

# “The social psychology of outdoor recreation lifestyles: dimensions, determinants, and implications”

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## The social psychology of outdoor recreation lifestyles: dimensions, determinants, and implications

### Abstract

This paper examines the degree to which diverse outdoor recreation activities cohere into lifestyles with strong correlations among the activities within a lifestyle, examines the linkage of these activities to values about different features of the recreational environment and to other social and economic variables, and draws out the implications of the linkages for the potential benefits to different groups to be gained by ecosystem management. The methods include factor analysis to determine the grouping of outdoor recreational activities and regression analysis to examine the sources of participation in these activities. Data are from a representative sample of Nevadans in 2005.

**Keywords:** outdoor recreation, environmental attitudes, recreation lifestyles, recreation repertoires, public lands management strategies, visual outdoor recreational life style, interactive outdoor recreation lifestyle, valuing wildlife habitat.

**JEL Classification:** Q00, Q50, Q26.

### Introduction

Participation in outdoor recreation is a near-universal in American society, with, for example, 97% of American adults participating in at least one outdoor activity in 2000 (Cordell and Betz, 2002). Naturally, some people take part much more often than others, and some become expert in a single activity whereas others take part in various combinations of activities. In many cases, we are still just beginning to understand the degree of organization of activities. This paper will show that outdoor recreational activities in the Nevada cohere into two primary lifestyles – an interactively oriented recreational lifestyle (IORL) and a visually oriented recreational lifestyle (VORL). The interactively oriented recreational lifestyle involves vigorous interplay of self in nature through hunting, fishing, riding ATVs, camping and kindred pursuits. The visually oriented recreational lifestyle involves wildlife viewing, photography, aesthetic appreciation of nature and recreations related to these. Interestingly, these are independent rather than conflicting. Although they are clearly distinct, a substantial number of people engage in both with the key intersection being that people participating in either lifestyle deeply value wildlife habitat.

Thus, the central question this research addresses is to what extent there is internal structure among outdoor recreational activities. In other words, are recreational pursuits like a smorgasbord, with each possibility taken up or ignored as a thing in itself, or do they cohere into organized lifestyles, with people taking part in clusters of activities? And if there are lifestyles, does adopting one preclude others, or are they largely independent? These are basic sociologi-

cal questions with the emergence of modernity being seen by some key theorists as presaging the world of social life as a preference-driven buffet – lots of options with little structure and few determinants or consequences (Hakim, 1998; Simmel, 1972) and by others as entailing new ways of life in which particular sets of leisure activities are closely linked with each other and with other elements of a specific social segment's "habitus", with these ways of life being highly distinct across social segments and closely involved with the quest for status (Bourdieu, 1984; Veblen, 1967).

Outdoor recreation is of particular interest as a site for testing these theories because of its contrast with the office-based or factory-based worklife of most of the population of modern societies. Existing sociological research on recreation has provided rich ethnographies of specific leisure pursuits, but has neglected to examine the degree to which social subgroups tend to pursue clusters of activities – leisure lifestyles rather than random collections of leisure activities<sup>1</sup>. An influential hypothesis, the recreational specialization hypothesis, suggests that people tend to shift from being recreational generalists as young adults into being expert in a single recreation as they age<sup>2</sup>, but the evidence is mixed and the possibility of specializing into clusters of recreations has not been examined. Economists tend to categorize outdoor recreation into "consumptive" and "non-consumptive" (sometimes called "appreciative") uses (e.g. Englin, Lambert, and Shaw, 1997; Rollins and Dumitras, 2005), and this catego-

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<sup>1</sup> Researchers have examined the degree to which different outdoor recreations are substitutes (Baumgartner and Heberlein, 1981). That is distinct from the lifestyles concept, because several activities that constitute an outdoor recreational *lifestyle* will often be engaged in together or during the same trip (e.g. horseback riding through the mountains to a camp where one stays while hunting).

<sup>2</sup> Alternatively, some researchers also use the term simply to describe the degree of engagement in a recreational activity, without any implications for a recreational career (Sorice, Oh, and Ditton, 2009).

rization is sometimes used in other disciplines, as well (Li, Zinn, Barro and Manfredo, 2003). This classification is useful for examining effects on the natural resources involved in outdoor recreation rather than for examining the social organization of outdoor recreation activities. By contrast, those concerned with public lands management tend to speak of “user groups” although there is no consensus on how to define them (Dorwart, Moore, and Leung, 2010; Mann and Leahy, 2009). Thus, prior research has largely neglected to examine the social coherence of outdoor recreational activities.

This paper contributes towards filling that gap by exploring the extent of crystallization of outdoor recreational lifestyles – the degree to which activities are linked by participation. For example, are hikers also campers, quad-riders, nature photographers, etc.? In this approach, the connection among the activities is the persons who participate in them, an approach explored in prior research on the related concept of leisure “repertoires” (Iso-Ahola, Jackson, and Dunn, 1994; Mobily, Lemke, and Gisin, 1991). That research laid the foundation for the lifestyles approach, but, in contrast to the lifestyles approach<sup>1</sup>, the criteria for defining a “repertoire” were never clearly established, although there is valuable progress examining the degree to which the quality of the recreation experience depends on solitude vs sociality as an axis of differentiation among outdoor recreational pursuits (Rollins, Dumitras, and Castledine, 2008).

This paper has two purposes. First, it examines the question of the degree to which people’s participation in outdoor recreation activities forms coherent lifestyles in a particular context – the Great Basin of the American West – where a large majority of the land is publicly owned, and multiple-use including recreation has been mandated for several decades. Hence there are fewer constraints on participation than in many other settings, although distances can be great. Second, the paper examines the degree to which these recreational lifestyles are differentiated by social class, by cultural contrasts between newcomers and traditional residents of the region, and by social-psychological differences in the aspects of nature that different groups value. For these purposes, we use survey data on a representative sample of Nevadans. Results on the first issue concerning the coherence of outdoor recreation lifestyles have theoretical implications for larger questions about the interconnectedness of social roles in modern life and

they have practical implications for the definition of stakeholder groups for policies concerning public land use. Results on the second issue have theoretical implications for social scientists’ perennial concerns about (1) the strength of connection between ascription, production, and consumption and (2) the strength of the linkages between values and behaviors. Results on this second issue also have practical implications for understanding the potential social impacts of changing public lands policies.

## 1. Prior research and hypotheses

**1.1. Dimensionality.** Early research on recreation posited a single dimension of value orientations about nature – with human use values at one extreme and, at the other, environmental protection – but more recent research suggests that these are actually distinct dimensions and that, in particular, a substantial number of people see nature BOTH as having entitlement to stewardship/protection AND as having its highest purpose in serving human ends (Champ, Williams, and Knotek, 2009). Similarly, older literature imagined a strong opposition between environmental attitudes and ranching because of some organized environmental groups opposition to ranching, but research shows that in the general population, people who hold pro-environmental attitudes tend also to support ranching (Evans and Kelley, 2013).

Could there be an analogous distinction in activities between those which emphasize the experience of self-acting-vigorously-in-nature which we might term the interactive outdoor recreation lifestyle (hereafter IORL) and those which emphasize the esthetic, visual pleasures of nature, the visually-oriented outdoor recreation lifestyle (hereafter, VORL)? An exploratory study of hunting suggests so, with a factor analysis revealing that hunting clusters strongly with other physically engaged pursuits and is separate from a group of visually-oriented pursuits (Pettis, 2009). This makes sense, because a good deal of prior research notes that many hunters are also fishers (e.g. U.S. Department of the Interior, 1999). In Nevada itself, there are signs that hunting<sup>2</sup>, fishing, and camping have been components of a vigorous interactive outdoor lifestyle at least since the 1930s (Nevada Writers’ Project of the Work Projects Administration, 1940b).

We would not go so far as to argue that all outdoor recreation activities are involved in one or the other dimension. It seems reasonable to expect instead that many, but not all outdoor recreational activities belong to either the IORL or VORL (latent dimen-

<sup>1</sup> Researchers have also pioneered the study of the degree to which favored site characteristics of destinations are “bundled”, an approach which is statistically akin to the factor analysis approach used here, albeit with a substantive focus on the site rather than activity (Pendleton and Shonkwiler, 2001).

<sup>2</sup> Big game species hunted in Nevada include native mule deer, big horn sheep, antelope, mountain lion, and imported elk. The elk thrived ever since two train-carloads were imported and loosed in White Pine county in 1932 (Nevada Writers’ Project of the Work Projects Administration, 1940a).

sions), with a scattering of specialized pursuits that are separate from both lifestyles and from each other. In short, we are positing that outdoor recreation does not fit neatly into either theoretical extreme: Neither do individuals choose at random among recreations (the strong form of the individualization/atomization thesis) nor does one choice dictate an individual's other choices (the strong form of the "habitus" thesis). Instead, we would like to suggest a "third way", with some activities belonging to linked lifestyles and others not. Note that our approach does not assume lifestyle conflict. Participating in one outdoor recreational lifestyle is not expected to preclude participation in other outdoor recreational activities. Let us state these expectations more formally.

**H1:** Assessment of patterns of participation in outdoor recreation activities by factor analysis will reveal two separate dimensions: "interactive activities" and "visually-oriented activities" with a scattering of unrelated activities. Participation in IORL activities and VORL activities will be different dimensions rather than opposite ends of one dimension: Involvement in one set of recreational activities is neutral with respect to the other. There will be people who engage in one, but not the other; people who engage in both; and people who engage in neither<sup>1</sup>.

**1.2. Determinants.** Our hypotheses concern the separate contributions of a variety of social and cultural influences, so they all concern net effects (other influences held constant). For brevity's sake, we will not repeat this for each hypothesis.

*Duration of residence.* There has been huge migration into this region (Albrecht, 2008; Brown, Glasgow, Kulcsar, Bolender, and Arguillas, 2008; Hammer, Radeloff, Fried, and Stewart, 2007; Hunter, Boardman, and Saint Onge, 2005; Johnson and Cromartie, 2006; Saint Onge, Hunter, and Boardman, 2007), although it is not clear to what degree this has engendered cultural conflicts (Clendenning, Field, and Kapp, 2005; Krannich and Smith, 1998; Robbins, Meehan, Gosnell and Gilbertz, 2009; Winkler, Field, Luloff, Krannich, and Williams, 2007), in part because kin and social network ties seem to be important selectivity factors (Glasgow and Brown, 2006). Because socialization into hunting and fishing takes part largely through kin networks (O'Leary, Behrens-Tepper, McGuire, and Dottavio, 1987), it seems plausible that the IORL is likely to be part of a local heritage (Medin, Fox, and Cox, 2006, p. 163) hence long-term residents parti-

cipate in them more (Clendenning, Field, and Kapp, 2005). By contrast, the VORL does not require local knowledge or the kinds of physical skills that are likely to be transmitted through family and social network (Peterson, Mertig, and Liu, 2007), so we anticipate that duration of residence in Nevada will not have a significant effect on participation in VORL.

Accordingly we will posit that:

**H2:** Long-term residents will participate more in IORL than otherwise comparable short-term residents.

**H3:** Long-term residents and short-term residents will participate equally in VORL activities.

*Ranching.* Ranchers are directly, physically involved with their local landscapes (Sheridanm, 2007; Starrsm, 1998), so it seems likely that they will be more likely to participate in the IORL. By contrast, there is no prior reason for expecting ranchers to be either more inclined (or less inclined) than otherwise similar non-ranchers to take part in the VORL.

**H4:** Ranchers will participate more in the IORL than otherwise comparable non-ranchers.

**H5:** Ranchers and non-ranchers will participate equally in the VORL.

*Working in tourism.* Tourism is a very mixed sector in the West, ranging from traditional activities like hunting and camping and gambling to train touring to ecotourism, with tourism entrepreneurs including both local families looking to expand their income sources or potentially seeking ways to work from home (and migrants looking for a way to support themselves near the amenities of their dreams (Jobes, 2000; Johnson and Rasker, 1995).

**H6:** Working in tourism will not significantly influence participation in the IORL.

**H7:** Working in tourism will not significantly influence participation in the VORL.

*Rurality.* Environmental concern is stronger, ecology more of a priority, and pro-environmental behaviors tend to be more common among rural residents (Freudenburg, 1991; Huddart-Kennedy, Beckley, McFarlane, and Nadeau, 2009)<sup>2</sup>, although some researches find null effects (Sharp and Adua, 2009) and urban and rural residents are equally supportive of traditional rural ways of life such as ranching (Evans and Kelley, 2013). Hence it seems likely that the strength of motivation to participate in outdoor recreation is likely to be neutral with

<sup>1</sup> This is similar to the multidimensional approach which has been shown to be a good representation of high culture. Two major dimensions with a few activities that aren't part of either. For high culture these are a reading-centered scholarly culture and an arts-consumption culture centered around attendance at art galleries, theaters, concerts, etc (e.g., Kelley and Evans, 2000).

<sup>2</sup> Recent research finds that other community characteristics also influence environmental attitudes (Hamilton, Colocousis, and Duncan, 2010), but we cannot explore such factors here because an IRB requirement for the original data collection was not collecting geographic information.

respect to rurality or to be stronger among rural residents. Opportunity also somewhat favors rural residents, but not strongly. For example, the Humboldt-Toiyabe National Forest borders most of Reno's western edge and Reno borders a mix of private and BLM-managed land to the east: no Reno resident is more than 20 minutes' drive from public forest or range-land. The other major city included in our sample, Las Vegas, also offers broad access to publicly-owned unsettled lands. Accordingly, it seems likely that rural and urban residents will participate equally often in the VORL. Insofar as the IORL involves local knowledge and skills transmitted within networks (Burch, 1969), rural residents will participate more. Prior research finds rural residents more likely to engage in big game hunting (Cordell and Betz, 2002). Note that in the intermountain West, rurality does not necessarily indicate long term residence, with non-metropolitan areas experiencing especially rapid population growth (Robbins, Meehan, Gosnell, and Gilbertz, 2009).

**H8:** Rural dwellers will participate more in the IORL than otherwise comparable urban residents.

**H9:** Rural and urban residents will be equally likely to participate in the VORL.

*Gender.* Prior research finds that women participate less in outdoor recreation (Shores, Scott, and Floyd, 2007; Snepenger and Ditton, 1985), but it seems likely that this will differ by the type of activity. Women are less keen on lethal wildlife control (Dougherty, Fulton, and Anderson, 2003), and are less likely to participate in hunting (Pettis, 2009). Accordingly, it seems likely that we will observe a substantial difference in participation in the IORL but not in the VORL.

**H10:** Women will participate less in the IORL than otherwise comparable men.

**H11:** Women and men will participate equally in the VORL.

*Age.* Older people do less outdoor recreation in general (Shores, Scott, and Floyd, 2007); a finding echoed in research on hunters over age 50 which finds that age has a negative effect on participation in other forms of outdoor recreation (Li, Zinn, Barro, and Manfredo, 2003). Similarly, older Nevada residents are less likely to hunt than are otherwise comparable younger people (Pettis, 2009). A description of age gradients for different outdoor recreation activities suggests declining participation with age for interactive recreations but not visually-oriented ones (Cordell and Betz, 2002). Accordingly, we anticipate that:

**H12:** Older people will participate significantly less in the IORL than their younger peers.

**H13:** Young and old adults will participate equally in visually-oriented recreational activities.

*Education.* Highly educated people participate more than their less educated peers in many recreational activities (Godbey, 1994). For example, education has a positive effect on "non-consumptive" activities among senior hunters (Li, Zinn, Barro, and Manfredo, 2003). But this may not be true of all activities. For example, education has a negative correlation with hunting in Nevada (Pettis, 2009). Thus, prior research suggests that education is likely to have a negative effect on IORL participation and a positive effect on VORL activity.

**H14:** Highly educated people will participate less in IORL activities than their less educated peers.

**H15:** Highly educated people will participate more in VORL activities than their less educated peers.

*Income.* Income should not matter to VORL activities because nearby opportunities are available to all Nevadans and many VORL activities are not costly. Income may have an enabling effect on IORL activities – in most instances, specially purchased gear is required, and distances can be long for some fishing and hunting purposes. A description of income gradients for different outdoor recreation activities suggests increasing participation with income for recreations requiring purchased equipment or travel but not others (Cordell and Betz, 2002).

**H16:** High income people will participate more in IORL activities than their less prosperous peers.

**H17:** High income people will participate in VORL activities to the same degree as their less prosperous peers.

*Values.* Prior research suggests that many public wildlands user groups value natural beauty, although it has not yet examined how these values compare to non-users (Dorwart, Moore, and Leung, 2010; Mann and Leahy, 2009). Prior research raises the possibility of subcultural differences shaping outdoor recreation practices (Li, Zinn, Barro, and Manfredo, 2003). For example, prior research generally finds that people who hold more pro-environment attitudes and who are more concerned about ecology are more frequent participants in outdoor recreation than are their peers who are otherwise similar, but less environment-oriented (e.g. Dunlap and Heffernan, 1975; Jackson, 1986; Sharp and Adua, 2009; Tarrant and Green, 1999; Theodori, Luloff, and Willits, 1998; Van Liere and Noe, 1981). Moreover, research has discovered more complexity than scholars had originally supposed, with some pro-environment attitudes affecting a variety of outdoor recreation activities similarly, but other attitudes having different effects on different recreation activities (Bjerke, Thrane, and Kleiven, 2006).

Following up on the complexity theme, we suggest that valuing different aspects of the environment may have different consequences. More specifically, scenic beauties are widely appreciated, but it seems likely that people who especially cherish them will be moved to take the opportunity to experience and appreciate them by engaging in VORL activities, but that cherishing scenic beauties will have no significant effect on IORL participation. On the other hand, valuing the landscape as wildlife habitat seems likely to motivate participation in both IORL and VORL activities.

**H18:** Valuing scenic beauties of rangelands will not have a significant effect on participation in IORL activities.

**H19:** The more people value scenic beauties of rangelands, the more they will participate in VORL activities.

**H20:** The more people value the wildlife habitat aspect of rangelands, the more they will do IORL activities.

**H21:** The more people value the wildlife habitat aspect of rangelands, the more they will participate in VORL activities.

## 2. Data, measurement, and methods

**2.1. Data.** Our analysis uses “Nevada’s Rangeland Vegetation: Public Opinion, 2005” (Rollins, 2005), a survey of a representative statewide sample ( $N = 576$ ; 30% response rate) which collected data on outdoor recreational practices and on the subjective importance that people accord to different wildland features (e.g. scenic beauty) as well as a good array of social and demographic variables. Survey development and sampling procedures are detailed in Rollins, Castledine, Swanson, Evans, McAdoo, Schultz, Havercamp, and Wilson (2007). The survey was conducted by mail with fieldwork following the standard Dillman methodology (Dillman, 2000).

**2.2. Scoring and missing data treatment of measured variables.** Variable definitions and scoring are given in Appendix, Table 1.

Missing data were replaced with the item mean for quantitative or Likert items, or by 0 for checklist items and “how often...” items, because our debriefing of respondents suggests that respondents who do not engage in an activity at all often skip the question rather than answering “never” or “no”. Substitution of a likely value (the mean for most variables) preserves cases for the multivariate analysis, thereby increasing the precision of the estimates and allows us to take advantage of all the non-missing information each respondent provided. Exploratory analysis showed that the data are essen-

tially missing at random (Evans and Rollins, 2012), so each respondent who had missing data on one or two of the independent variables in the analysis provided information on the many other variables and their relationships. Coding the missing data to the mean or to another likely value allows us to incorporate all that information into the analysis.

**2.3. Assessing whether measured variables represent underlying concepts.** In the classic measurement model, the measured variables that represent a single underlying concept (also called an underlying variable or a “true variable”) need to have high correlations with each other, to have similar correlations with criterion variables (e.g. all the candidate items might have near-zero correlations with age, correlations in the 0.2 to 0.3 range with duration of residence, etc.), and to have high loadings on one factor and low loadings on any other factors. In an exploratory factor analysis of these and other items (Bollen, 1989; Evans and Kelley, 2004; Treiman, 2009) these criteria are met. We assess below whether sets of the variables in this dataset meet the classic measurement model requirements to be measures of the concepts (also called underlying or “true” variables) interactive outdoor recreation lifestyle and visually-oriented outdoor recreation life style. Because (as shown below) the variables do meet these requirements, we use them to construct multiple-item scales representing these two concepts. The scale construction method used here is to take the mean of the candidate items, so for each respondent, their value on the IORL scale is the average of their answers on hunting, fishing, quadding, camping, and target shooting. Similarly, their value on the VORL scale is the mean of their answers on sightseeing, wildlife viewing, and hiking.

**2.4. Additional methods.** We begin with descriptive statistics, developing a context for the analysis by examining the means on how often Nevadans engage in these different forms of recreation. Next we assess linkages among forms of recreation by examining correlations. For each form of recreation, the correlations show to what degree participating in that form of recreation is associated with participating in each of the other forms of recreation. The correlation analysis, as will be seen, suggests that there are two multi-recreation lifestyles, IORL and VORL, and several independent recreations that do not belong entirely to either of those. We then assess the degree to which recreational activities cohere into IORL and VORL by factor analysis, as discussed above. A similar strategy has been used to examine “high culture” recreational lifestyles and has found that instead of the single lifestyle that was

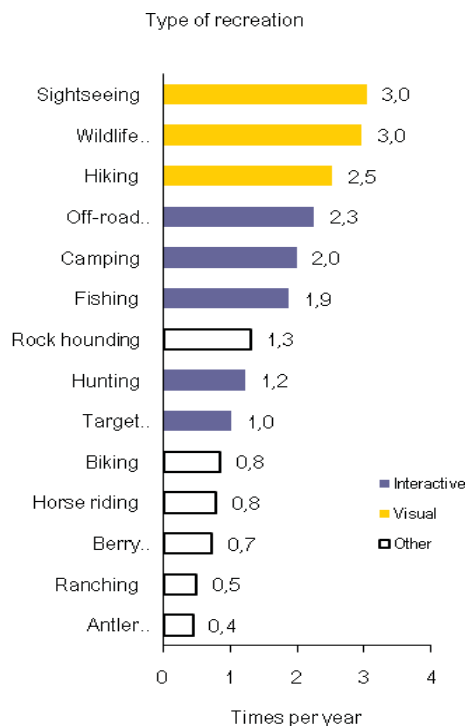
posited by prior research, there are actually two – a scholarly culture lifestyle centered on reading and related cognitive pursuits and an arts spectatorship lifestyle centered on attendance at public arts venues and events such as art galleries, theater, plays, opera, concerts, etc. (Crook, 1997; de Graaf, 1986; Kelley and Evans, 2000).

To assess the social differentiation of these outdoor recreation lifestyles, we use ordinary least squares regressions predicting the degree of participation in these lifestyles from the independent variables discussed above in the section above presenting the hypotheses. We present and discuss both the metric (raw) and the standardized (beta) regression coefficients from models predicting each of the outdoor recreation lifestyles and also from models predicting participation in several ungrouped activities: biking, berry picking and horseback riding. Moreover we conduct significance tests to assess whether the ef-

fects of each of the independent variables differ according to the type of recreation.

### 3. Results

**3.1. Description.** Sightseeing and wildlife viewing are the most common recreations on Nevada’s public lands, with the average Nevadan engaging in them about 3.0 times a year (Figure 1). Hiking (mean of 2.5 experiences a year) and OHV/quad use (mean of 2.3 experiences a year) come next, followed by camping (2.0 experiences a year, on average) and fishing (1.9 times a year, on average). After that come rock hounding (mean of 1.3 times a year), hunting (mean of 1.2 times a year), and target shooting (1.0 times a year, on average). Those are followed by biking and horseback riding (0.8 times a year, on average, each) and berry picking. Ranch-related uses of the rangeland come next (0.5 times a year, on average) closely followed by antler collecting (0.4 times a year, on average).



**Fig. 1. How often do people engage in different outdoor recreations? Mean times per year, Nevada residents, 2005**

Thus, Nevadans make a good deal of use of rangelands in the state for recreation, with a wide variety of recreations being conducted on the rangelands. Much of this rangeland is public, 84.5% of the land in Nevada is owned by the Federal Government (General Services Administration, 2004), and much of this activity occurs within the multi-use mandates which cover much of the land managed by the BLM and the USFS.

### 3.2. Analysis: structure of recreation lifestyles.

To discover whether there are recreation lifestyles, we turn to factor analysis, as noted above in the measurement section. The two latent variables – the

lifestyles – we are seeking to assess meet classic factor analysis criteria, as shown in Table 1.

Consider first the IORL. The candidate variables intended to measure this underlying concept, hunting, fishing, off-roading, target shooting, and camping, all have moderately high correlations with each other, which shows that a person who engages in one of them is likely also to engage in the others (Table 1, upper left, columns 1-5), so the first requirement (significant inter-item correlations) is met. In terms of the second requirement, correlations with criterion variables (Table 1, columns 1-5,

about half way down), it is clear that when one of our candidate variables for this scale has a positive correlation with a criterion variable, so do the other candidate variables (e.g., see the correlations with “Years in Nevada”). Similarly, when one of our candidate variables for this scale has a negative correlation with a criterion variable, so do the other candidate variables (e.g., see the correlations with “Urban resident”). Thus the requirement for similar

correlations with criterion variables is satisfied. On the third and final requirement, the factor loadings for these candidate items are all substantial, 0.45 or higher, on the first factor which we may take to represent IORL and are very much lower (none exceeding 0.25) on the second factor (columns 1-5 bottom two rows). Thus, the evidence strongly supports the claim that hunting, fishing, off-roading, target shooting, and camping are activities all integrated into one IORL.

Table 1. Participation in recreational activities in Nevada (N = 576<sup>1</sup>)

	Hunt	Fish	Off-road	Target shoot	Camp	Sight-see	Wildlife	Hike	Bike	Berry harvest	Horse-back
A. Correlations											
<i>Interactive recreation:</i>											
Hunting	1.00										
Fishing	.55	1.00									
Off-road vehicle	.37	.36	1.00								
Target shooting	.40	.29	.25	1.00							
Camping	.41	.49	.38	.26	1.00						
<i>Visually-oriented rec.</i>											
Sightseeing	.10	.16	.24	.11	.26	1.00					
Wildlife viewing	.22	.27	.31	.18	.32	.62	1.00				
Hiking	.20	.26	.31	.17	.35	.46	.42	1.00			
<i>Other recreation:</i>											
Biking	-.04	.06	.06	.01	.19	.16	.04	.28	1.00		
Berry harvesting	.29	.30	.15	.19	.23	.19	.23	.19	.06	1.00	
Horseback riding	.12	.14	.12	.10	.17	.07	.19	.06	-.01	.16	1.00
<i>Criterion variables:</i>											
Years resident in Nevada	.21	.13	.12	.08	.18	-.07	-.02	-.01	-.06	.21	.07
Age	-.08	-.08	-.10	-.08	-.12	.09	.04	-.17	-.21	.07	-.07
Female	-.21	-.15	-.10	-.16	-.09	.04	.06	-.07	-.04	-.07	.03
Urban resident	-.18	-.21	-.19	-.14	-.07	-.05	-.13	-.05	.09	-.18	-.01
Scenic values important	.01	.00	.05	-.02	.08	.36	.30	.27	.09	.09	.11
Wildlife habitat important	.17	.14	.12	.07	.18	.21	.29	.23	.08	.10	.12
B. Descriptive statistics											
Mean	1.2	1.9	2.3	1.0	2.0	3.0	3.0	2.5	0.8	0.7	0.8
Standard deviation	2.1	2.3	2.6	2.0	2.2	2.4	2.5	2.4	1.8	1.5	1.8
C. Factor analysis <sup>2</sup>											
Factor loading: First factor	.78	.69	.45	.45	.54	.04	.20	.20	-.04	.34	.20
Factor loading: Second factor	.09	.14	.25	.11	.22	.73	.83	.43	.02	.20	.14

Notes: <sup>1</sup> Nevada Rangeland Vegetation Survey, 2005. <sup>2</sup> Principal axis factor analysis with communalities estimated iteratively. Oblique equimax rotation with Kaiser normalization.

Next, consider the VORL. The candidate variables intended to measure this underlying concept (sight-seeing, wildlife viewing, and hiking) all have moderately high correlations with each other, which shows that a person who is engaged in one of them is likely also to be engaged in the others (Table 1, first number in columns 6-8), so the first requirement (significant inter-item correlations) is met. Turning to the second requirement, correlations with criterion variables (Table 1, about half way down columns 6-8), the pattern is less clear than in the previous case, but, by and large, the correlations with criterion variables are

similar. So, the requirement for similar correlations with criterion variables is roughly satisfied. Finally, the factor loadings for all three candidate items are substantial, 0.43 or higher, on the second factor which we may take to represent the VORL and are very much lower (none exceeding 0.25) on the first factor. Thus, the evidence mainly supports the claim that sight-seeing, wildlife viewing, and hiking are all integrated into one VORL. Finally, biking, horseback riding, and berry harvesting are largely separate recreations rather than components of more encompassing life styles. They have small positive correlations

with nearly all the other outdoor recreations, but these correlations are far too small to suggest a common underlying construct and the factor analysis substantiates this: These items do not have large loadings on either of the two factors detected in this analysis (Table 1).

**3.3. Analysis: determinants of recreation lifestyles.** To assess determinants of recreation lifestyles – social differences in participation – we turn to regression analysis. First consider participation in the IORL (Table 2, panel 1). The standardized regression coefficients (betas) reveal the relative importance of the different social forces

included in the model. In this case, the two most important effects are the value placed on wildlife habitat and gender with betas of 0.2. Thus, net of the social and economic characteristics in the model, people who value wildlife habitat highly participate more often in the IORL than do people who place a lower value on wildlife habitat. Indeed, the metric regression coefficient (b) of 7.1 shows that people who place the highest value on wildlife habitat (rating it “extremely important”) participate in the IORL 7.1 times more annually than do otherwise comparable people who place the lowest value on wildlife habitat (rating it “not important at all”).

Table 2. Influences on different types of recreation. Metric and standardized partial regression coefficients. Nevada; N = 576<sup>1</sup>

	1 Interactive recreation			2. Visually oriented recreation			3. Biking			4. Berry harvesting			5. Horse riding		
	b	Beta	t	b	Beta	t	b	Beta	t	b	Beta	t	b	Beta	t
Years resident in Nevada	0.11	.18	4.37	-0.03	-.05	-1.30	0.00	.00	-0.10	0.02	.18	4.20	0.01	.06	1.39
Occupation: ranch. farm	3.70	.13	3.09	1.10	.05	1.21	-0.27	-.04	-0.93	0.46	.09	1.98	1.52	.23	5.21
Occupation: recreation. tourism	-0.58	-.01	-0.36	-1.08	-.04	-0.88	0.29	.03	0.73	-0.73	-.10	-2.32	0.15	.02	0.38
Urban resident	-2.45	-.15	-3.56	-1.48	-.12	-2.82	0.33	.09	1.98	-0.39	-.13	-2.91	0.17	.04	0.99
Female	-3.14	-.20	-4.81	-0.05	.00	-0.10	-0.26	-.07	-1.60	-0.20	-.07	-1.53	0.11	.03	0.72
Age	-0.10	-.17	-4.14	-0.01	-.01	-0.29	-0.03	-.21	-4.85	0.00	.03	0.70	-0.01	-.10	-2.24
Education (years)	-0.46	-.12	-2.83	0.27	.10	2.23	0.09	.10	2.23	-0.03	-.05	-1.06	-0.11	-.13	-2.74
Income	0.01	.07	1.56	0.00	.03	0.65	0.00	-.06	-1.20	0.00	-.03	-0.53	0.00	.07	1.55
Scenic values important	-0.79	-.02	-0.52	7.50	.30	6.46	0.47	.06	1.27	0.51	.08	1.70	0.60	.08	1.61
Wildlife habitat important	7.10	.20	4.46	4.49	.17	3.71	0.48	.06	1.24	0.43	.07	1.39	0.62	.08	1.60
(Constant; R-squared)	13.28	21%	-	-4.01	19%	-	0.39	8%	-	0.07	10%	-	1.34	10%	-

Notes: <sup>1</sup>Nevada Rangeland Vegetation Survey, 2005. Types of recreation are defined in Table 1. Coefficients in grey type are not significantly different from zero at  $p < .05$ , two-tailed. Metric coefficients highlighted in blue are significantly different from those for interactive recreation at  $p < .05$ , two-tailed.

Gender differences are just as important in differentiating participation in outdoor lifestyles (beta of 0.2 for both gender and wildlife habitat values), with women participating less than men. On average, aside from differences in values and other demographics, the metric regression coefficient shows that women participate about three times a year less in interactive recreation than do men.

Next in importance is the influence of duration of residence in Nevada, with a beta of 0.18. Thus, people who have lived longer in Nevada are significantly more likely to participate in interactive outdoor recreation. The metric regression coefficient shows that every 10 years increase in residence is associated with an additional annual participation in outdoor recreation. Thus, for example, someone who has lived in Nevada for 40 years would go hunting, fishing, camping, quadding or target shooting approximately 4 more times a year than their otherwise comparable peer who just moved to the state. The next most potent influence on participation in outdoor recreation is age, as shown by the beta of

-0.17: participation in outdoor recreation significantly declines with age. More specifically, the metric coefficient shows that with every additional decade of age, people participate about one time less a year in interactive outdoor recreations, all else equal. Thus, compared to people in their 20s, people in their 30s participate about 1 time less a year, people in their 40s participate about 2 times a year fewer, people in their 50s participate about 3 times a year fewer, and so on.

Another moderately important influence on participation in interactive outdoor recreation is urban or rural residence, as shown by the beta of -0.15. Thus, urban residents participate in the IORL significantly less often than do their rural peers. The metric coefficient of -2.45 shows that city and suburb dwellers participate in IORL activities about two and a half times a year less than do rural residents.

In Nevada, as elsewhere in the American West, the ranching way of life survives, but there are relatively few ranchers. This necessarily means that the

beta is not huge. In fact, it is 0.13, showing that ranchers and ranch hands are significantly more likely than otherwise comparable non-ranchers to participate in IORL activities. The difference is quite large, as shown by the metric regression coefficient: ranchers participate nearly 4 times a year more often than do non-ranchers, all else equal.

Education has a moderate effect deflecting people from interactive outdoor recreation, with a significant beta of -0.12. The metric coefficient of -0.46 shows that each year of education discourages IORL activity by about half a participation. Thus, for example, on average, a college graduate would participate 2 times a year fewer than would an otherwise comparable person who completed their education with a high school diploma.

None of the other variables in the model had a significant influence on participation in outdoor recreation: working in a tourism-based occupation, holding scenic values to be important, and income all fail to have statistically significant effects on participation in interactive outdoor recreation.

The determinants of VORL participation are rather different. Notably, it is less socially differentiated – fewer of the potential determinants have significant effects.

Wildland values play a dominant role in the VORL. In particular, valuing the scenic beauties of Nevada's rangelands is a very potent influence on participation in the VORL, as shown by the standardized regression coefficient of 0.3 which is nearly twice as large as the next most important influence. The metric regression coefficient shows that someone who places the highest possible value on scenic beauty participates in VORL 7.5 times a year more than their peer who places the lowest possible value on scenic beauty. This is approximately the same size as the impact of valuing wildlife habitat on interactive outdoor recreation. The effect of scenic beauty values on participation in VORL is statistically significantly higher than their nonsignificant (and hence possibly zero) effect on IORL activities.

Valuing wildlife habitat is the second most important influence on VORL participation, as shown by the beta of 0.17 – that is moderately important, although a good deal less important than scenic beauty values with their beta of 0.3. Thus, the two most important influences on VORL participation are valuing the aesthetics of the scenery and valuing rangeland as wildlife habitat.

The next most important influence is urban residence, with a beta of 0.12. The metric coefficient

shows that urban residents participate in VORL activities about 1.5 times a year less than their rural peers.

Education also has a significant impact of participation in VORL activities, as shown by the beta of 0.10. The metric coefficient shows that each year of education induces an extra 0.27 of a participation. Thus, for example, on average a college graduate participates in VORL activities about one more time a year than an otherwise comparable person whose education ended with a high school diploma.

In many ways, VORL participation is not socially differentiated: there is no significant difference between men and women, old and young, long-term residents and newcomers, rich and poor, ranchers and non-ranchers, or people working in the tourist industry compared to others.

The other recreations which do not form part of either of the major recreational lifestyles have rather different determinants. Mountain bikers tend to be young, highly educated urban residents, but not significantly distinctive in other respects. Berry pickers tend to be long-term rural residents, especially ranchers, are much less likely than non-berry-pickers to work in tourism, but are not significantly distinctive in other respects. Ranchers, but not other rural residents participate significantly more often than urban residents in recreational horseback riding. Moreover, recreational horseback riding tends to decline with age and education. Aside from those influences, recreational horseback riding is not socially differentiated. It is noteworthy that these three "other" recreations are not influenced by the values that are so important in the recreational lifestyles. More specifically, valuing wildlife habitat encourages IORL participation and VORL participation and valuing scenic beauty encourages VORL participation, but valuing wildlife habitat and scenic beauty neither encourages nor discourages mountain biking, berry picking, and horseback riding.

## Conclusion

**Summary.** Our results emphasize the presence of two major outdoor recreation lifestyles in the Great Basin: (1) the IORL – an interactive lifestyle involving vigorous physical interactions with nature, sometimes mediated by technologies such as the Quad/ATV/OHV and the rifle, sometimes not; and (2) the VORL involving a more visually-oriented engagement with nature, with an emphasis on the visual/aesthetic qualities of the site. It is worth emphasizing that these are distinct dimensions rather than opposite ends of one dimension: participating in one does not preclude the other, but slightly encourages it: people do not seem to

feel an opposition between them, nor a strong affinity. Instead, they seem to choose about participating in each largely separately. People participating in the visually-oriented recreation lifestyle through sightseeing, wildflower photography, etc. are, contrary to some stereotypes, a little more likely than their peers who do not participate in this lifestyle to engage in interactive recreation. For example, someone who goes fishing and hunting and quadding is not usually strongly motivated by scenic beauty opportunities for photographing wildflowers. In addition to these two recreation lifestyles, we also find a number of separate activities that do not cohere with either of the lifestyles.

Thus the evidence supports Hypothesis 1 which posited that assessment of patterns of participation in outdoor recreation activities by factor analysis would reveal two separate factors: “interactive activities” (the IORL) and “visually-oriented activities” (the VORL) with a scattering of unrelated activities. The only reframing of Hypothesis 1 suggested by the data is that there is a small positive correlation between the two recreational lifestyles, showing that people who are deeply involved in the interactive lifestyle are a little

more likely than those uninvolved to take part in the visually-oriented lifestyle as well. This suggests that outdoor recreation is neither the smorgasbord envisioned by preference theorists nor the tightly linked habitus envisioned by the social closure theorists. Instead, we find a middle ground.

On the one hand, the two lifestyles are distinct from each other and from several independent recreations and their determinants differ in most respects. On the other hand, there is some intersection between the two lifestyles: people who participate frequently in the interactive outdoor recreation lifestyle are more likely than non-participants also to take part in the visually oriented outdoor recreation lifestyle: hunters, fishers, campers, and quadders are more likely than others also to do photography, sightseeing, and the like. The two life styles also differ in some determinants, for example, valuing scenic beauty drives participation in the VORL, but not the IORL. On the other hand, they have important points of commonality, perhaps most importantly the fact that valuing wildlife habitat has a large impact on participation in both life styles. The mixture of shared and unique predictors is shown in the last column of Table 3.

Table 3. Summary of hypotheses and findings, and proposed working hypotheses for future research

Hypothesis	Variables	Effect on participation in ...						Effects on IORL and VORL significantly different?
		Interactive outdoor recreational lifestyle			Visually-oriented outdoor recreational lifestyle			
		Predicted	Observed	Working hypothesis	Predicted	Observed	Working hypothesis	
<b>H2:</b> Traditional old West experiences encourage participation in IORL, are neutral with respect to VORL.								
	Years in Nevada	+	+	0.1	0	ns	0	Yes
	Rancher	+	+	3.7	0	ns	0	Yes
	Rural	+	+	2.4	0	+	1.5	Yes
<b>H3:</b> There are demographic differences in IORL participation but not VORL participation.								
	Female	-	-	-3.1	0	ns	0	Yes
	Age	-	-	-0.1	0	ns	0	Yes
<b>H4:</b> Social class: education discourages IORL, but encourages VORL. Income is neutral for both.								
	Education	-	-	-0.5	+	+	.3	Yes
	Income	0	ns	0	0	ns	0	No
<b>H5:</b> Values: valuing scenic beauty is neutral for IORL, but encourages VORL. Valuing wildlife habitat encourages both.								
	Scenic beauty	0	ns	0	+	+	7.5	Yes
	Wildlife	+	+	7.1	+	+	4.5	No
Control variable: works in ...	Recreation, tourism	(no hypothesis)	ns	0	(no hypothesis)	ns	0	No

These are distinct lifestyles, but their boundaries are permeable. Both forms of recreation may be partly motivated by feelings of “connectivity” with nature – dissolving boundaries, a sense of common essence between the self and nature (Dutcher, Finley, Luloff, and Johnson, 2007) – and may also serve to affirm those feelings. As predicted by Hypothesis 1, the “third way,” incorporating elements of both leading theories, but avoiding the extremes of either, actually

represents the data best. Table 3 also shows that most of the social and demographic differences in participation in the interaction-oriented recreational lifestyle expected on the basis of prior research on one or another of the component recreations are found for the “bundle” of recreations, the lifestyle as well: in accordance with socialization arguments, deeply rooted Nevadans do more, as do ranchers. Urbanism, female gender, age, and education appear to

discourage participation. Income seems to be neutral. By contrast, participation in the visually oriented recreation lifestyle is less differentiated by social and demographic characteristics. The only significant differences are that urban residents do less and highly educated people do more. To the extent that public lands managers define recreational “user groups” on the basis of socio-demographic characteristics, it is worth emphasizing that the socio-demographic differences are actually not large in the case of the interaction-oriented recreational lifestyle and are mostly non-existent in the case of the visually-oriented recreational lifestyle<sup>1</sup>.

Far more important than social and demographic characteristics is subcultural differentiation: attitudes about nature have substantial impacts on participation in both the interaction-oriented recreational lifestyle and the visually-oriented recreational lifestyle. Valuing the importance of wildlife habitat is an important incentive for participation in both lifestyles, and valuing scenic beauties also encourages participation in the visually oriented recreational lifestyle. An important finding of this project is that the effects of these attitudes are independent of social and demographic characteristics.

## Discussion

At one level, the finding that participation in these two distinct outdoor recreation lifestyles/repertoires is lightly shaped by culture but little or not at all by social class or demographic characteristics makes public lands management for recreation more challenging, because the benefits of providing/enhancing recreational opportunities accrue to people scattered throughout society who happen to share some attitudes, rather than to easily-described census-type categorizations of people. Nonetheless, at the same time, this dominance of cultural effects may facilitate linkages between special-purpose environmental and recreational groups and may suggest some new possibilities.

In particular, awareness of and attention to these two leisure repertoires/lifestyles may enhance the management of rangeland for recreation in ways that are specific to different landscapes and climates, because users with different preferences and values find different kinds of outdoor recreation experience satisfying, and user satisfaction reflects a good match between characteristics of the user and characteristics of

the landscape (Manning, 2011, pp. 13-15). In the Great Basin, the dominant presence of the fire cycle – whereby large-scale burns occur periodically across the landscape – suggests that a recreational management *cycle* that adapts to the fire cycle could enhance user satisfaction. Thus, in this eco-system, recreation planning could move away from an exclusive focus on permanently managing/designating for particular types of recreation and instead expand the management repertoire to develop the concept of recreation-type circulation following the fire-cycle. For example, recently burned landscapes have very low visual amenity, and so are unlikely to appeal to people involved in the visually oriented recreational lifestyle, but scenic beauties are a much lower priority for most people involved in the interaction oriented recreational lifestyle. As a burnt landscape gradually recovers and becomes more appealing aesthetically, management could shift towards visually oriented recreators, while management of other, more recently burnt landscapes could shift towards interactively oriented recreators. Thus, one might enhance user satisfaction by orienting recreation planning towards the interaction-oriented recreational lifestyle in early post-fire years with a schedule shifting towards a shared emphasis with the visually oriented recreation lifestyle as visual amenities improve.

Another important result is the finding that valuing wildlife habitat is an important influence encouraging participation in both interactive and visually-oriented recreation. This suggests that improving wildlife habitat would enhance the subjective well-being of both groups. In particular, if ecosystem health could be restored to areas currently degraded as wildlife habitat by invasive weeds, the gains in wildlife habitat would be consistent with features of wildlands valued by both groups. In addition, the aesthetic, visual quality of restored wildlands would further enhance the recreational experience of the visually-oriented recreators whose recreational goals emphasize the enjoyment of scenic beauty. Thus, there would be quality-of-life gains to both major groups of recreators, with especially large gains to the visually-oriented recreators because restoration would help meet the wildlife habitat values they share with the interactive recreators and would also meet the aesthetic values that are more specific to their particular recreational lifestyle.

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<sup>1</sup> This is consistent with other research showing that social class differences diminished in many domains of life in the post-WWII period (de Graaf, 1986; Marks, 2013).

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**Appendix: Variables and scoring**

Table A. Variables, verbatim questions, and scoring

Concept	Verbatim question	Answers
Interactive outdoor recreation		
Stem question	“Please check the boxes that best indicate your use of Nevada’s rangelands for the listed activities in the last 12 months...”	
	Camping	Never = 0, 1...4 times = 2, 5+ times = 6
	Off-road vehicle use	as above
	Hunting	as above
	Fishing	as above
	Target shooting	as above
Visually oriented outdoor recreation		
Stem question	“Please check the boxes that best indicate your use of Nevada’s rangelands for the listed activities in the last 12 months...”	
	Hiking	Never = 0, 1...4 times = 2, 5 + times = 6
	Sightseeing/photography	as above
	Wildlife viewing	as above
Age	Age in years	Single years, missing to mean
Duration of residence	Years lived in NV	Coded to category midpoints: 1, 3.5, 7.5, 15, 25, 37; missing to mean
Education	Educational attainment	Qualifications coded to nearest standard year (e.g. HS grade = 12)
Gender	Gender	Male = 0, female = 1; no missing
Rancher	Rancher or farmer: yes to ranching occupation (job1) or farming occupation (job2) or ranching activity on rangelands (act12)	1 = rancher or farmer; 0 = other
Outdoor recreation/tourism job	Works in outdoor recreation and/or tourism	1 = yes, 0 = no
Income	Income categories	9 categories, coded to midpoints, divided by 1000 to keep coefficients readable
Values for rangeland		
Stem question	Nevada rangeland vegetation provides us with many goods and services. Check the boxes to show how important each of the following is to <b>you personally</b> .	
Scenic values importance	Scenic value	Not at all = 0; Somewhat = 33; Important = 67; Very important = 100
Wildlife habitat importance	Wildlife habitat	as above