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An Examination of Recreationists' Relationships with Activities and Settings

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The place attachment construct has demonstrated utility for explaining a variety of leisure behavior in outdoor recreation contexts. Preliminary evidence suggests that recreationists' involvement with leisure activities is an antecedent to their attachment to specific settings. Multidimensional measures of these constructs, however, indicate that linear interpretations of their relations may be misleading. Given that both involvement and place attachment examine recreationists' association with activities and settings, the potential for variation among activity and setting types is high. Thus, the purpose of this investigation was to further examine the relationship between involvement and place attachment for hikers along the Appalachian Trail, boaters (i.e., kayakers and rafters) along the South Fork of the American River in California, and anglers in New England. The results illustrated that recreationists' relationships with activities and settings varied among the three groups examined. That is, the effect of involvement on place attachment differed among these groups of recreationists.

Keywords place attachment, leisure involvement, hiking, boating, angling

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Introduction

The concept of place attachment has been used by leisure researchers and practitioners to refine our understanding of leisure behavior for more than two decades (Moore & Graefe, 1994; Schreyer, Jacob & White, 1981; Williams, Patterson, Roggenbuck, & Watson, 1992; Williams & Roggenbuck, 1989). In the context of leisure research, it has generally been conceptualized as the extent to which an individual values or identifies with a particular natural setting (Williams & Roggenbuck, 1989). Past investigations of the construct, mostly within the context of outdoor recreation, have demonstrated relationships with leisure satisfaction and demand (Driver, 1976; Williams & Huffman, 1986), substitution and displacement (Shelby & Vaske, 1991), recreation specialization (Bryan, 1977; Bricker & Kerstetter, 2000), recreation conflict (Thapa, 1996), and recreationists' management preferences and use behavior (Bricker, 1998; Wickham, 2000; Williams et al., 1992). Despite the construct's importance to resource-based leisure, little empirical work has appeared in the leisure literature directly explaining how recreationists develop attachments to specific settings. In this investigation, we explored the relationship between activity involvement and place attachment. This article is an extension of earlier work conducted by Kyle, Graefe, Manning, and Bacon (2003). In their earlier paper, Kyle et al. proposed and tested a model that examined the relationship between involvement and place attachment among four groups of hikers (i.e., day users, overnight users, section hikers, and thru hikers) along the Appalachian Trail. In the current paper, we replicate their analysis by further testing their hypothesized model across two additional activities and settings. Consequently, the purpose of this study was to further investigate the relationship between involvement and place attachment for hikers along the Appalachian Trail, boaters (i.e., kayakers and rafters) along the South Fork of the American River in California, and anglers from New England. Using these different groups of recreationists, we proposed and simultaneously tested a model that suggested involvement is an antecedent of place attachment.

Review of Literature

Place Attachment

The place attachment construct examines the meaning places have for people and represents an emotional or affective bond between a person and a particular place (Guiliani & Feldman, 1993; Williams & Patterson, 1999). In the leisure literature, current understanding suggests that the construct is composed of two components; place identity and place dependence. Place dependence is said to reflect the importance of a resource for providing amenities necessary for desired activities (Stokols & Shumaker, 1981; Williams et al., 1992; Williams & Roggenbuck, 1989). Schreyer and associates (Jacob & Schreyer, 1980; Schreyer et al., 1981; Schreyer & Roggenbuck, 1981) described the functional meaning of a place as the tendency to see the environment as a collection of attributes that permit the pursuit of a focal activity (Williams et al., 1992). In this context, the value of a setting to the individual is based on specificity, functionality, and satisfaction of a place and its "goodness" for hiking, fishing, camping, scenic enjoyment, and so forth. Moore and Graefe (1994) also observed that place dependence is related to the frequency of use.

In the leisure literature, the second view of place attachment has developed around Proshansky's (1978) concept of place identity. Place identity refers to "those dimensions of the self that define the individual's personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences, feelings, values, goals, and behavioral tendencies and skills relevant to this environment" (Proshansky, 1978, p. 155). Jorgensen and Stedman (2001) have referred to this as a cognitive structure that refers to global self-identification similar to conceptualizations of gender

identity and role identity. Thus, in addition to being a resource for satisfying explicitly felt behavioral or experiential goals, a place may be viewed as an essential part of one's self, resulting in strong emotional attachment to places (Williams et al., 1992).

Leisure Involvement

Most conceptualizations of involvement have drawn from the work of Sherif and associates (Sherif & Cantril, 1947; Sherif & Hovland, 1961; Sherif, Sherif, & Nebergall, 1965) and have examined the strength or extent of the cognitive linkage between the self and a leisure activity. In this sense, involvement reflects the degree to which a person devotes him or herself to an activity or associated product (Engel & Blackwell, 1982; Peter & Olson, 1987; Slama & Tashchian, 1985; Zaichkowsky, 1985). Most operations of the construct have conceptualized the association between the self and activity along several dimensions. For example, McIntyre and Pigram (1992) suggested that leisure involvement consists of three components; *attraction*, *self expression*, and *centrality* to lifestyle. Based on their research on camping and risk activities, McIntyre and Pigram suggested that the *attraction* dimension should be conceptualized as a combination of importance and pleasure. That is, although pleasure or enjoyment is clearly an aspect of *attraction*, it does not necessarily indicate high involvement unless the enjoyable activity is also deemed to be important and meaningful to the individual. The *self expression* dimension of involvement is similar to the "sign" or symbolic notion proposed by Laurent and Kapferer (1985). *Self expression* refers to self-representation, or the impression of oneself that individuals wish to convey to others through their leisure participation. Finally, the third dimension of involvement proposed by McIntyre and Pigram refers to the *centrality* of a particular leisure activity in terms of an individual's overall lifestyle (Watkins, 1986). An activity may be considered central if other aspects of an individual's life are organized around that activity.

These dimensions represent conceptually separate and distinct aspects of leisure involvement that make up an involvement profile related to an individual's participation in a particular leisure activity or type of activity. Together, they provide insight concerning the overall relevance or meaning of an activity in the context of the individual's life (Wiley, Shaw & Havitz, 2000).

The Relationship Between Involvement and Place Attachment

There is indirect evidence suggesting involvement with activities leads to attachment to settings. First, several scholars (e.g., Beatty, Kahle & Homer, 1988; Bloch, Black & Lichtenstein, 1989; Buchanan, 1985; Crosby & Taylor, 1983; Lastovicka & Gardner, 1979) have suggested and/or found that involvement plays a formative role in developing psychological commitment to brand, a construct that is conceptually similar to place attachment. In the context of specialization research, several investigations using multi-dimensional measures have included a centrality component that is also an element of activity involvement (Bricker & Kerstetter, 2000; Mowen, Graefe, & Virden, 1997; Virden & Schreyer, 1988). This research has shown that specialized recreationists generally have more specific setting preferences than their less-specialized counterparts. Further, Bricker and Kerstetter included McIntyre and Pigram's (1992) measure of involvement as an additional dimension of specialization. In their analysis, however, they treated the multidimensional measure of involvement as a unidimensional scale that produced a single involvement score for each respondent. Cumulative evidence suggests that unidimensional measures of involvement are limited with respect to the information they provide (Havitz & Dimanche, 1997, 1999; Kuentzel & McDonald, 1992). Also, common throughout most studies of specialization are measures of self-reported experience, skill level, and financial investment in the activity

and related equipment, all of which are closely related to level of activity involvement (see Havitz & Dimanche, 1999).

Moore and Graefe (1994) also examined several variables leading to recreationists' attachments to place. While their study represents the only investigation reported in the leisure literature specifically examining the development of place attachment, it too is limited by the manner in which involvement was operationalized; namely, a single-item measure of activity importance. Their findings, however, indicated that activity importance had a positive and significant effect on the development of place identity. Finally, in Kyle et al.'s (2003) examination of the involvement—place attachment relation, they found that while there was no variation in the effect of involvement on place attachment among the four groups of hikers, there was variation among the dimensions of involvement and place attachment. For example, place identity was only predicted by the attraction and self expression components of involvement and place dependence was only predicted by self expression. Centrality was not a significant predictor of either component of place attachment. These findings illustrate the complexity involved in interpreting and understanding multidimensional conceptualizations of the constructs. Their results do indicate, however, that the affective and emotional elements related to the activity also impact the development of attachment to specific settings.

Hypothesized Model

The hypothesized model examined in this investigation is depicted in Figure 1 and indicates that *place identity* and *place dependence* are predicted by three dimensions of involvement—*attraction*, *centrality*, and *self expression*. Research presented thus far suggests that involvement with activities leads to recreationists' attachment to settings (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Pritchard, Havitz, & Howard, 1999). On the basis of this, we have hypothesized that each dimension of involvement will have a positive and significant effect on each dimension of place attachment. It is important to note that this investigation is primarily concerned with first order relations among these constructs only. That is, how do the dimensions of involvement influence the dimensions of place attachment?

Method

Study Sample

Hikers

Data were collected over the summer and fall of 1999. Sampling occurred along the entire length of the Appalachian Trail (AT). Two sampling techniques were employed.

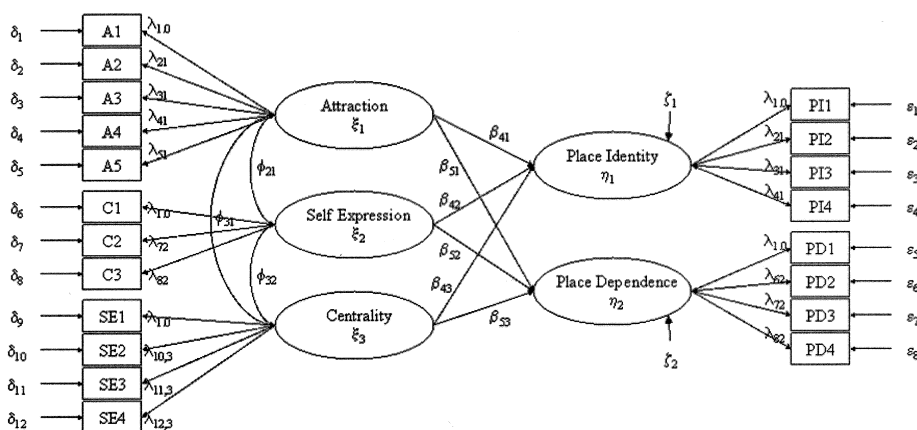


FIGURE 1 Hypothesized Model.

First, a stratified, systematic sampling technique was employed to obtain a representative sample of all AT hikers, with the exception of through hikers (Babbie, 1995). Sampling intensity was stratified (i.e., time and day of the week) in accordance with use estimates¹ provided by staff from the National Park Service and the Appalachian Trail Conference.² Consequently, most sampling occurred on weekends. Every third trail user over the age of 18 was intercepted and requested to provide their name and address to be sent a survey instrument. Because we were interested in capturing thru hikers who had completed the entire length of the trail in a single season, these hikers were also purposively sampled at the end of the trail, but were excluded from these analyses on the basis that they represent a distinct minority of AT users.³

A total of 2,529 AT visitors agreed to participate (approximately 95% response rate) in the study and were mailed a questionnaire within two weeks after their visit. Two weeks after the initial mailing, visitors were mailed a reminder/thank you postcard. Visitors who did not return a completed questionnaire within four weeks of the initial mailing were mailed a second copy of the questionnaire. This sampling procedure yielded 1,569 completed questionnaires (62% response rate).

Boaters

A stratified systematic sampling strategy was chosen for this study. To ensure that the diversity in types of boaters and variation in levels of experience were represented, a multi-method approach was employed. First, on-site sampling was conducted at designated put-in/take-out areas, and public land lunch sites along the South Fork of the American River from May 15 through August 18, 1997, months that together account for the majority of all use.⁴ Further, El Dorado County reported that use varies between weekday and weekend; with greater use taking place on Saturdays on the lower stretch of the river and higher use taking place on Sundays on the upper stretch. Therefore, sampling for on-site river users took place four times a week to include two weekdays and the weekend. The Bureau of Land Management (BLM) manages over nine miles of river frontage utilized by whitewater recreationists for lunch stops, camping, and rest stops. These sites were utilized as interview sites.

The strategy used to select participants at put-in/take-out sites was based on a systematic approach. This approach involved determining (a) the number of individuals to be sampled each day and (b) how many individuals should be sampled per hour. In addition, because the study population, river recreationists, consisted of rafters and kayakers, it was imperative that the two types of river recreationists were represented in the study. Therefore, on any given interview day, some interviewers were selected to focus on kayakers, while others were selected to focus on rafters. In order to randomize sampling within a private raft party, interviewers based their selection on the number of arrivals of rafts or kayaks to the site. In commercial and private boater situations, the lunch site was reviewed and one out of every two lunch groups was selected to participate in the study during their lunch stop.

A total of 1,226 river recreationists were sampled, 76.2% whitewater rafters and 23.8% kayakers. This proportion was consistent with the 1996 overall estimated use levels, which showed that 75% of whitewater recreationists were rafters and 25% were kayakers. If

¹Use estimates were estimates based on staff and volunteer heuristics.

²The Appalachian Trail Conference is a volunteer-based, not-for-profit organization dedicated to the preservation, management and promotion of the trail.

³National Park Service staff estimate that the AT receives approximately 4,000,000 visitors each year. In 1999, only 376 *thru hikers*, hiking the traditional South to North route, completed hiking the length of the trail.

⁴These months account for the majority of all use, 81%.

individuals agreed to participate in the study, they were given a questionnaire. Surveys took approximately ten minutes to complete. The total number of refusals was 76. Out of the 1,226 questionnaires distributed, 4 were without ID numbers, making tracking impossible, and 4 were not fully completed. Therefore, the net sample for this study was 1,218.

Anglers

Data were collected as part of a larger project focusing on anglers in the New England District of the U.S. Army Corps of Engineers. In total, there are 33 lakes in the New England district that provide recreational opportunities. Data collection focused on four of these; Hopkinton-Everett Lake in New Hampshire, East Brimfield Lake and Buffumville Lake in Massachusetts, and West Thompson Lake in Connecticut.

A multiple-method approach was used for data collection to obtain a diverse sample of anglers from the New England region. In total, 433 addresses were collected for this investigation:

1. Two hundred seventy-seven addresses were obtained from eight angling clubs;
2. Eighty-six addresses were obtained from the four target Corps of Engineer lakes—Names and addresses were obtained from anglers that had volunteered for angling-related events organized by the Corps;
3. Seventy addresses were obtained from on-site interviews—Employing stratified systematic sampling, 79 (9 refusals) addresses were collected from the four Corp lakes. Five sampling days were randomly selected for each lake during July and August 1999. Anglers were approached at popular sites situated around each of the lakes. After a brief interview lasting approximately three minutes, respondents were requested to provide their name and address to be sent a more extensive questionnaire related to angling issues.

The mailing list was reduced to 385 through elimination of duplicate and incomplete entries. The distribution of questionnaires followed a modified Dillman (1978) multiple mailing process and yielded a final sample of 123 useable surveys (32% response rate). Surveys were also sent to two large state bass fishing organizations. By combining the surveys returned from the mail-out portion of the study and the surveys distributed to the state bass organizations, the total sample size for this study increased to 176.

In light of the low response rate, a telephone survey of non-respondents was conducted to test for response-bias. A systematic random sample (i.e., every fifth name) of anglers was drawn from the list of non-respondents. For those phone numbers not already provided by the anglers, an internet White Pages service was used to obtain selected anglers for phone interviews. A total of 109 phone calls were made with a total of 30 interviews completed; 3 individuals refused to participate, and 7 phone numbers were no longer accurate. The 30 surveys were analyzed and compared with the results in the original mail survey. Differences were observed on only three items. Thus, for the most part, respondents and non-respondents shared similar views toward the activity and settings. Anglers' reasons for not completing the survey generally focused on lack of time issues.

Analysis

For all three samples the three dimensions of involvement (i.e., *self expression*, *centrality*, and *attraction*) were measured using items adapted from McIntyre and Pigram's (1992) measure of involvement with camping (see Table 1). Similarly, eight items were adapted from Williams and Roggenbuck's (1989) scale developed to measure two dimensions for place attachment (i.e., *place identity* and *place dependence*). Construct reliability estimates

TABLE 1 Item Means and Construct Reliabilities

Scale items		Hikers	Boaters	Anglers
Involvement ¹				
Attraction	α	.86	.87	.69
A1 ____ is important to me		4.13	3.65	4.31
A2 Participating in ____ is one of the most enjoyable things that I do		4.04	4.05	4.63
A3 Participating in ____ is one of the most satisfying things that I do		3.97	3.99	4.59
A4 I have little or no interest in ____.		4.68	4.49	4.87
A5 ____ offers me relaxation when pressures build up		4.17	4.05	4.39
	M	4.20	4.05	4.00
Centrality	α	.66	.76	.54
C1 I find a lot of my life is organized around ____.		2.83	2.92	3.93
C2 I enjoy discussing ____ with my friends		3.71	3.73	4.40
C3 Most of my friends are in some way connected with ____.		2.66	2.65	3.67
	M	3.07	3.10	4.56
Self expression	α	.73	.79	.79
SE1 When I participate in ____ I can really be myself		3.73	3.20	3.49
SE2 You can tell a lot about a person by seeing them ____.		3.32	3.74	3.25
SE3 When I participate in ____ others see me the way I want them to see me		3.91	3.28	3.93
SE4 ____ says a lot about who I am		3.39	3.22	3.42
	M	3.59	3.36	3.52
Place attachment ¹				
Place identity	α	.86	.85	.79
PI1 This ____ means a lot to me		4.01	4.20	4.20
PI2 I am very attached to the ____.		3.38	3.56	3.73
PI3 I identify strongly with this ____.		3.21	3.37	3.65
PI4 I feel no commitment to this ____.		3.68	3.96	3.51
	M	3.57	3.77	3.77
Place dependence	α	.87	.81	.84
PD1 I enjoy ____ along the ____ more than any other trail		3.19	2.99	3.69
PD2 I get more satisfaction out of visiting this ____ than from visiting any other ____.		2.96	2.86	3.42
PD3 ____ here is more important than ____ any other place		2.68	2.84	2.92
PD4 I wouldn't substitute any other ____ for the type of recreation I do here		2.50	2.69	3.01
	M	2.83	2.85	3.26

¹Measured using a Likert-type format where 1 = Strongly disagree and 5 = Strongly agree.

were calculated for all scales. With the exception of anglers' *centrality* reliability coefficient ($\alpha = .54$), all constructs demonstrated adequate internal consistency with alphas ranging from .66 to .87 (Cortina, 1993). On the basis of these items' performance with the hiking and boating samples, in addition to previous work (McIntyre & Pigram, 1992), *centrality* was retained in the model.

Covariance structure analysis, a component of LISREL (version 8.50; Jöreskog & Sörbom, 1997), was used to test the hypothesized model for three different samples; (a) hikers along the AT; (b) boaters along the South Fork of the American River, and (c) New England anglers. The use of covariance structure analysis has certain advantages over separate analyses using factor analysis and regression. It allows the researcher to (a) simultaneously test a system of theoretical relationships involving multiple dependent variables, (b) restrict the relationships among variables to those that have been hypothesized *a priori*, and (c) more thoroughly investigate how well the model fits the data (e.g., through the use of residuals and goodness-of-fit indices) (Lavarie & Arnett, 2000).

Separate covariance matrices were constructed for each sample. To examine the causal relationship between involvement and place attachment for each activity group, analyses were designed to test whether or not components of both the measurement model and structural model were invariant (i.e., equivalent) across the three types of recreationists.

Assessment of overall model fit was based on Steiger and Lind's (1980) Root Mean Square Error of Approximation (RMSEA), Bentler's Comparative Fit Index (CFI; 1990), and Bentler and Bonett's (1980) Normed Fit Index (NFI). Individual model fit was assessed using the standardized Goodness-of-Fit Index (GFI) (Hu & Bentler, 1995). A RMSEA value less than .08 is said to indicate an acceptable model fit (MacCullum, Browne, & Sugawara, 1996) and NFI, CFI, and GFI values over .90 also indicate acceptable model fit.⁵ While it has been demonstrated that the chi-square test of significance is overly sensitive to sample size and, thus, not a good indicator of overall model fit when using large samples, the use of the statistic to test model respecification and model comparison is considered appropriate (Byrne, 1998).

Results

Sample Profile

The socio-demographic profile of respondents is reported in Table 2. For all three groups, respondents were mostly male (hikers = 69.1%; boaters = 62.5%; anglers = 97.7%). Hikers' age was relatively evenly distributed between the ages of 18 and 55. For boaters, most respondents were between the age of 26 and 45 (64.7%), and for anglers, most respondents were between the age of 26 and 55 (86.2%). For hikers and anglers, most respondents indicated having attained at least a college degree (hikers = 71.7%; anglers = 75.2%). For boaters, however, only 30.8% of respondents indicated having attained a college or post-graduate education. Finally, for hikers, respondents' household income was relatively evenly distributed among the categories of "less than \$20,000" to "\$80,000 and above." For anglers, however, their household income was more likely to be \$40,000 or more.

Testing the Hypothesized Model

Because invariance testing across groups assumes well-fitting single-group models, a prerequisite to testing for invariance is establishing a baseline model estimated separately for each group (Byrne, 1998; Byrne, Shavelson, & Muthén, 1989). The *a priori* structure of

⁵NFI, GFI and CFI values range from 0 to 1.0.

TABLE 2 Socio-Demographic Profile of the Sample

	Hikers (<i>n</i> = 1879)	Boaters (<i>n</i> = 1218)	Anglers (<i>n</i> = 176)
Gender			
Male	69.1	62.5	97.7
Female	30.9	37.5	2.3
Age			
18 to 25	24.8	14.9	3.0
26 to 35	21.2	35.7	21.6
36 to 45	22.7	29.0	38.9
46 to 55	19.7	17.9	25.7
56 to 65	10.3	1.9	9.6
66 to 75	3.2	.5	1.2
75 and above	.2	0	0
Education			
Some high school	2.0	6.4	1.2
High school graduate or GED	7.7	31.4	4.1
Business school, trade school, some college	19.3	31.4	19.5
College graduate	30.9	20.9	33.1
Some graduate school	10.9	4.7	14.5
Masters, doctoral, or professional degree	29.2	5.2	27.6
Household income			
Less than \$20,000	17.9	12.3	2.5
\$20,000 to \$39,999	18.2	22.9	18.1
\$40,000 to \$59,999	20.3	22.5	28.1
\$60,000 to \$79,999	15.0	14.2	26.9
\$80,000 and above	28.6	28.1	24.4

the measurement component of the model posits that each indicator has a nonzero factor loading on only the factor it is hypothesized to measure, covariance among exogenous concepts is freely estimated, and the uniqueness associated with each measured variable was uncorrelated. For the structural model, two endogenous variables were predicted by three exogenous variables. Covariance was permitted among exogenous and endogenous variables, but not between.

The matrices were analyzed separately for each group because this stage of the analysis did not impose any between-group constraints on parameters. All three solutions provided good support for the *a priori* model. The goodness of fit indices were acceptable in relation to baselines of acceptable fit (see Table 3). While the NFI reported for anglers was low, other indicators of model adequacy suggested an acceptable fit between the data and the model. Consequently, no model re-specification was undertaken.

Invariance Testing

Our analyses in LISREL tested our hypothesized model across the three groups of recreationists. This procedure is termed invariance testing. Given that covariance structure analysis is relatively new to the leisure literature and that multi-group analysis (i.e., invariance testing),

TABLE 3 Summary of Tests for Invariance of Involvement—Place Attachment Measurements and Structure

Model	χ^2	df	$\Delta\chi^2$	Δ df	RMSEA ¹	NFI ²	CFI ³	GFI ⁴
Baseline model—No invariance constraints								
Hikers ($n = 1879$)	1272.74	160			.078	.93	.92	.92
Boaters ($n = 1218$)	618.12	160			.072	.91	.93	.91
Anglers ($n = 176$)	252.41	160			.053	.84	.93	.89
Tests of invariance across groups								
H ₁ : Equality of structure	1910.55	480			.065	.92	.94	.91
H ₂ : Equality of scaling	1992.37	510	81.82**	30	.064	.91	.93	.90
H ₃ : Equality of factor variance/covariance	2039.59	518	114.06***	18	.064	.91	.93	.89
H ₄ : Invariance of structure coefficients	1970.83	514	43.40***	12	.063	.91	.94	.90
Final model	1931.14	508			.063	.92	.94	.90

Differences among groups were observed on the following parameters: λ_{21} , λ_{31} , λ_{82} , λ_{103} , λ_{205} , ϕ_{11} , ϕ_{22} , ϕ_{21} , ϕ_{31} , ψ_{11} , ψ_{22} , ψ_{21} , β_{43} , β_{51} , and β_{52} .

** $p < .01$.

*** $p < .001$.

¹Root mean square error (Steiger & Lind, 1980): Values $\leq .08$ indicated acceptable fit.

²Goodness-of-fit index (Hu & Bentler, 1995): Values $\geq .90$ indicate acceptable fit.

³Comparative fit index (Bentler, 1990): Values $\geq .90$ indicate acceptable fit.

⁴Normed fit index (Bentler & Bonnet): Values $\geq .90$ indicate acceptable fit.

in particular, has yet to appear in the leisure literature, we have extended our description of the procedure beyond what might normally be encountered for readers new to this technique.

Bollen (1989) noted that testing for comparability across groups is a matter of degree in that the researcher decides which parameters should be tested for equality across groups and in what order these tests should be made. The hierarchy of invariance that was tested in this study included:⁶

H₁: Equality of structure (examines the suitability of a three-factor solution for involvement and a two-factor solution for place attachment across the three groups);

H₂: Equality of scaling (λ) (examines the similarity in the pattern of factor loadings across the three groups);

H₃: Equality of factor variance/covariances (Φ/Ψ) (examines the similarity in the variances and covariances among the three groups); and

H₄: Equality of structural coefficient estimates (β) (examines the similarity of the regression paths for the three groups).

The focus of the tests of invariance explicitly examined the similarity of each group's covariance structure. If we fail to reject these hypotheses, then we can conclude that the relationship (assuming there is a relationship) between involvement and place attachment is identical for all three groups of recreationists. Rejection of these hypotheses, however, would imply that the covariance structure for each group differs, and thus, our hypothesized model will not fit each group in the same manner. Therefore, these hypotheses focus on the similarity/differences in the measurement and structural components of our hypothesized model, but do not specifically test our hypothesized model. For example, we hypothesized

⁶The invariance of relations among second-order constructs was not substantively relevant to this study's purpose and therefore was not included in the invariance testing procedures.

that each dimension of involvement would positively and significantly effect each dimension of place attachment for all three groups. It is possible that we could reject each of the above hypotheses (i.e., tests of invariance), which would suggest that the nature of the relationship between involvement and place attachment differed among the three groups, but still find support for our hypothesized model if the effect of involvement on place attachment were positive and significant. This would occur if these effects differed in magnitude among each of involvement and place attachment's dimensions.

In testing for equality of structure (H_1), the pattern of fixed and free parameters was consistent with that specified in the *a priori* model. The models across groups were hypothesized to have the same pattern of fixed and free values in the matrices containing factor loadings, structural coefficients, and the variance/covariance matrices. Non-fixed parameters were not restricted to have the same value across groups in H_1 . On the basis of the fit indices reported in Table 3, H_1 is tenable. It suggests that a three-factor solution for involvement and a two-factor solution for place attachment is appropriate for all three groups. This unconstrained model served as a point of comparison for H_2 ($\chi^2_{(480)} = 1910.55$; RMSEA = .065; NFI = .92; CFI = .94). The chi-square difference reported in Table 3 was used to assess support for equality constraints (Byrne, 1998).

The minimum condition for factorial invariance is the invariance of factor loadings (Marsh & Grayson, 1990). In this study, the fit of the model that required all factor loadings to be the same (H_2) was compared with the fit of the model that did not require this invariance (H_1). The chi-square difference test (Byrne, 1998) indicated significantly worse fit ($\Delta\chi^2 = 81.82$; $\Delta df = 30$) and therefore the hypothesis of invariant factor loadings (H_2) was rejected. This suggests that there is variation among groups with respect to specific factor loadings. Successive independent tests were then conducted to determine which parameter estimates in the lambda matrix (λ) were contributing to this overall matrix inequality (see footnote of Table 3). The procedure involved testing, independently, the invariance of each element in the lambda matrix. As a consequence, all elements were constrained to be equal across the three groups except for the factor loadings on: $A2_{(\lambda 21)}$, $A3_{(\lambda 31)}$, $C3_{(\lambda 82)}$, $SE2_{(\lambda 10,3)}$, and $PD4_{(\lambda 82)}$.

The third hypothesis (H_3) required holding factor variance/covariances to be invariant across groups. The fit of this model was compared to the fit of the final model test of H_2 . The chi-square difference test indicated significantly worse fit ($\Delta\chi^2 = 114.06$; $\Delta df = 18$), and therefore the hypothesis of invariant factor variance/covariances was rejected. The rejection of this hypothesis again suggests variation among groups, in this instance, among the factor variances and covariances. Successive independent tests were then conducted to determine which parameter estimates in the phi (Φ) and psi (Ψ) matrices were contributing to this overall matrix inequality (see Table 3). All elements were permitted to be freely estimated across the three groups except for the variance of *self expression* (ϕ_{33}).

For the final hypothesis test (H_4), the same procedure described for H_3 was used to test for invariant beta (β) weights. Model comparison with the final model test of H_3 indicated significantly worse fit ($\Delta\chi^2 = 43.40$; $\Delta df = 12$) and therefore the hypothesis of invariant beta weights was rejected. Finally, this test indicated that the effect of involvement on place attachment differed among the three groups. Successive independent tests indicated that the beta weights for the following paths could be constrained to be equal across all three groups; *attraction* \rightarrow *place identity* (β_{41}), *centrality* \rightarrow *place identity* (β_{43}), and *self expression* \rightarrow *place dependence* (β_{52}). Betas for *self expression* \rightarrow *place identity* (β_{43}), *attraction* \rightarrow *place dependence* (β_{51}), and *centrality* \rightarrow *place dependence* (β_{53}) were freely estimated for each type of hiker (see footnote of Table 3).

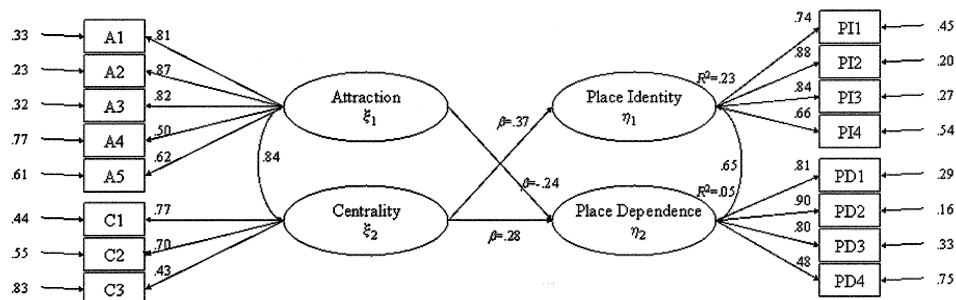
The standardized structure coefficients are presented in Table 4 and displayed in Figure 2–4. These results provide minimal support for our hypothesized model that

TABLE 4 Summary of Structural Models

Direct effects	β (Structure coefficients)	<i>t</i> -value	R^2 (Total coefficient of determination)
Hikers			
<i>Attraction</i> \rightarrow <i>Place identity</i>	.09	1.26 ns	.23
<i>Centrality</i> \rightarrow <i>Place identity</i>	.37	4.15 sig	
<i>Self expression</i> \rightarrow <i>Place identity</i>	.06	.81 ns	
<i>Attraction</i> \rightarrow <i>Place dependence</i>	−.24	−2.96 sig	.05
<i>Centrality</i> \rightarrow <i>Place dependence</i>	.28	2.62 sig	
<i>Self expression</i> \rightarrow <i>Place dependence</i>	.15	1.82 ns	
Boaters			
<i>Attraction</i> \rightarrow <i>Place identity</i>	.09	1.26 ns	.44
<i>Centrality</i> \rightarrow <i>Place identity</i>	.37	4.15 sig	
<i>Self expression</i> \rightarrow <i>Place identity</i>	.17	2.21 sig	
<i>Attraction</i> \rightarrow <i>Place dependence</i>	−.25	−1.24 ns	.02
<i>Centrality</i> \rightarrow <i>Place dependence</i>	.18	.85 ns	
<i>Self expression</i> \rightarrow <i>Place dependence</i>	.15	1.82 ns	
Anglers			
<i>Attraction</i> \rightarrow <i>Place identity</i>	.09	1.26 ns	.14
<i>Centrality</i> \rightarrow <i>Place identity</i>	.37	4.15 sig	
<i>Self expression</i> \rightarrow <i>Place identity</i>	−.08	−.85 ns	
<i>Attraction</i> \rightarrow <i>Place dependence</i>	.70	2.24 sig	.07
<i>Centrality</i> \rightarrow <i>Place dependence</i>	−.49	−1.87 ns	
<i>Self expression</i> \rightarrow <i>Place dependence</i>	.15	1.82 ns	

suggests each dimension of involvement would positively predict each dimension of place attachment.

Centrality was a significant and positive predictor of *place identity* for all recreation groups ($\beta = .37$). For all recreationists, their emotional bond with the recreation setting was positively influenced by the relative importance of the activity within the context of their lives. As such, recreationists that organize their lives and relationships around chosen activities are more likely to develop emotional bonds to specific recreation settings. Also, for boaters, *place identity* was significantly influenced by *self expression* ($\beta = .17$). For these recreationists, as the self expressive value of the activity increased, so too did their emotional attachment to the South Fork of the American River.

**FIGURE 2** Involvement—Place Attachment Relation for Hikers.

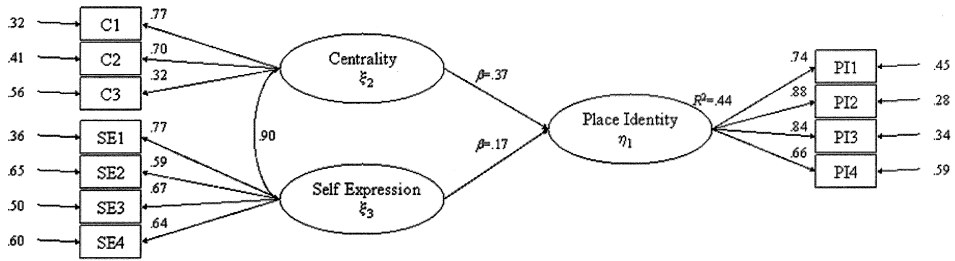


FIGURE 3 Involvement—Place Attachment Relation for Boaters.

Place dependence was significantly predicted by *attraction* ($\beta = -.24$) and *centrality* ($\beta = .28$) for hikers, and *attraction* ($\beta = .70$) only for anglers. For boaters, no dimension of involvement significantly predicted *place dependence*. For hikers, as the importance and pleasure of the activity grew, their dependence on the AT diminished. Conversely, for the NE anglers, as the importance and pleasure derived from the activity grew, so too did their dependence on the specific lake setting. Also, hikers that organized their lives and relationships around the activity were more inclined to be dependent on the AT to provide them with their desired experiences.

For all recreationists, the dimensions of involvement were stronger predictors of *place identity* than *place dependence*. For hikers, *centrality* accounted for 23% of the variance in *place identity*, while *attraction* and *centrality* accounted for 5% of the variance in *place dependence*. For boaters, *centrality* and *self expression* accounted for 44% of the variance in *place identity*. Finally, for anglers, *centrality* accounted for 14% of the variance in *place identity* and *attraction* accounted for 7% of the variance in *place dependence*.

Discussion

While previous work has hinted that involvement is an antecedent of place attachment (Kauffman & Graefe, 1984; Moore & Graefe, 1994; Schreyer & Beaulieu, 1986), results of this study suggest that a complex relationship exists among these constructs. Building on Kyle et al.'s (2003) earlier findings, these results indicated that involvement's influence on place attachment differed by activity and setting type. For each of the samples investigated, elements of the activity and setting differed in terms of their personal relevance and, consequently, involvement's effect on place attachment also differed.

The only consistent relationship observed among the three groups of recreationists was the *centrality* \rightarrow *place identity* relation. Our results indicated that by constraining this path to be equal across the three samples, model fit was not adversely affected. The

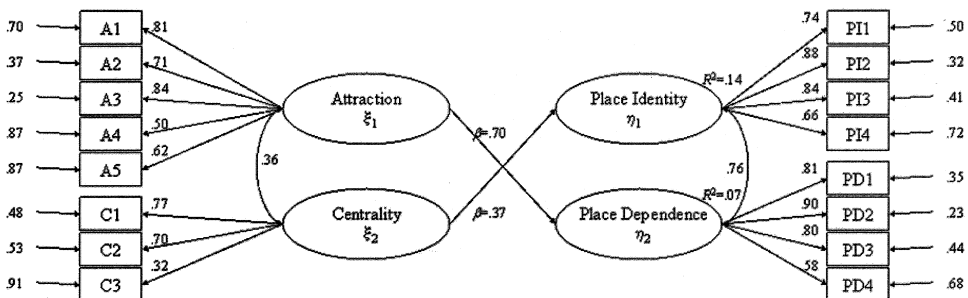


FIGURE 4 Involvement—Place Attachment Relation for Anglers.

interpretation of this relationship, however, is confounded by current conceptualizations and measures of *centrality*. As discussed earlier, *centrality* is composed of items referring to friends or others and social interactions centered on the activity and one item attesting to the central role of the activity in the individual's life. These results indicated that, for all recreationists, as their social ties to the activity grew along with the importance of the activity within the context of their lives, so too did their emotional attachment to the particular setting. We suggest that future investigations consider separating the *centrality* dimension into two components; one measuring the role of the activity in the individual's life and the other measuring the social component. While it is likely that these dimensions will be strongly correlated, conceptually, they remain distinct.

This point is further supported by comparing results reported here with those reported in our earlier analysis of several subgroups of Appalachian Trail hikers (Kyle et al., 2003). In the earlier paper, the *centrality* dimension was not a significant predictor of place attachment for any of the hiker groups. This contrasting finding may be explained by two factors. First, one of the groups included in the earlier analysis (AT thru hikers) was deleted from the present analysis due to its uniqueness. It has been shown that deleting some groups from a pooled analysis can have unusual effects in a structural equations analysis (Pearl, 2000; Spirtes, Glymour, & Scheines, 2000). Second, the items measuring centrality differed in the previous and current analyses (items included here were limited to those included in all three study settings). Specifically, items reflecting the social component of *centrality* were not included in the earlier analysis. While this simplified the meaning of the *centrality* construct, it may also have limited the effect of the measure on the place attachment variables. In any case, the inconsistent results reinforce the conclusion that the relationships between the dimensions of involvement and place attachment are sensitive to measurement issues as well as variation in settings and activities.

With this in mind, study results suggest that for recreationists for whom the activity occupies an important place in their life, an emotional bond with the recreation setting is also likely. In addition, it appears that emotional ties to settings and social ties are closely related. In this regard, the social ties that engender an emotional attachment to the setting is conceptually similar to Buchanan's (1985) conceptualization of commitment in which social ties (i.e., side bets) were considered a component of recreationists' commitment to an activity. Perhaps future investigations of place attachment ought to consider incorporating measures of recreationists' social ties to particular settings as a component of place identity. Social worlds research has demonstrated that for many recreationists specific leisure settings are sought by different social groups. Consequently, recreationists may come to associate specific leisure experiences with these social groups and settings.

Other predictors of *place identity* and *place dependence* varied among the three different groups of recreationists. For hikers, *place dependence* was predicted by both *attraction* and *centrality*. As the perceived pleasure and importance derived through the activity grew, their dependence on the AT to enjoy hiking declined. It appears that for respondents scoring high on this affective component of involvement, the AT may well be considered somewhat limited and lacking in its ability to provide or facilitate the experiences hikers seek. Also, given that literally thousands of trails intersect, run parallel, and adjacent to the AT, there are many viable alternatives. Consequently, for hikers scoring high on the *attraction* dimension, setting diversity appears to be important.

Alternately, the more central hiking became in the context of respondents' lives, the more dependent they were on the AT. It is possible that for some respondents their dependence on the AT is related to the social bonds that bind them to the activity. Perhaps these hikers have a regular social group who hike specific sections of the trail. In this sense, the trail may be valued for providing opportunities for social interaction.

For boaters, the dimensions of involvement were only significant predictors of *place identity*. *Place identity* was positively influenced by both *centrality* and *self expression*. For these recreationists, as the role of boating within the context of their overall life grew and the self expressive value of boating increased, so too did their emotional bond to the South Fork of the American River. We were surprised to find that *self expression* was not a stronger and more consistent predictor of *place identity* in each of the models given their conceptual similarity. Theory suggests that they both provide information about an individual's external self (i.e., values that are expressed to others through the association of the self and an attitude object). This notion is supported in the psychology literature examining ego-involvement and the consumer behavior literature examining psychological commitment. For example, Greenwald's (1982) analysis of psychology's various treatments of ego-involvement identified three different types of ego-involvement. One of these, *impression management* refers to manipulations or treatments that attempt to reveal a subject's external self; that is, characteristics (e.g., attitudes, values, beliefs) of the individual that are exposed to the social world. These treatments expose an aspect of the self that is also visible in the *self expression* and *place identity* dimensions. In this sense, respondents' attitudes, values, and beliefs are revealed through their participation in specific activities or their association with specific recreation settings.

In the context of psychological commitment, the distinguishing characteristic between *self expression* and *place identity* is the level of specificity at which they are both conceptualized and measured. For *self expression* the attitude object is an activity, whereas for *place identity* the attitude object is a geographic setting. In this sense, *place identity* is similar to Pritchard et al.'s (1999) notion of "position involvement." Thus, the association of *self expression* (where the self is reflected in the activity) and *place identity* (where the self is reflected in the setting) is conceptually consistent.

The finding that involvement was not a significant predictor of *place dependence* for boaters is somewhat surprising given that rafting and kayaking are activities that rely on specific recreation settings with limited substitutes. Based on past examinations within the context of specialization research (Bricker & Kerstetter, 2000; Kauffman & Graefe, 1984; Kuentzel & McDonald, 1992; Schreyer & Beaulieu, 1986; Virden & Schreyer, 1988), it was anticipated that as one's level of involvement with an activity increased, so too would one's dependence on the setting. For boaters along the South Fork of the American River, however, no such relationship was found. While these data support the notion that increasing involvement leads to an emotional or affective attachment to the recreation setting, only limited evidence could be found to suggest a more instrumental or utilitarian attachment. This finding, along with the negative effect of *attraction* on *place dependence* for hikers, runs contrary to some investigations that have shown that increasing activity involvement leads to increased resource specificity and brand choice and may require further investigation (Havitz & Dimanche, 1999; Iwasaki & Havitz, 1998). While there is evidence to suggest that involvement is positively correlated with the size of recreationists' awareness sets⁷ (Bloch et al., 1989; Celsi & Olson, 1988), current understanding suggests that as involvement increases, the size of recreationists' evoked sets decrease⁸ suggesting that recreationists should have specific preferences (Ewert & Hollenhorst, 1994; McIntyre & Pigram, 1992; Schuett, 1993). Future investigations should continue to explore this issue in varied contexts. Is it possible that the reverse may be true in certain contexts? Perhaps as boaters become

⁷Awareness sets refer to recreationists' cognitive complexity relating to the activity and knowledge of available alternatives, e.g., service providers and settings.

⁸Evoked sets refer to realistic options from which an individual might realistically choose.

more involved with the activity, they also become more skilled and are able to enjoy a variety of settings that offer challenges consistent with their level of skill.

Other research has also shown that *place dependence* can be an antecedent of *place identity* (Moore & Graefe, 1994; Vaske & Kobrin, 2001). This research suggests that increasing use of a specific setting leads to dependence on the setting followed by an emotional bond with the setting. While not directly contradicting this research, our results suggest that an emotional attachment to the setting is possible without necessarily being dependent on the setting. It is important to note that use history and involvement, while often positively correlated, are distinct concepts. It is possible to have an extensive use history with little involvement and *vice versa*. Future investigations should consider the temporal structure of these constructs.

Finally, for anglers, in addition to the *centrality* → *place identity* relationship, *attraction* had a significant and positive effect on *place dependence*. In contrast to hikers, for anglers, as the importance and pleasure derived through the activity increased, so too did their dependence on the resource. Unlike hikers, the availability of setting substitutes is substantially lower. This finding is somewhat logical given that in addition to a body of water, anglers often require various species of fish, thereby further reducing the number of setting alternatives.

Overall, our results suggest that leisure involvement and the *centrality* dimension in particular, are a better predictor of the *place identity* dimension of place attachment than of *place dependence*. On the surface, this finding is somewhat surprising given that one would normally assume that the primary reason for recreationists' presence in the setting is to enjoy their specific activity. In this sense, it would seem reasonable to expect that involvement would then be a better predictor of *place dependence*; that is, recreationists are dependent on the resource to provide the specific experiences they seek through participation in specific leisure activities. These results, however, suggest that their involvement with the activity engenders not dependence on the resource, but rather, an emotional bond with the resource. For managers of natural resource-based recreation settings this finding illustrates the complexity of the issues that confront their management of recreation resources. Had involvement been a predictor of *place dependence*, managers could simply examine the types of activities enjoyed by recreationists and their usage patterns and manage the setting accordingly. For recreationists that have an emotional bond with the setting, the implications are not as clear. As suggested by Proshansky, Fabian, and Kaminoff (1983), *place identity* is a component of self-identity and consists of a constellation of attitudes, beliefs, feelings, and values. Therefore, to manage recreation resources based solely on the activities enjoyed in the setting may be inappropriate if in so doing we ignore the more abstract elements of the experience such as values, beliefs, and feelings about specific recreation settings. Accurate measures of these constructs remain a challenge for leisure researchers. Future investigations should consider using qualitative techniques to examine how and if preferences in leisure settings reflect individual attitudes and values.

Finally, much remains to be learned about recreationists' relationship with the settings in which they enjoy their leisure experiences. Almost two decades have passed since Proshansky et al. (1983) first called for greater consideration of the physical environment in understanding the development of self-identity. Much of the leisure research, however, has focused on the activities alone and ignored the settings in which these experiences occur. For example, is the freedom to choose specific leisure settings as important as choosing specific activities? While the consequences of perceived freedom, or lack thereof, have been well documented in the leisure literature as it applies to activity selection and use of time (Iso-Ahola, 1980; Mannell & Kleiber, 1997), the implications for the leisure experience within the context of the setting are not as clear. Does the need to maintain behavioral

freedom extend to the physical setting? Does the threat of freedom in the use of a particular resource (e.g., through regulations, use and entrance fees, hours of operation) result in a state of psychological reactance similar to that suggested by Brehm (1966)? Answers to these questions should remain a priority for researchers in their attempt to better understand the role of the setting in leisure experiences.

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