including age, sex, education, etc. Section II of the questionnaire asked for visitors' previous forest experience, visiting motivation to the study area, and activities in the study area, etc. Demographic and experience information in shown in Table 1.

Two-third (66%) of the respondents were male and 34 percent were female. Respondents to the questionnaire were mostly young and well-educat-

Table 1. Visitors Characteristics for Worak-san National Park

	Variables	Frequencies(%)
Sex:	Male	280 (66)
	Female	164 (34)
Age:	19 or less	36 (9)
	20 - 29	268 (63)
	30 - 39	58 (14)
	40 - 49	42 (10)
	50 - 59	16 (4)
	60 or more	6 (1)
Education:	Elementary Sch.	4 (1)
	Middle Sch.	20 (5)
	High Sch.	158 (37)
	Jr. Coll.	66 (15)
	Univ.	158 (37)
	Grad. or Prof. Degr.	12 (2)
Previous Forest Exp. (yrs):	1 - 2	222 (57)
	3 - 4	104 (27)
	5 or more	62 (16)
No. of Worak-san visited:	1	228 (54)
	2	92 (22)
	3	36 (9)
	4 or more	68 (16)
Days of staying in Worak-san:	1	212 (50)
	2	82 (20)
	3	104 (25)
	4 or more	22 (5)

Note : The number of respondents in each category may not add up to the total(N=426) because of missing data.

ed. The average level of education completed was 15 years, comparable to third year of university.

The Worak-san respondents were a novice group in forest recreation. Majority of respondents(57%) had 1 or 2 years of previous experience in forest recreation. The mean number of trips into Worak-san for respondents was 1.8 trips. Half of the respondents were day-users.

2. Socio-psychological Outcomes

ICLUST (Revelle, 1977) was used to identify types of Worak-san visitors based on their respondents to socio-psychological outcome. The ICLUST cluster analysis produced twelve out-

come clusters from the 43 outcome items on the questionnaire. These clusters were "Relationships with Nature/Scenery", "Exploration", "Learn about Nature", "Escape Pressure", "Autonomy/Achievement", "Skill/Learning", "Introspection", "Family Togetherness", "Being with Friends", "Meeting-Observing New People", "Risk Taking", and "Learning Others". Of the 43 scaled outcome items, 4 were not assigned to any clusters because each had a communality with the remaining items of less than 0.20.

Clusters in Table 2 are listed from highest to lowest in terms of the effect on respondents' experiences. Six clusters added to respondents' forest experience (mean scores higher than 3.60) with "Relationships with Nature/Scenery " adding the most (mean 4.14).

3. Important Setting Attributes

The purpose of the attribute items on the questionnaire was to get respondents to indicate which of the attribute types was most important to them in Worak-san environment. Attribute items were grouped together based on the 9 physical, social, and managerial categories obtained from the preliminary questionnaire. "Water related", "vegetation", "forest", "fish and wildlife", and "attractive topography" are included as physical attributes. "Conflicts" and "indirect evidence of others" are classified into social attributes. Domains of "facilities" and "information" are classified into managerial attributes. "Water related" had the highest domain scores, while information had the lowest domain scores. Reliability coefficients ranged from 1.00 for "fish and wildlife" to 0.59 for attractive topography attributes (see Table 3).

Multiple regression identified the resource attributes which are predictive of each socio-psychological outcome for the study area. Table 4 shows each outcome, its predictor attribute(s), multiple R, and R square. Only the attributes which are significantly ($\geq .0005$) predictive of an outcome are reported. Table 4 shows there is a significant linear relationship between nine outcomes and one or more resource attributes. The amount of R square ranges from 0.03 for introspection to 0.17 for relationships with nature.

Table 2. Socio-psychological outcome clusters, outcome item means, and cluster reliabilites(N=422)

Outcome Cluste	Mean ^a (S.D.)	Cluster Reliability
RELATIONSHIPS WITH NATURE/SCENERY	4.14	0.52
enjoying the sound and smells of nature	4.18 (0.79)	
viewing the scenic beauty	4.13 (0.86)	
viewing the scenery	4.10 (0.77)	
ESCAPE PRESSURE	3.95	0.70
being away from the noise	4.17 (0.85)	
giving your mind a rest	4.11 (0.79)	
getting away from the usual demands	4.09 (0.92)	
tranquility	3.73 (0.98)	
releasing tensions	3.66 (1.01)	
LEARNING ABOUT NATURE	3.87	0.62
being close to nature	4.04 (0.91)	
learning more about nature	3.88 (0.79)	
study nature	3.68 (0.89)	
EXPLORATION	3.85	0.47
having a chance from daily routine	3.98 (0.91)	
experience new and different things	3.71 (0.94)	
INTROSPECTION	3.79	0.66
thinking about your personal values	3.90 (0.92)	
thinking about good times you had	3.76 (0.89)	
thinking about what you are	3.70 (0.93)	
AUTONOMY/ACHIEVEMENT	3.64	0.71
feeling your independence	3.75 (0.86)	
gaining a sense of self-confidence	3.70 (0.96)	
being free to make your own choice	3.63 (0.97)	
learning what you are capable of	3.48 (0.99)	
FAMILY TOGETHERNESS	3.79	0.70
doing something with family	3.35 (1.14)	
bringing the family closer together	3.31 (1.20)	
MEETING-OBSERVING NEW PEOPLE	3.51	0.48
being near others who could help	3.55 (0.99)	
observing other people	3.49 (1.00)	
talking to new and varied people	3.48 (0.96)	
BEING WITH FRIENDS	3.39	0.53
being with friends	3.75 (0.91)	
being with others who enjoying the same things you do	3.67 (0.95)	
sharing what you have learned with others	3.31 (0.90)	
teaching your outdoor skills to others	2.83 (1.11)	
SKILLS/LEARNING	3.19	0.66
experiencing excitement	3.52 (1.08)	
testing your abilities	3.32 (1.05)	
developing skill and abilities	3.18 (0.97)	
testing and using your equipmentq	2.73 (1.06)	
LEADING OTHERS	3.28	0.37
helping direct the activities of others	3.38 (0.99)	
showing others you could do it	3.18 (0.99)	
RISK TAKING	3.26	0.59
taking risks	3.27 (1.01)	
changing dangerous situations	3.25 (1.02)	

^a A 5-point scale was used where 5 equaled most strongly added to experience outcome and 1 equaled least strongly added to outcome.

Table 3. Resource attribute domains and items described by mean score and reliability

Resource Attribute Domains and Items	Mean ^a (S.D.)	Reliability
WATER RELATED	4.03	0.62
stream	4.23 (0.77)	
clean water	4.20 (0.89)	
drinkable water	3.66 (1.10)	
FOREST	3.85	0.64
natural forest	4.00 (0.90)	
evergreen forest	3.47 (1.05)	
managed forest	3.65 (0.99)	
ATTRACTIVE TOPOGRAPHY	3.76	0.59
panoramic vistas	3.83 (1.06)	
rugged terrain	3.76 (1.08)	
rock slides	3.69 (1.13)	
INDIRECT EVIDENCE OTHERS	3.22	0.85
litter along the trail	3.37 (1.15)	
litter at campsites	3.16 (1.01)	
noise	2.99 (1.14)	
VEGETATION	3.19	0.70
wild flower	3.47 (1.05)	
edible plant	3.13 (1.09)	
medicinal herbs	2.98 (1.11)	
FISH AND WILDLIFE	3.18	1.00
appearance of wildlife	3.25 (1.13)	
fish	3.11 (1.17)	
CONFLICTS	3.11	0.78
crowdings in stream	3.76 (1.09)	
crowdings in the trails	3.16 (1.13)	
campsites that are close together	2.94 (1.13)	
INFORMATION	2.89	0.73
directional signs	3.11 (0.97)	
kindness of rangers	2.81 (1.10)	
maps and booklet	2.74 (0.97)	
FACILITIES	2.79	0.83
campsite	2.96 (1.00)	
lodging	2.85 (0.96)	
toilets	2.84 (1.00)	
garbage cans	2.73 (0.99)	

Six outcomes have 0.10 or more of their R square, while the remaining three outcomes have less than 0.05 of their R square. From R square of 0.17 for "Relationships with nature", it can be explained that 17% of the variability in the respondent socio-psychological outcome of relationships with nature by knowing attribute of "forest".

"Attractive topography" is a predictor variable

for four outcomes, and "forest" and "conflict" for two outcomes, while "vegetation", "indirect evidence of others", and "information" are predictor variables for one outcome.

Three of the socio-psychological outcomes are not resource dependent. These include "escape pressure", "family togetherness", and "leading others". These outcomes might be dependent on other (unknown) attributes.

Table 4. Significant (0.0005) multiple regression analysis results relating resource attributes (predictor variables) to socio-psychological outcomes (criterion variables)

Socio-psychological Outcomes	Resource Attributes	Multiple R	R Square	F Values
Relationships with Nature	Forest	0.415	0.172	86.138
Exploration	Forest Attractive Topography	0.400	0.160	39.412
Learning about Nature	Vegetation	0.357	0.128	60.531
Escape Pressure	—	—	—	n.s.
Autonomy/ Achievement	Attractive Topography	0.395	0.156	76.736
SKills/ Learning	Attractive Topography	0.362	0.131	62.398
Introspection	Conflicts Indirect evidence others	0.191	0.036	7.731
Family Togetherness	—	—	—	n.s.
Being with Friends	Conflicts	0.224	0.050	21.786
Meeting New People	Information	0.236	0.056	24.162
Risk Taking	Attractive Topography	0.345	0.119	65.083
Leading Others	—	—	—	n.s.

CONCLUSION AND IMPLICATIONS

This study identifies twelve socio-psychological outcomes from Worak-san experience and nine resource attributes, and has determined that several of the resource attributes are significantly related to the experience outcomes. Managers must be able to define the recreational opportunities available on their lands so that they will know what is being produced. Knowing what adds to users' recreation experiences enables to manager to plan for and provide those features that add to satisfaction (Wennegren and Johnston, 1977). The attributes mean scores also could guide the weight or importance attached to each attribute. That is, the water related, forest, and attractive topography might have larger weights than the facilities and information attributes because they

contribute more to the recreation experience.

Recreation managers could utilize the resource attributes to develop a visitor information package. A map or maps of an area might be developed indicating where each of the attributes are prevalent. Recreation visitors might also utilize resource attribute information to decide where to recreate. One visitor might focus on the water related attribute in his decision while another visitor might focus on attractive topography attribute.

To facilitate recreation resource assessment and inventory, recreational experience outcome and setting attributes have been defined as the major variables (Driver and Brown, 1977). Inventories undertaken to determine where and how to meet user desires can be aided by knowing specifically what the outcome represent. Different sets of outcomes require that different physical, social,

or managerial characteristics of the environment be examined in inventories. Recreation managers might utilize outcome and recreation experience information in selecting the management tools and or techniques of implementation which will achieve the management objectives set for an area. Recreation managers might be guided in their selection of management tools and or techniques of implementation by being aware of the socio-psychological outcomes.

Economic valuation is an old problem which might be aided by knowledge of the socio-psychological outcomes which visitors obtain. This includes relating economic valuation techniques (e.g., willingness-to-pay) to different experiences, defining recreation experience in different settings. In the case of resource valuation, economists have captured use of the values. However, most of outcomes identified in this study hardly convert into monetary units. If the resource is truly valued, the non-monetary measure of values from the resource are needed for purposes different from those of the economic efficiency analysis. In turn, the non-economic measure will improve the economic measures by enhancing the consumers' utility appraisals, for example (Driver, 1986).

The basic and most important implication of this study is that it has helped to define and specify the recreation means and the recreation end. That is, a recreation opportunity is the opportunity for a person to engage in a recreation activity within a specific environmental setting (recreation means) to realize a predictable recreation experience (recreation end). Considerable research is still needed to apply this conceptualization in planning and management. More representative samples need to be selected than the one used in this study. It is also needed a greater array of socio-psychological outcomes might be examined.

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