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# Diverse Challenges of Our Times: People, Products, Places

Edited by
Ingrid E. Schneider
Deborah Chavez
Bill Borrie
and
Katherine James

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# The Mediating Effects of Values on the Relationship between Outdoor Recreation Participation and Pro-environmental Behavior[1]

**Alan D. Bright**
353 Ramsey Center
Department of Recreation and Leisure Studies
University of Georgia
Athens, GA 30602-6555
abright@coe.uga.edu
**Susan C. Barro**
North Central Research Station, U.S. Department of Agriculture Forest Service

## Abstract

Environmental awareness has increased in the past two decades. One factor believed to influence this awareness is outdoor recreation participation. We examined whether participation in outdoor recreation predicts pro-environmental behavior and whether environmental values mediate the relationship. A survey of residents of Washington state measured (a) participation in outdoor recreation, (b) environmental values, and (c) pro-environmental behavior. Factor analysis of recreation activities resulted in the following four "types": "resource-utilization" activities, "nature-appreciation" activities, "backcountry-adventure" activities and "technology-dependent" activities. Participation in "resource-utilization" activities had a significant, negative relationship to pro-environmental behavior, while "nature-appreciation" and "backcountry-adventure" activities had significant positive relationships with pro-environmental behavior. Participation in "technology-dependent" activities was not related to pro-environmental behavior. The relationship of participation in "resource-utilization" activities and "backcountry-adventure" activities with pro-environmental behavior were mediated by environmental values. This suggests that participation in these activities may help form environmental values. The relationship between participation in "nature-appreciation" activities and pro-environmental behavior was maintained while controlling for environmental values indicating effects beyond that contributed by environmental values. Finally, some outdoor activities may not tap into broader environmental values. Such may be the case with "technology-dependent" activities which were not related to pro-environmental behavior. The relationship between outdoor recreation participation and pro-environmental behaviors appears complex. Information on people's levels of involvement and their motivations for participating may improve our understanding of this relationship.

## Introduction

In the mid-1960s, environmental quality emerged as a major social problem in our society. Peaking with the first Earth Day in 1970, environmental concern saw a decline during the 1970s. Since then, public concern for the environment has increased, reaching unprecedented levels in the 1990s (Dunlap, 1992). In 1990, 40 percent of American households contained someone who had either donated to or was active in a group that worked to protect the environment; up from 15 percent in 1987. At the beginning of the 1990s, about three-quarters of the public considered themselves environmentalists (Gallup & Newport, 1990). This trend has continued, as evidenced by a variety of studies which have consistently reported that at least 70 percent of the public perceives themselves as environmentalists (Kempton, Boster, & Hartley, 1995). In addition to public-opinion polls on the environment, information on trends in legislation and on individual decisions in the marketplace support the contention that environmentalism is increasing. In a review of voting records of U.S. House of Representatives from 1971–1989, Hays (1992) found increasing pro-environmental votes, suggesting a persistent incremental change in social, economic, and political forces surrounding public perceptions of the environment. The public illustrates an increased environmental awareness in its market decisions. After media reports of the negative effects of chlorofluorocarbon aerosol propellants on the ozone layer, there was a 50 percent drop in market share of products packaged in spray cans using these propellants (Benedick, 1991). Evidence suggests a change in the

1 This research was conducted through funding (cooperative agreement #23-97-35-RJVA) by the U.S. Department of Agriculture Forest Service North Central Research Station.

way Americans conceive of the environment, going beyond responses on opinion polls to behavior (Kempton et al., 1995).

## Outdoor Recreation and Environmental Concern

It has often been suggested that an important factor in the increased public awareness of environmental issues is the growth of outdoor recreation that has occurred since World War II. Outdoor recreation is also fast becoming the primary connection that Americans have to the natural environment as the country is increasingly urbanized. Participation in outdoor recreation may have implications for a conservation ethic in that involvement in outdoor recreation activities creates an awareness of environmental problems by (a) exposing people to specific instances of environmental degradation in locations that they recreate, and subsequently (b) increasing their concern about such degradation on a broader scale. While this relationship appears to make intuitive sense, research results have been mixed. Dunlap and Heffernan (1975) found that the relationship between involvement in outdoor recreation and environmental attitudes depended on the type of activity; that is, participating in appreciative activities led to higher environmental concern than participation in consumptive activities. Other research, however, has tested the Dunlap and Heffernan hypotheses and found only moderate or weak correlation between outdoor activity and environmental concern (Van Liere & Noe, 1981; Geisler, Martinson, & Wilkening, 1977; Jackson, 1987; Pinhey & Grimes, 1979; Theodori, Luloff, & Willits, 1998). Given these results, it is apparent that the connection between outdoor recreation participation and environmental concern is more complex than originally thought. We suggest that a more realistic relationship between outdoor recreation and environmental concern is the extent to which participation results in the practice of certain environmental behaviors. This study examined the connection between outdoor recreation participation and pro-environmental behavior and the potential mediating effects of environmental concern (measured as environmental values) on that relationship.

## Methods

A mail-back questionnaire was sent to a stratified, random sample of 2000 Washington-state residents and measured (a) participation in outdoor recreation activities, (b) environmental values using the new environmental paradigm (NEP) (Dunlap & Van Liere, 1978), and (c) engagement in pro-environmental behavior. Given that less than one-fifth of the U.S. population over 16 years old participate in hunting (7%) or fishing (19%) (Statistical Abstract of the United States, 1994) sampling was conducted to insure a large enough response from individuals participating in those activities.

To ensure that an adequate number of consumptive recreationists were included in the study, we randomly selected names and addresses of 1,000 residents who had purchased a hunting or fishing license. Access to these licenses was provided by the Washington Fish and Game Department. In addition, a random sample of 1,000 names and addresses of the general public was selected to identify a broader range of both wildlife-related and non-wildlife–related recreation participation. Care was taken to insure individuals were not drawn in both groups. Follow-up tests determined if nonrespondents differed from respondents in outdoor recreation participation.

Factor analysis on the NEP items identified two dimensions of environmental values: *environmental concern* and *human dominion.* Factor analysis on the recreation activities revealed four dimensions of outdoor recreation activity participation: *resource-utilization* including hunting, fishing, and ORV use; *technology-dependent* including bicycling, mountain-biking, downhill skiing/snowboarding, motorboating, and water-skiing; *nature-appreciation,* including hiking, photography, auto sightseeing, and wildlife viewing; and *backcountry-adventure* including rock and ice climbing, mountaineering, and backpacking.

Pro-environmental behaviors we asked about included recycling, contributing money to environmental groups, avoiding buying foods with chemicals, avoiding aerosol spray cans, volunteering for an environmental group, buying organically grown produce, buying products made of recycled materials, voting for an environmental candidate or referendum, not littering, avoiding buying products from companies that pollute, reducing the use of plastic products, and writing letters to the editor about environmental issues. To determine the frequency of engagement in these behaviors, respondents evaluated each behavior on a 5-point scale and the

adjectives "never," "rarely," "sometimes," "usually," or "always," The mean score for environmental behaviors was used in further analyses.

Mediation analysis (Baron & Kenny, 1986) was used to evaluate how environmental values affected the relationship between participation in the four recreation activity types and pro-environmental behavior. Mediation occurred when the mediating variable (environmental values) accounted for all or most of the relationship between the predictor (outdoor recreation activity) and criterion variables (pro-environmental behavior).

## Results

Of the 2,000 questionnaires mailed, 364 were nondeliverable and 900 were completed and returned (55% return rate). Telephone contact of 50 individuals who did not return the questionnaire found no significant differences in outdoor recreation participation between respondents and nonrespondents.

Table 1 provides the results of regression and subsequent mediation analysis for each of the four recreation activity types. In mediation analysis 1 the relationship between "resource-utilization" activities, pro-environmental behavior, and environmental values was examined. A significant but negative relationship was found between participation in "resource-utilization" activities and pro-environmental behavior ($B = -.074$, $p < .05$). This relationship was mediated by the *human dominion* dimension of environmental values ($B = -.254$, $p < .001$). This is shown by the decrease in the relationship of "resource-utilization" activities on environmental behavior from $B = -.074$ to a statistically insignificant $B = -.033$ (p = .210). No relationship was found between participation in "technology-dependent" outdoor recreation activities and pro-environmental behavior ($B = .040$, $p = .235$), making further mediation analysis unnecessary (shown in mediation analysis 2).

**Table 1. Mediating effects of environmental values on the relationship between activity type and environmental behavior**

| | | Mediation Regressions | |
|---|---|---|---|
| | Regression 1[1] | Regression 2[2] | Regression 3[3] |
| Mediation Analysis 1 | | | |
| Activity Type: | | | |
| Resource Utilization | -.074* | | -.033 |
| Environmental Values: | | | |
| Human Dominion | | .071* | -.254*** |
| Environmental Concern | | .038 | N/A |
| Mediation Analysis 2 | | | |
| Activity Type: | | | |
| Technology-dependent | -.040[4] | | |
| Environmental Values: | | | |
| Human Dominion | | | |
| Environmental Concern | | | |
| Mediation Analysis 3 | | | |
| Activity Type: | | | |
| Nature-appreciation | .253*** | | .195*** |
| Environmental Values: | | | |
| Human Dominion | | -.103** | -.147*** |
| Environmental Concern | | 110** | 360*** |
| Mediation Analysis 4 | | | |
| Activity Type: | | | |
| Backcountry-adventure | .103** | | -.030 |
| Environmental Values: | | | |
| Human Dominion | | -.051 | N/A |
| Environmental Concern | | 140** | 417*** |

[1]Regression 1 regresses environmental behavior on the activity type to determine if there is a significant relationship between them.

[2]Regression 2 regresses the activity type on the environmental value variables to determine if there is a significant relationship between them.

[3]Regression 3 regresses environmental behavior on activity type and environmental values to determine if including the environmental values causes the relationship between activity type and environmental behavior to reach or approach insignificance. If so, mediation has occurred.

[4] Since no significant relationship existed between equipment-oriented activities and environmental behavior, no additional mediation analyses was conducted.

* p < .05, ** p < .01, *** p < .001.

*Note*: For all mediation analyses, outdoor recreation activity was the predictor variable, environmental behavior was the criterion variable, and the environmental values were the mediating variables.

A positive significant relationship was found between participation in "nature-appreciation" and pro-environmental behavior ($B = .253, p < .001$) in the third mediation analysis. This relationship continued to be significant ($B = .195, p < .001$) even when environmental values were controlled for, indicating the relationship between activity and environmental behavior went beyond the measures of values included in this study.

The fourth mediation analysis found a positive significant relationship between participation in "backcountry-adventure" activities and pro-environmental behavior ($B = .103, p < .05$) that was mediated ($B = -.030, p = .346$) by the *environmental concern* dimension of environmental values ($B = .417, p < .001$).

## Discussion

Although much work has explored the relationship between outdoor recreation and pro-environmental behavior, little research has examined the mediating effects of the values people hold regarding the environment on this relationship. Results of this study suggested environmental values, in certain cases, mediate the relationship between recreation participation and environmental behavior. We observed different "scenarios" in our study with respect to these three variables. First, the classic mediation effect occurred with participation in "resource-utilization" activities and with "backcountry-adventure" activities. In both cases a significant relationship between participation and pro-environmental behaviors became insignificant when measures of environmental values were added to the model. This suggests, albeit empirically, that these types of activities might be important in forming environmental values. A second scenario occurred with participation in "nature-appreciation" activities. In this instance, environmental values did not mediate the positive relationship between participation and pro-environmental behaviors. Here we surmise certain types of outdoor recreation participation may provide information about an individual's environmental behavior beyond influencing basic environmental values. Finally, in the case of "technology-dependent" activities, no relationship with pro-environmental behavior was observed suggesting that some outdoor activities may not tap into broader environmental values. Given the diversity of mediating relationships between outdoor recreation participation, environmental values, and pro-environmental behavior, the issue is likely more complex than simply connecting outdoor activities to environmental behavior as has been done in previous research. Factors like involvement with activities and motivations for outdoor recreation participation may provide more information about how and why outdoor recreation participation influences environmental attitudes and behavior.

## References

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51* (6), 1173–1182.

Benedick, R. E. (1991). *Ozone diplomacy: New directions in safeguarding the planet.* Cambridge, MA: Harvard University Press.

Dunlap, R. E. (1992). Trends in public opinion toward environmental issues: 1965–1990. In R. E. Dunlap & A. G. Mertig (Eds.), *American environmentalism: The U.S. environmental movement, 1970–1990* (pp. 89–116). Washington D.C.: Taylor & Francis.

Dunlap, R. E., & Heffernan, R. B. (1975). Outdoor recreation and environmental concern: An empirical examination. *Rural Sociology, 40* (1), 18–30.

Dunlap, R. E., & Van Liere, K. D. (1978). The new environmental paradigm. *The Journal of Environmental Education, 9,* 10–19.

Gallup, G., Jr., & Newport, F. (1990, April). Americans strongly in tune with the purpose of Earth Day 1990. *Gallup Poll Monthly,* No. 295, pp. 5–14.

Geisler, C. C., Martinson, O. B., & Wilkening, E. A. (1977). Outdoor recreation and environmental concern: A restudy. *Rural Sociology, 42* (2), 241–249.

Hays, S. P. (1992). Environmental political culture and environmental political development: An analysis of legislative voting, 1971–1989. *Environmental History Review, 16* (2), 1–22.

Jackson, E. L. (1987). Outdoor recreation participation and views on resource development and preservation. *Leisure Sciences, 9,* 235–250.

Kempton, W., Boster, J. S., & Hartley, J. A. (1995). *Environmental values in American culture.* Cambridge, MA: The MIT Press.

Pinhey, T. K., & Grimes, M. D. (1979). Outdoor recreation and environmental concern: A reexamination of the Dunlap-Heffernan thesis. *Leisure Sciences, 2* (1), 1–11.

Statistical Abstract of the United States. (1994). [On-line]. Available: http://www.census.gov/prod/www/statistical-abstract-us.html.

Theodori, G. L., Luloff, A. E., & Willits, F. E. (1998). The association of outdoor recreation and environmental concern: Reexamining the Dunlap-Heffernan thesis. *Rural Sociology, 63* (1), 94–108.

Van Liere, K. D., & Noe, F. P. (1981). Outdoor recreation and environmental attitudes: Further examination of the Dunlap-Heffernan thesis. *Rural Sociology, 46* (3), 505–513.