

## Predictors of Behavioral Loyalty Among Hikers Along the Appalachian Trail

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*In recent years, conceptual and empirical papers have begun to appear in the leisure literature examining the processes leading to the formation of recreationist loyalty. While this work is still in its infancy, current understanding suggests that leisure involvement plays a formative role in the development of social psychological commitment, which in turn, is an antecedent to loyalty to a brand or organization. In the context of natural resource-based recreation the concept of loyalty is most often used to refer to recreationists' attachments to specific recreation areas. The purpose of this paper is to provide an empirical examination of the first order structural relations among involvement (i.e., Centrality, Attraction, Self Expression), commitment (i.e., Social Investment, Financial Investment, Position Involvement, Informational Complexity, Volitional Choice), resistance to change (i.e., Activity Resistance, Place Resistance) and behavioral loyalty for hikers along the Appalachian Trail. These data provided partial support of our hypothesized model. The strength of the structural models varied and not all predictors were significant. Also, the valence of the dimensional relations varied. These data highlight several measurement related issues relating to each of the constructs modeled. These*

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*measurement issues inhibit progress toward a fuller understanding of the relationships between each of the constructs and their dimensions.*

**Keywords** loyalty, place attachment, commitment, leisure involvement, hiking

## **Introduction**

In recent years, a number of conceptual and empirical papers have appeared in the leisure literature examining the processes leading to the formation of recreationist loyalty (Gahwiler & Havitz, 1998; Iwasaki & Havitz, 1998; Kim, Scott, & Crompton, 1997; Park, 1996; Pritchard, Havitz, & Howard, 1999). While this work is still in its infancy, current understanding suggests that leisure involvement plays a formative role in the development of social psychological commitment, which in turn is an antecedent to loyalty to a brand or organization. Most past examinations have limited their investigation to a subset of the components of this model (Kim et al., 1997; Park, 1996; Pritchard et al., 1999). They have also drawn their samples from commercial or not-for-profit organizations where the cultivation of loyal recreationists is recognized as an important determinant of the agency's success, given that these individuals often account for the greatest proportion of the agency's purchase rates (Gahwiler & Havitz, 1998; Howard, 1992; Park, 1996; Pritchard, Havitz, & Howard, 1999). In the context of natural resource-based recreation the concept of loyalty is most often used to refer to recreationists' attachments to specific recreation areas. Seldom has recreationists' loyalty to the service provider (e.g., National Park Service, USDA Forest Service, Bureau of Land Management, etc.) been examined. In this sense, the place attachment construct (i.e., place identity and place dependence) shares conceptual similarity with attitudinal loyalty. While the study of loyalty to recreation settings has received considerable attention over the past two decades in the leisure literature alone, research examining its formative processes has been scant. Therefore, the purpose of this paper is to provide an empirical examination of the structural relations among involvement, commitment, and loyalty for hikers along the Appalachian Trail. Following is a review of the literature related to each of these constructs.

## **Review of Literature**

### ***Leisure Involvement***

In recent years involvement has become a widely studied construct in the leisure literature and has been defined as "an unobservable state of motivation, arousal or interest toward a recreational activity or associated product. It is evoked by particular stimulus or situation and has drive properties" (Havitz & Dimanche, 1997, p. 246; adapted from Rothschild, 1984). Involvement with leisure activities leads to greater sensitivity toward the subtleties of activity attributes, greater perceptions of activity importance, and a greater commitment to specific service providers or geographic locales (Bricker & Kerstetter, 2000; Gahwiler & Havitz, 1998; Iwasaki & Havitz, 1998; Moore & Graefe, 1994). Research has suggested that involvement is multidimensional, but disagreement exists as to which facets are most salient (see Havitz & Dimanche, 1997). For example, Laurent and Kapferer (1985) proposed that importance, pleasure, perceived probability and consequence of risk, and sign value are critical components or antecedents of involvement. Building on Laurent and Kapferer's works, McIntyre and Pigram (1992) conceptualized leisure involvement as consisting of attraction (i.e., interest and enjoyment), self expression, and centrality to lifestyle. First, attraction refers to a combination of the perceived importance of a good or activity to a particular

individual and the pleasure or hedonic value derived from the activity. Self-expression is the identity affirmation derived through participation in leisure activities. Finally, centrality to lifestyle refers to the position the activity occupies within the context of an individual's overall lifestyle.

While involvement is multifaceted, the various components of involvement do not equally influence an individual's involvement profile (see Havitz & Dimanche, 1997). That is, patterns of involvement differ by activities, products, or individual characteristics. For example, the merging of the importance and pleasure facets, common in leisure contexts, consistently produces an attraction facet (McIntyre, 1989).

### ***Commitment***

A number of scholars (e.g., Beatty, Kahle, & Homer, 1988; Block, Black, & Lichtenstein, 1989; Buchanan, 1985; Lastovicka & Gardner, 1979; Zaltman & Wallendorf) have suggested and/or found that involvement plays a formative role in developing commitment to associated brands.

Over the past 40 years a number of definitions and measures of commitment have appeared in the literature. The conceptual heterogeneity and lack of consensus appears to be a symptom of the variety of disciplinary paradigms in which each investigator is couched. From a sociological point of view, many stress the structural conditions which underlie the commitment to and the persistence in a line of activity (e.g., social bonds and financial investment; Becker, 1960; Buchanan, 1985; Kanter, 1960; Scott & Godbey, 1994). From a psychological perspective, on the other hand, the locus of commitment is seen to be internal or to be hinged upon individual choice (Festinger, 1957; Shamir, 1988). Some of these investigations have proposed that social exchange theory points toward the personal motivations of actors as the cause of their commitment (Mannell, Zuzanek, & Larson, 1988; Searle, 1991). Regardless of the disciplinary approach, there is now general agreement that commitment is a multidimensional construct consisting of "personal and behavioral mechanisms that bind individuals to a consistent pattern of leisure behavior" (Kim et al., 1997, p. 323).

Pritchard et al. (1999) recently developed a measure of psychological commitment that is gaining popularity in the leisure literature. Their research, conducted in the context of travel services, revealed three dimensions of psychological commitment: (a) volitional choice, which refers to the perception that a decision has been taken out of free choice, (b) informational complexity, which relates to the complexity of an individual's informational schema underlying his or her preference, and (c) position involvement, which is similar to the self expression or sign value dimension of involvement. In this instance, the attitudinal object (i.e., focus of personal relevance) shifts from the product level (i.e., activity) to the brand level (i.e., brand name or geographic locale). Position involvement is maintained when self-image is linked to brand preference (Freedman, 1964). In the context of natural resource-based recreation, position involvement is conceptually similar to the place identity dimension of place attachment. This conceptualization of commitment holds that behavioral commitment and the informational, identification, and volitional processes are active precursors of loyalty in that they maximize the tendency to resist change.

Kim et al. (1997) also suggest the need for behavioral measures of commitment. Building from the work of Johnson (1973), Becker (1960), and Buchanan (1985), they conceptualize a behavioral component of commitment in terms of social and financial investments made by recreationists that bind them to certain activities (i.e., side bets). Thus, discontinuing a leisure activity may be too costly because of the loss of friendships engendered through participation, the loss of financial investments or the absence of viable alternatives.

### ***Place Attachment and Recreationist Loyalty: Distinctions and Similarities***

The study of place attachment in the context of outdoor recreation is relatively new compared to investigations of the construct appearing in the geography and environmental psychology literatures (Moore & Graefe, 2000). Early research on attachment to place focused on environment-behavior issues (Stokols & Shumaker, 1981; Tuan, 1976). Many human geographers and environmental psychologists believe that through the development of an attachment to place within the geographic landscape, people develop a bond that may provide meaning to them (Buttimer, 1980; Low & Altman, 1992; Tuan, 1980).

Recreation researchers have built on the work of geographers and environmental psychologists and have applied the concept of place attachment to outdoor recreation settings. Schreyer, Jacob, and White (1981) proposed that place attachment represents a user's valuing of a recreation setting and that this valuation consists of two dimensions; functional meanings (relating to specific activity needs) and emotional-symbolic meanings. In other words, a place can be valued by a recreationist because it is a "good place" to undertake a particular activity, or it can be valuable because it is seen as "special" for emotional and symbolic reasons, or both (Moore & Graefe, 1994).

In an attempt to empirically define the place attachment construct, Williams and Roggenbuck (1989) developed a series of Likert-scaled statements designed to measure these two theorized dimensions of place attachment and pilot tested them on 129 students from 4 universities. Their results suggest that recreationists do form attachments to particular settings. Factor analysis produced three distinct dimensions for their sample. The first dimension corresponds to the emotional-symbolic meanings proposed by Schreyer et al. (1981). This dimension was termed "place identity" because it included items that represent the extent to which using the place is a central aspect of subjects' lives. The second dimension corresponds to functional meanings proposed by Schreyer et al. This dimension was termed "place dependence" because it was composed of items indicating that subjects were less willing to use another site for their particular activities. A third factor was also found to include items that made negative appraisals of the setting and was considered a "place indifference" dimension. Subsequent research using Williams and Roggenbuck's items has shown the place identity and place dependence dimensions to be the most reliable across a variety of samples (Moore & Graefe, 1994; Moore & Scott, 2000; Wazecha & Lime, 2000).

Consistent with previous suggestions appearing in the leisure literature, we conceptualize psychological commitment as the attitudinal component of loyalty and an antecedent of behavioral loyalty (Backman, 1991; Backman & Crompton, 1991). In most leisure research, the attitude object in investigations of loyalty has been the service provider, the leisure activity, or both. In the context of public land recreation, however, when measured at the brand-level, it is the geographic area rather than the service provider that is treated as the attitude object. In this sense, attitudinal loyalty is somewhat similar to the concept of place attachment. Building from the work of Pritchard et al. (1999) and Jorgensen and Stedman (2001), we propose that (a) position involvement is conceptually akin to place identity (e.g., the connection between the self and the attitude object), and (b) resistance to change can also be conceptualized in terms of place dependence such that recreationists' tendencies to select other recreation sites is inhibited by their preferences for the current geographic locale. Given these conceptual similarities, we have synthesized these dimensions of place attachment with Pritchard et al.'s model examining the relationships between psychological commitment, resistance to change, and behavioral loyalty. We contend that when examining psychological commitment within the context of natural resource recreation, it is more appropriate to shift from treating the service provider as the attitude object

to treating the recreation setting as the attitude object. We propose that, in this context, recreationists are more likely to discriminate between settings rather than service providers (e.g., USDA Forest Service vs. Bureau of Land Management).

As yet, little is known about how recreationists form attachments to settings or loyalty to recreation resources. Moore and Graefe (1994),<sup>1</sup> using data collected from users of rail-trails, suggested that behavioral involvement and activity importance were direct predictors of place dependence and place identity. Williams, Patterson, Roggenbuck, and Watson (1992)<sup>2</sup> also found that the level of place attachment differed on several measures of behavioral involvement, where length and intensity of use were more strongly associated with higher attachment scores. Finally, Bricker (1998)<sup>3</sup> examined the relationship between whitewater specialization (which included a measure of enduring involvement) and place attachment among recreationists along a river in California. Her results indicated that only the place identity dimension was related to specialization, such that as level of specialization increased, so too did recreationists' scores on the place identity dimension.

### *The Value of Loyal Recreationists*

Activity, and to a lesser extent, service provider loyalty are generally viewed in positive terms by leisure researchers (Gahwiler & Havitz, 1998). Downsides of excessive involvement and participation have been identified but generally apply to only small percentages of participants or situations (Bloch, 1990; Scott & Godbey, 1994). For commercial and some not-for-profit service providers, the retention of fee-paying clients is a critical success factor (Gruen, Summers, & Acito, 2000). For membership-reliant organizations, the retention of fee-paying members is an organizational competency that is consistently sought, yet inconsistently achieved. For example, in the fitness industry, Howard (1992) found that just 2% of all adults accounted for up to 75% of the adult participation in six major sport and fitness activities, suggesting that intensity of participation, rather than individual attendance figures, determines total participation rates.

Loyal recreationists on public lands present managers with a unique set of issues, quite distinct from those encountered in other sectors of the leisure industry. Being loyal or attached to a particular setting indicates a high level of identification with or dependence on it. This attachment can be quite strong and focused. As with Bryan's (1979) technique-setting specialists, the satisfaction of those most attached to a particular place is inextricably linked to that place. Management actions and other recreationists' use of specific settings can drastically affect the quality of recreational experiences for all users. Research examining the relationship between place attachment and management preferences has shown that place-dependent respondents are generally more concerned about resource development and maintenance, whereas place identity is more often associated with resource preservation and maintaining primitive settings (Bricker, 1998). Also, place-attached recreationists are more likely to act as resource stewards and are more likely to adopt low-impact use practices than those recreationists exhibiting low attachment toward recreation areas (Wickham, 2000). While loyal recreationists present managers of natural resources with a unique set of issues,

<sup>1</sup>While this work provided insight into place attachment's formative processes, Moore and Graefe's measures of involvement (i.e., the use of a single item measure) could be considered limited given the field's current understanding of involvement (i.e., multi-item measures are required to measure several dimensions).

<sup>2</sup>Place attachment was measured using a single summative index including measures of both place dependence and place identity.

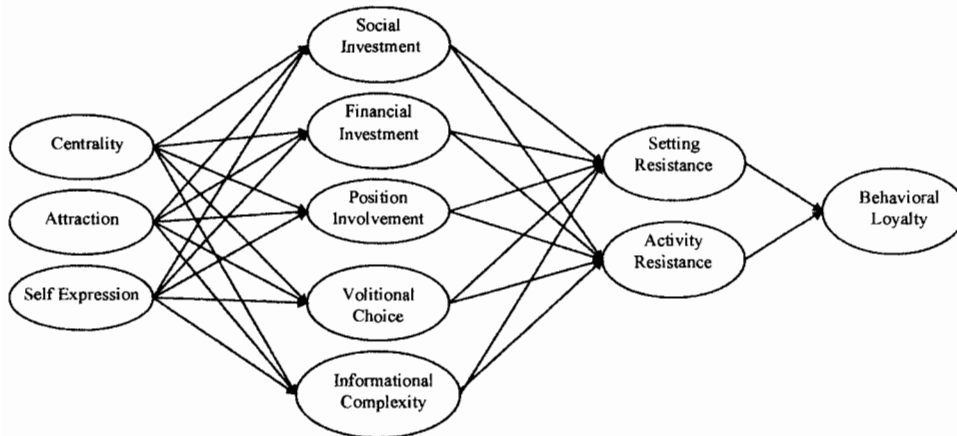
<sup>3</sup>Bricker's (1998) measure of specialization included several dimensions, which included *centrality to lifestyle*. On this dimension, *enduring involvement* was one of four sub-components. This measure was a single summative scale adapted from McIntyre and Pigram (1992).

if understood, they could also act as parochial allies and assist management in a number of areas. Understanding how recreationists become loyal to specific settings may assist management in facilitating this process.

### *Hypothesized Model*

Based on the previous discussion, the relations among the constructs are depicted in Figure 1 and represent our hypothesized model. In this model, we are primarily concerned with the relations among the dimensions underlying each of the constructs (i.e., the first-order model). Following the work of Iwasaki and Havitz (1998), the model begins with direct effects of involvement (e.g., Attraction, Self Expression, and Centrality) on psychological commitment (e.g., Informational Complexity, Volitional Choice, and Position Involvement) and behavioral commitment (e.g., Financial Investment and Social Investment). Psychological and behavioral commitment then directly predict resistance to change (e.g., Activity Resistance and Setting Resistance), which in turn is a predictor of Behavioral Loyalty (e.g., annual use frequency and use proportion).

It has been suggested that a stronger test of a proposed model is to compare it with a rival model (Bagozzi & Yi, 1988; Bollen & Long, 1992). However, given the infancy of this work in the leisure literature, no competing model has been empirically examined. Therefore, we have permitted all dimensions of involvement and commitment equal predictive capability (see Figure 1). While Iwasaki and Havitz (1998) have proposed a conceptual model illustrating the nature of the relationships among the involvement and commitment dimensions, their conceptualization of involvement relies on Laurent and Kapferer's Consumer Involvement Profile (CIP) scale. The CIP includes two additional dimensions of involvement measuring risk that were not included in this study. These dimensions were excluded because of their poor performance in previous examinations of leisure involvement (see Havitz & Dimanche, 1997). The structure of the psychological commitment—resistance to change—loyalty relation is based on the model proposed by Pritchard et al. (1999). Based on previous work (Buchanan, 1985; Kim et al., 1997; Park, 1996), we have also included additional measures of behavioral commitment. Continued examination of the relationships among these constructs will inevitably produce rival models that will allow for rigorous comparison.



**FIGURE 1** Hypothesized Model: Involvement, Commitment, and Loyalty.

## Methods

### *Data Collection*

Data were collected from users of the Appalachian Trail (AT) over the summer and fall of 1999. Sampling occurred along the entire length of the trail. A stratified, systematic sampling technique was employed to obtain a representative sample of all AT hikers (Babbie, 1995). To accomplish this, the length of the trail was segmented into 22 sections based on use estimates provided by the various associations charged with maintaining the trail (i.e., maintenance and management). Every third trail user over the age of 18 was intercepted by volunteers and paid staff and requested to provide their name and address to be sent a survey instrument. A total of 2,529 AT visitors agreed to participate in the study and were mailed a questionnaire two weeks after their visit. One week after the initial mailing, visitors were mailed a reminder/thank you postcard. Visitors who did not return a completed questionnaire within three weeks of the initial mailing were mailed a final copy of the questionnaire. This sampling procedure yielded 1,569 completed questionnaires (62% response rate). Through ("Thru") hikers were also purposively over-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.<sup>4</sup>

### *Construct Measures*

Multiple-item measures were used for all constructs. All of the measures were employed in previous studies, some of which have been adapted to fit the context of this study. The wording of items is reported in Table I.

***Leisure Involvement:*** Involvement with hiking was measured using 11 items drawn from Laurent and Kapferer's (1985) consumer involvement profile scale and McIntyre and Pigram's (1992) measure of enduring involvement. These items were hypothesized to measure involvement across three dimensions: (a) Attraction, (b) Self Expression, and (c) Centrality to lifestyle.

***Psychological Commitment:*** Measures of psychological commitment were adapted from Pritchard et al. (1999) and Williams and Roggenbuck (1989). The items focused on both hiking and the AT. Ten items measured psychological commitment across three dimensions: (a) Informational Complexity, (b) Volitional Choice, and (c) Position Involvement (i.e., place identity).

***Behavioral Commitment:*** Kim et al. (1997) have suggested that there are two kinds of commitment, personal and behavioral. Therefore, in addition to measuring the psychological basis of hikers' commitment to the activity (akin to Kim et al.'s "personal" commitment) and the AT, four items also measured two dimensions of behavioral commitment: (a) Social Investment, and (b) Financial Investment.

***Resistance to Change:*** Pritchard et al. (1999) suggested that a resistance to change brand preferences is the primary evidence of commitment and mediates the relationship between commitment and behavioral loyalty. Two items measured respondents' resistance to change activity types (i.e., Activity Resistance) and five items measured respondents' resistance to change trails (i.e., Setting Resistance).

***Behavioral Loyalty:*** Three items measured respondents' behavioral loyalty to the AT: (a) their annual frequency of use (i.e., days spent on the trail and miles hiked along the trail), and (b) the proportion of their annual use devoted to the AT.

<sup>4</sup>National 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.

**TABLE 1** Factor Loadings, Reliabilities, and Means

Scale items	$\alpha$	Factor loading	<i>t</i> -value	M
<b>Involvement<sup>1</sup></b>				
Self expression	.65			2.98
SV1 When I participate in hiking I can really be myself		.70	—	3.73
SV2 You can tell a lot about a person by seeing them hiking		.43	14.16	3.32
SV3 When I participate in hiking others see me the way I want them to see me		.72	21.41	3.91
Attraction	.88			4.22
A1 Hiking is important to me		.81	—	4.13
A2 Hiking interests me		.75	30.38	4.04
A3 Participating in hiking is one of the most enjoyable things that I do		.80	33.32	3.97
A4 Hiking is pleasurable		.63	24.45	4.49
A5 I really enjoy hiking		.75	30.38	4.46
Centrality	.93			2.85
C1 I find a lot of my life is organized around hiking		.94	—	2.83
C2 Hiking has a central role in my life		.88	53.73	2.91
C3 I find a lot of my life is organized around hiking activities		.90	55.86	2.81
<b>Psychological Commitment<sup>1</sup></b>				
Information Complexity	.88			3.91
IC1 I don't really know much about hiking*		.80	—	4.04
IC2 I consider myself an educated consumer regarding hiking		.81	34.31	3.73
IC3 I am knowledgeable about hiking		.91	38.45	3.96
Volitional Choice	.84			3.80
VC1 The decision to go hiking was not entirely my own*		.81	—	3.79
VC2 The decision to go hiking was primarily my own		.90	20.11	3.81
<b>Position Involvement</b>				
P11 This trail means a lot to me	.88	.69	—	3.49
P12 I am very attached to the Appalachian Trail		.86	30.00	4.01
P13 I identify strongly with this trail		.87	30.25	3.38
P14 I have a special connection to the Appalachian Trail and the people who hike along it		.66	23.42	3.21
P15 The Appalachian Trail means more to me than any other trail I can think of		.75	26.41	3.68
				3.16

<b>Behavioral Commitment</b>			
Social Investment <sup>1</sup>		.60	
SI1 I enjoy discussing hiking with my friends		.66	3.19
SI2 Most of my friends are in some way connected with hiking		.40	3.71
Financial Investment <sup>2</sup>			2.66
FI1 Please specify your estimated investment in hiking equipment to date		.92	3.84
FI2 About how much did you spend on all expenses relating to hiking in the last 12 months?		.61	\$1,000-\$1,499
			\$100-\$499
<b>Resistance to Change<sup>1</sup></b>			
Activity Dependence		.78	3.34
AD1 Even if close friends recommended another recreational activity, I would not change my preference from hiking		.74	3.50
AD2 To change my preference from hiking to another leisure activity would require major rethinking		.86	3.17
<b>Place Dependence</b>			
PD1 I enjoy hiking along the Appalachian Trail more than any other trail		.85	2.91
PD2 I get more satisfaction out of visiting this trail than from visiting any other trail		.86	3.19
PD3 Hiking here is more important than hiking any other place		.91	2.96
PD4 I wouldn't substitute any other trail for the type of recreation I do here		.83	2.68
PD5 For me, lots of other trails could substitute for the Appalachian Trail*		.53	2.50
		.56	3.23
<b>Behavioral Loyalty</b>			
BL1 Days spent on the trail over the past 12 months		.67	15.47
BL2 Miles hiked annually along the Appalachian Trail		.92	99.87
BL3 Proportion of use of total annual hiking along the Appalachian Trail <sup>3</sup>		.44	42.7%

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

<sup>2</sup>Measured using eight categories beginning with \$0 through to More than \$5000.

<sup>3</sup>The proportion of use was derived by dividing respondents' weekly use of the Appalachian Trail by the sum of all trails hiked per week.

\*Reverse coded.

## Results

### *Testing the Proposed Model*

The data were analyzed using covariance structure analysis provided with LISREL (version 8.12; Jöreskog & Sörbom, 1997). The use of covariance structure analysis has certain advantages over separate applications of 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).

Analysis of these data followed Muliak, James, Alstine, Bennett, Lind, and Stilwell's (1989) two-step approach to modeling beginning with the examination of the measurement model followed by an examination of the structural model. Examination of the measurement model provided an assessment of the construct validity (i.e., convergent and discriminant validity) of involvement, commitment, and loyalty and the reliability (i.e., internal consistency) of items measuring these constructs. The structural model assessed the predictive validity of the latent constructs.

### *Measurement Model*

An assessment of the measurement model was made using confirmatory factor analysis. After the initial analysis a specification search (Leamer, 1978) of parameter estimates and the modification indices (Sörbom, 1986) indicated that model fit could be significantly improved by permitting the errors to correlate between items A<sub>4</sub> and A<sub>5</sub> ( $\Delta\chi^2 = 143.90$ ,  $\Delta df = 1$ ). Fit statistics indicated satisfactory model fit ( $\chi^2 = 2780.15$ ;  $df = 504$ ,  $p < .05$ ). Although the chi-square statistic was significant (see Table 2) it is understood that the chi-square statistic is sensitive to sample sizes greater than 100 (Byrne, 1998). Therefore, other indicators of model fit provided by LISREL were used to assess the adequacy of the hypothesized model. The results reported in Table 2 indicate satisfactory model fit (RMSEA = .057; GFI = .90; CFI = .92; NFI = .91).

Indicators of construct validity (e.g., convergent and discriminant validity) and reliability (i.e., internal consistency) were also used to assess the adequacy of the measurement model.

**Assessing Convergent Validity:** Convergent validity refers to the ability of a scale's items to load on its underlying construct (Bagozzi, 1994). Specifically, convergent validity is evidenced if each indicator's loading on its posited underlying construct is greater than twice its standard error (Anderson & Gerbing, 1988). All loadings had significant *t*-values ranging from 14.16 to 55.86, providing evidence of convergent validity (see Table 1).

**Assessing Discriminant Validity:** Bagozzi (1994) has suggested that discriminant validity exists when scales intended to measure different constructs have weak correlations

**TABLE 2** Goodness-of-Fit Indices

	<i>df</i>	$\chi^2$	<i>p</i>	RMSEA <sup>1</sup>	GFI <sup>2</sup>	CFI <sup>3</sup>	NFI <sup>4</sup>
Measurement model	504	2780.15	.000	.057	.90	.92	.91
Structural model	523	3067.86	.000	.062	.89	.92	.90

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

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

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

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

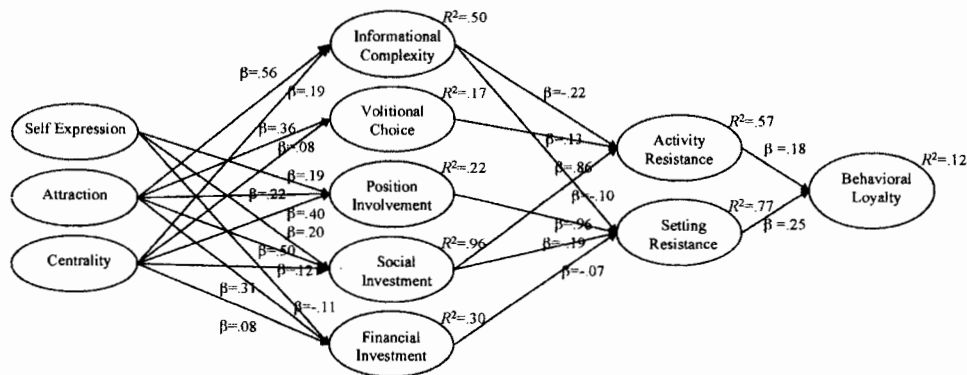
with each other. Hatcher (1994) has also suggested that confirmatory factor analysis can provide evidence of discriminant validity by testing whether the fit of the measurement model decreases significantly when pairs of measures are fixed to covary perfectly. We used the chi-square difference test (Byrne, 1998) to assess if the model allowing free covariance among pairs of latent constructs was superior to the model with the covariance between constructs fixed to 1.0 (Hatcher, 1994). This method relies on the assumption that when two factors are fixed to covary perfectly, they are then measuring the same construct. The results demonstrated discriminant validity among all latent constructs because the fit of the model significantly deteriorated when covariances were set at 1.0.

**Assessing Reliability:** The reliability (i.e., internal consistency) of all scales measuring involvement, commitment, resistance to change, and loyalty was assessed using Cronbach's alpha coefficients. Nunnally (1978) suggests that Cronbach alpha coefficients which are equal to or greater than .70 are acceptable values. Cortina (1983), however, has noted that in scales with a reduced number of items (e.g., six or less), .60 and above may also be acceptable. The alpha values for all constructs ranged between .60 through .93. On the basis of this, we concluded that all scales were reliable.

**Structural Model**

Twenty-seven structural equations were constructed to examine the processes leading to the formation of behavioral loyalty. We hypothesized that each dimension of involvement would positively predict each dimension of commitment, which would in turn positively predict each dimension of resistance to change. Finally, resistance to change was hypothesized to positively predict behavioral loyalty. A full structural model with all parameter estimates was computed. We then undertook a specification search (Leamer, 1978) of the resultant output. We first examined the parameter estimates to identify non-significant structural coefficients. Five of the hypothesized paths (i.e., Self Expression → Informational Complexity, Self Expression → Volitional Choice, Volitional Choice → Setting Resistance, Position Involvement → Activity Resistance, and Financial Investment → Activity Resistance) were removed from the model on the basis of non-significant *t*-values (Schumacker & Lomax, 1996). We then examined the modification indices to identify model misspecification. These indices indicated that it was not necessary to specify additional parameters.

The resultant structural coefficients are reported in Table 3 and shown in Figure 2 and offer only partial support for our hypothesized model. Although this analysis produced



**FIGURE 2** Structural Relationships Between Involvement, Commitment, Resistance to Change, and Behavioral Loyalty.

**TABLE 3** Structural Model Analysis

Direct effects	$\beta$	$t$ -value
<b>Predictors of Commitment</b>		
Self Expression → Position Involvement	.19	3.20
Self Expression → Social Investment	.20	4.16
Self Expression → Financial Investment	-.11	-2.01
Attraction → Information Complexity	.56	15.28
Attraction → Volitional Choice	.36	8.22
Attraction → Position Involvement	.22	4.17
Attraction → Social Investment	.50	11.42
Attraction → Financial Investment	.31	6.19
Centrality → Informational Complexity	.19	5.76
Centrality → Financial Investment	.08	2.05
Centrality → Social Investment	.12	2.80
Centrality → Position Involvement	.40	11.40
Centrality → Volition Choice	.37	9.05
<b>Predictors of Resistance to Change</b>		
Informational Complexity → Activity Resistance	-.22	-3.61
Informational Complexity → Setting Resistance	-.10	-2.66
Volitional Choice → Activity Resistance	.13	3.21
Position Involvement → Setting Resistance	.96	25.34
Social Investment → Activity Resistance	.86	13.98
Social Investment → Setting Resistance	-.19	-5.05
Financial Investment → Setting Resistance	-.07	-2.39
<b>Predictors of Behavioral Loyalty</b>		
Activity Resistance → Behavioral Loyalty	.18	5.74
Setting Resistance → Behavioral Loyalty	.25	7.78

a significant chi-square statistic ( $\chi^2 = 3067.86$ ;  $df = 523$ ,  $p < .05$ ), other goodness-of-fit criteria shown in Table 2 indicate a satisfactory fit between this model and the data (RMSEA = .063; GFI = .89;<sup>5</sup> CFI = .92; NFI = .90).

**Predictors of Commitment:** We hypothesized that all dimensions of involvement would positively predict the five dimensions of commitment. Two structural coefficients were not significant (i.e.,  $t$ -values less than 1.96) and their paths were removed from the model (see Figure 2 and Table 4). First, Informational Complexity was positively influenced by Attraction ( $\beta = .56$ ) and Centrality ( $\beta = .19$ ). Respondents' general knowledge of hiking increased along with (a) the level of importance and pleasure they derived through hiking and (b) the perceived value they ascribed to hiking relative to their other life activities.

Volitional Choice was also positively predicted by Attraction ( $\beta = .36$ ) and Centrality ( $\beta = .08$ ). Respondents' decision to participate in the activity of hiking on their own volition increased along with the importance and pleasure gained through the activity and the perceived value of hiking within the context of their other life activities.

Position Involvement was positively predicted by all three dimensions of involvement; Self Expression ( $\beta = .19$ ), Attraction ( $\beta = .22$ ), and Centrality ( $\beta = .40$ ). These relationships indicated that respondents' emotional and symbolic attachment to the AT increased

<sup>5</sup>Although .89 is just below the suggested cutoff of .90, several other indices of model fit reported in Table 3 suggest good fit.

**TABLE 4** Squared Multiple Correlations

	$R^2$
Commitment	
Informational Complexity	.50
Volitional Choice	.17
Position Involvement	.22
Social Investment	.96
Financial Investment	.30
Resistance to Change	
Activity Resistance	.57
Setting Resistance	.77
Behavioral Loyalty	.12

along with (a) the level of importance and pleasure that respondents derived through hiking, (b) the centrality of the activity within the context of their overall life, and (c) the self-expressive value they derived from hiking.

Similarly, Social Investment was positively predicted by Self Expression ( $\beta = .20$ ), Attraction ( $\beta = .50$ ), and Centrality ( $\beta = .12$ ). This finding suggests hikers' social commitments associated with the activity are positively influenced by (a) the self-expressive value that they derive through hiking, (b) the perceived pleasure and importance ascribed to the activity, and (c) the centrality of the activity to the individual relative to other life interests.

Finally, Financial Investment was predicted by all three dimensions of involvement: Self Expression ( $\beta = -.11$ ), Attraction ( $\beta = .31$ ), and Centrality ( $\beta = .08$ ). These findings suggest that respondents' financial investment in hiking-related activities increased along with (a) the perceived importance and pleasure they derived from hiking and (b) the relative importance of hiking within the context of respondents' other life activities. Alternately, as the self-expressive value of hiking increased, respondents' expenditures on hiking decreased.

**Predictors of Resistance to Change:** We hypothesized that all dimensions of commitment would positively predict the two dimensions of resistance to change, Activity Resistance and Setting Resistance. We removed three structural coefficients from the model because they were not statistically significant (see Figure 2 and Table 3). These results indicate that respondents' Activity Resistance was predicted by Informational Complexity ( $\beta = -.22$ ), Volitional Choice ( $\beta = .13$ ), and Social Investment ( $\beta = .86$ ). That is, respondents' resistance to change their activity preference from hiking was positively influenced by the likelihood that their decision to go hiking was primarily their own and their social ties to the activity. However, as respondents' knowledge of the activity increased, their resistance to change activity preference declined.

Setting Resistance was predicted by four dimensions of commitment: Informational Complexity ( $\beta = -.10$ ), Position Involvement ( $\beta = .96$ ), Social Investment ( $\beta = -.19$ ), and Financial Investment ( $\beta = -.07$ ). This result indicates that respondents' resistance to change trails is positively influenced by their emotional attachment to the trail. Conversely, their resistance to change trails was negatively influenced by their general knowledge of the activity, their social bonds associated with the activity, and their financial expenditures on the activity.

**Predictors of Behavioral Loyalty:** Behavioral loyalty was positively influenced by Activity Resistance ( $\beta = .18$ ) and Setting Resistance ( $\beta = .25$ ). Respondents' use of the trail increased along with their resistance to change activity types and settings.

**Strength of the Structural Models:** We assessed the strength of each of the structural models using the squared multiple correlation coefficients ( $R^2$ ) for each of the dependent variables (See Figure 2 and Table 4). For commitment, Attraction and Centrality accounted for 50% of the variation in Informational Complexity and 17% of the variation in Volitional Choice. In addition, Self Expression, Attraction, and Centrality accounted for 22% of the variation in Position Involvement, 96% of the variation in Social Investment, and 30% of the variation in Financial Investment.

For resistance to change, Informational Complexity, Volitional Choice, Social Investment, and Financial Investment accounted for 57% of the variation in Activity Resistance, while Informational Complexity, Position Involvement, Social Investment, and Financial Investment accounted for 77% of the variation in Setting Resistance. For the final structural model, Activity Resistance and Setting Resistance accounted for 12% of the variance in Behavioral Loyalty.

## Discussion

The purpose of this investigation was to examine the structural relations between involvement, commitment, and loyalty among hikers along the AT. We examined a model using covariance structure analysis that suggests involvement, commitment, and resistance to change predicts behavioral loyalty to the AT. More specifically, our hypothesized model suggested that the dimensions of involvement (i.e., Attraction, Self Expression, and Centrality) would positively influence the dimensions of commitment (i.e., Social Investment, Behavioral Commitment, Informational Complexity, Position Involvement, and Volitional Choice). Further, commitment was hypothesized to positively influence resistance to change (i.e., Activity Resistance and Setting Resistance), which in turn was hypothesized to positively influence behavioral loyalty. These data offered partial support of our model.

### *Involvement* → *Commitment*

Each dimension of involvement positively influenced each dimension of commitment with the exception of the effects of Self Expression on Financial Investment. Howard and Sheth (1969) were among the first in the marketing literature to suggest that involvement with products may lead to commitment to brands. These results suggest that as hikers' involvement with the activity develops so too does their behavioral and psychological commitment to the activity and setting. Some of these relationships have been previously observed in earlier work. For example, the Centrality → Social Investment relationship is implied in McIntyre and Pigram's (1992) measure of involvement. In addition, Gahwiler and Havitz's (1998) examination of YMCA members' social worlds illustrated that the "insider"<sup>6</sup> segment reported the highest scores on the Centrality dimension. In the context of recreational tennis, Siegenthaler and Lam (1992) found a positive relationship between "ego-involvement" and financial investments (e.g., clothes, equipment, and memberships) related to activity. Research also suggests Self Expression and Position Involvement are conceptually similar in that they both reveal an aspect of the self (Pritchard et al., 1999). Their distinguishing characteristic, however, lies in the source of personal relevance (Gahwiler & Havitz, 1998). For Self Expression, the self is linked to the activity, whereas for Position Involvement, the self is linked to the geographic setting.

The negative effect of Self Expression on Financial Investment was, however, unexpected in light of previous research (Bloch, Black, & Lichtenstein, 1989; Siegenthaler & Lam, 1992). It was anticipated that the expression of the self would be exhibited both through

<sup>6</sup>Please see Unruh's (1979) conceptualization of social worlds to see the definition of this segment.

participation in the activity in addition to the accoutrements (e.g., clothing and equipment) associated with the activity. Our finding suggests the opposite. Respondents scoring high on this dimension were inclined to spend less on hiking-related equipment. While our analysis provides little insight concerning why this relation exists in these data, Greenwald's (1982) examination of psychologists' treatments of ego attitudes offers limited insight concerning this unexpected finding. His analysis showed that the "self" consists of two components: (a) a concern about others' evaluation of the self (e.g., one's physical appearance relative to other's in his/her social group) and (b) a concern about self-evaluation (e.g., how one performs on a given task relative to one's own personal standards). While the measures used in this investigation appear to tap into both components suggested by Greenwald, perhaps these components of the self warrant individual attention and should be further separated into two sub-dimensions of self expression; the external self and the internal self.

### ***Commitment → Resistance to Change***

The relationship between commitment and resistance to change varied among each of the dimensions of the constructs. These variations highlight some of the conceptual and measurement-related issues that confront research on commitment. While one approach suggests that commitment can be measured at the product level (e.g., commitment to an activity) (Becker, 1960; Buchanan, 1985; Kim et al., 1997), another suggests that commitment is best conceptualized at the brand level (e.g., Iwasaki & Havitz, 1998; Pritchard et al., 1992; Pritchard et al., 1999). We employed measures drawn from both approaches. First, three dimensions of commitment, each of which was measured at the product level, influenced Activity Resistance, which was also measured at the product level. While it could be expected that social ties to hiking (i.e., Social Investment) along with an individual's decision to enjoy hiking (i.e., Volitional Choice) would positively affect their preference for the activity, the finding that respondents' knowledge of hiking was a negative predictor of their preference for the activity was unexpected. It appears that hikers along the AT also have other strong leisure preferences.

Setting resistance, which we measured using items adapted from Williams and Roggenbuck's (1989) measure of place dependence, was negatively influenced by the dimensions of commitment that were measured at the product level (i.e., Informational Complexity, Social Investment, and Financial Investment). For these respondents, it appears that the AT is not unique in its ability to provide their desired experiences. Respondents' preference for setting variety increased congruently with their knowledge of hiking, their social ties to the activity, and their financial investment in the activity. This is consistent with other research that has shown that recreationists' committed or involved in the activity usually have extensive awareness sets relating to alternate settings or brands of leisure services. For example, in Schreyer and Beaulieu's (1986) examination of environmental attribute preferences, they found that "Persons higher in experience and commitment tend to be more specific in the attributes they identify, and identify more attributes as being important in the decision process" (p. 244). Bloch et al. (1989) observed that in the context of recreational equipment, behavioral commitment was a positive predictor of recreational sporting equipment knowledge.<sup>7</sup> Within the context of substitution research, results have also indicated that recreationists with the most extensive activity-related cognitive structures are more inclined to alter setting preferences than they are to alter activity types (Baumgartner & Heberlein, 1980; Vaske, 1980).

<sup>7</sup>Equipment knowledge was operationalized as "familiarity with running shoe attributes."

Alternately, Position Involvement was a strong and positive predictor of Setting Resistance. This finding is logical given that the items measuring these dimensions were adapted from Williams and Roggenbuck's (1989) measures of place identity and place dependence. While these dimensions represent two components of recreationists' attachment to specific settings, consensus on the temporality of their relationship remains outstanding. Investigations have shown place dependence to be an antecedent of place identity (Moore & Graefe, 1994; Vaske & Kobrin, 2000). However, we employed Pritchard et al.'s (1999) framework, which suggests that this needn't be so. Inspection of the modification indices provided in the LISREL output also provided no indication that modeling the reverse relation might improve model fit. Finally, given the complexity of the model that we tested in this investigation, we chose not to test competing models. To address the issue of temporality, future investigations ought to consider modeling these alternate models.

Gahwiler and Havitz (1998) provided some insight concerning the issue of specificity (i.e., product vs. brand levels of measurement) relating to psychological commitment by measuring the construct with two forms of the same scale; one measuring commitment to the leisure activity, and one measuring commitment to the service provider. They concluded that commitment as measured by Pritchard et al.'s (1999) psychological commitment index, was best measured at the brand level. It is difficult to determine whether or not our results would have been improved had we used more extensive measures of brand level commitment. Gahwiler and Havitz also neglected to use measures of behavioral commitment (e.g., Social Investment and Financial Investment), which further complicates comparison. This remains an important issue to be addressed by leisure researchers. If recreationists can be committed to leisure activities, then how does the commitment construct differ from the involvement construct? Is a highly involved recreationist also a committed recreationist? While the psychological approach appears to address these issues, it fails to consider the structural components external to the individual (e.g., social bonds, financial commitments) that are also said to bind recreationists to activities and settings.

### ***Resistance to Change → Behavioral Loyalty***

Both Setting Resistance and Activity Resistance positively influenced behavioral loyalty. Respondents' behavioral loyalty to the AT grew in congruence with their psychological dependence on the trail and their reluctance to alter their activity preferences. This result is consistent with earlier work examining place attachment that has shown that place dependence is strongly associated with recreationists' use history and use intensity of the resource (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams et al., 1992). Our results also indicate that resistance to change activity types is predictive of behavioral loyalty. As respondents' preference for hiking grew, so too did their use of the trail (e.g., intensity, frequency, and proportion of use). While it appears that respondents' commitment to hiking (i.e., Informational Complexity, Social Investment, and Financial Investment) has a negative effect on Setting Resistance, it does not impact their repeated use of the trail. It is possible that respondents either use the trail for its convenience or use the trail to get to their destinations.

### ***Implications***

Previous investigations of the involvement → commitment → loyalty relationship have drawn their samples from populations in tourism and community leisure service contexts (Gahwiler & Havitz, 1998; Park, 1996; Pritchard et al., 1999). In these investigations the

attitude objects portrayed in the items used to measure psychological commitment have focused on the agency or agency programs. In the context of the AT, however, it makes less sense to word items to reflect these attitude objects when their commitment is less likely to lie with service providers, but rather, the products they offer (e.g., geographic locales). In this sense, psychological commitment shares conceptual similarity with the place attachment construct. In particular, we contend that the Position Involvement dimension is conceptually akin to Place Identity and that resistance to change brand preferences<sup>8</sup> (i.e., Setting Resistance) is also represented in the Place Dependence dimension where recreationists' are reluctant to choose other locations to enjoy their leisure activities. Having said this, future investigations ought to continue to explore the object of loyalty in the context of public lands. It may be possible that the AT is unique in the sense that the trail itself is more recognizable than the agencies charged with its management. In other contexts, such as prominent national parks and forests, do recreationists hold differing attitudes toward public land management agencies? Given that these agencies hold different service missions, it is not unreasonable to suspect that the recreating public may view them differently. Is this variation in public sentiment then manifested behaviorally (e.g., frequency of use, type of use, etc.)?

The investigation of loyalty in the context of public lands also touches upon several other issues unique to the management of these lands. In the context of commercial leisure services, loyal customers are generally perceived to be an asset to the agency. Consequently, marketing efforts tend to focus on practices that engender loyalty to the service provider, typically by adjusting elements of the marketing mix to suit specific target markets. Public land managers, however, are challenged to accomplish this on several fronts. First, their public service mission limits their ability to use price as a tool to manage demand. Second, their agency missions limit their ability to modify the products that they offer to accommodate specific markets' needs. For example, many extractive or consumptive activities (e.g., hunting, fishing, gold dredging, etc.) are prohibited in certain areas even though large segments of users prefer these activities. Finally, because public lands are often used by recreationists with conflicting needs and goals (Watson, Zaglauer, & Stewart, 1996), it becomes difficult to manage settings that are consistent with one segment's preferences without alienating other users of the setting. How then do public land managers build the kind of constituent loyalty that will enable them to achieve their agency objectives? Recent efforts suggest that relational marketing might aid in this regard (Borrie, Christensen, Watson, Miller, & McCollum, 2002). Relational marketing shifts the focus of the agency away from economic exchanges and the pursuit of customer satisfaction<sup>9</sup> and suggests that marketing efforts should be directed toward building trust, confidence, and commitment to the agency. While behavioral loyalty is not the ultimate goal of relational marketing, the factors influencing it that were examined in this investigation are also considered important elements affecting the relationships public land management agencies hold with their constituents. This remains an important issue for these agencies as they attempt to implement controversial policies that have the potential to adversely impact relationship building (e.g., recreation use and entrance fees, forest logging and mining, and fire management practices). Given our limited understanding of these issues and the factors influencing responses to them, continued investigation is warranted.

<sup>8</sup>Pritchard et al. (1999) have suggested that resistance to change is primary evidence of psychological commitment.

<sup>9</sup>We acknowledge that visitor satisfaction and service quality are important considerations, however, we concur with Borrie et al.'s (1999) suggestion that these elements should not drive agency objectives.

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