Commitment to Public Leisure Service Providers: A Conceptual and Psychometric Analysis

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In this investigation, we proposed and tested a scale designed to measure recreationists' commitment to public leisure service providers. We suggested that the identity of public leisure service providers is embedded in the facilities and settings they manage. Consequently, we feel that it is important to consider recreationists' commitment to public leisure service providers by examining the meanings they associate with the settings and facilities managed by the agency in addition to their trust in the agency's ability to manage these settings in a manner consistent with these meanings. To operationalize this conceptualization, we drew upon the place bonding literature to construct a measure of agency commitment that consisted of five dimensions; affective attachment, place dependence, place identity, social bonding, and value congruence. Data were collected from two public leisure service contexts: the Chattahoochee National Forest and Cleveland Metroparks. Our analyses offered strongest support for a correlated factor model consisting of the five proposed dimensions. In addition to offering a valid and reliable measure of public agency commitment, this paper also provides an example of the utility of structural equation modeling for the systematic testing of attitudinal scales.

KEYWORDS: Agency commitment, scale development, structural equation modeling, setting attachment.

Introduction

While several authors have discussed the value of committed recreationists for both public and commercial service providers (Gahwiler & Havitz,

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1998; Iwasaki & Havitz, 1998, 2004; Kim, Scott, & Crompton, 1997; Kyle, Graefe, Manning, & Bacon, 2004), consensus on how best to conceptualize and measure the commitment construct remains elusive. For example, Havitz and Dimanche (1997) noted that there has been some disagreement concerning the distinction between leisure involvement and commitment. Researchers who have adapted conceptualizations of commitment from consumer theory have considered commitment in terms of recreationists' sentiment toward service providers and their service offerings (e.g., Gahwiler & Havitz, 1998; Iwasaki & Havitz, 2004; Pritchard, Havitz, & Howard, 1999). For these researchers, the relationship between involvement and commitment is reflective of a developmental process where recreationists' become involved with leisure activities and then develop distinct service preferences. Consequently, these researchers have indicated that the distinction between involvement and commitment lies in the specificity of the attitude object: involvement is measured at the product level (i.e., activities), whereas commitment is measured at the brand level (i.e., service providers and service offerings). Alternately, other researchers who have drawn from theories grounded in sociology have tended to use involvement and commitment interchangeably (Buchanan, 1985; Kim et al., 1997; Moore & Scott, 2003; Scott, Baker, & Kim, 1999). For these researchers, a committed recreationist could be an individual deeply involved with a specific activity. While recent conceptual and empirical evidence has offered most support for the former conceptualization (Havitz & Dimanche, 1997; Iwasaki & Havitz, 1998, 2004; Kyle, Graefe, Manning, & Bacon, 2003; Park, 1996), we suggest that elements of both approaches have the potential to contribute to our understanding of the commitment construct.

Another issue confounding our understanding of commitment concerns whether or not the properties underlying commitment are consistent for both public and commercial contexts. For example, in commercial contexts, the cultivation of recreationists' commitment to the agency is seen as an important indicator of agency success as determined by profit margins. Committed recreationists purchase the service more frequently and are more inclined to purchase premium products (Reichheld & Sasser, 1990). In these contexts, great importance is placed on elements related to the immediate transaction context that stress consumer satisfaction, quality, and value. Alternately, Borrie, Christensen, Watson, Miller, and McCollum (2002) suggested that, in the context of public leisure services and public land management, in particular, it is more appropriate for public agencies to focus their efforts on fostering trust, given their mandate to consider the variety of stakeholders' perspectives and the public purpose of the places and resources they manage. Borrie et al. warned against focusing too narrowly on transactions alone and adopting commercially-derived practices that support these transactions. They indicated that these practices have the potential to lead to the commodification of public goods and the exclusion of segments within the community. Borrie et al. noted that the shift in focus from transactions to trust is more consistent with fostering the development of longterm relationships with stakeholders.

Thus, to address these issues, we systematically tested a scale designed to measure respondents' commitment to public leisure service providers and their product offerings. In so doing, we build upon previous work suggesting that commitment is an attitudinal construct best measured at the brand level. In our study contexts—a National Forest and a urban park agency respondents' attachment to the agency could best be understood in terms of the meanings they associated with the settings and facilities managed by the agency along with their trust in the agency's ability to manage these settings in a manner consistent with these meanings. We also systematically tested the psychometric properties of our proposed scale that was adapted from several authors' work that was consistent with our public leisure service context.

Past Literature

The Attitudinal Foundation of Commitment

The study of psychological commitment to various stimuli transcends a number of disciplines. As such, a number of definitions and measures have appeared in the literature over the past 40 years. For example, from a sociological point of view, investigators have stressed the conditions external to the individual that underlie commitment and the persistence in a line of activity (e.g., social bonds and financial investment; Becker, 1960; Buchanan, 1985; Kim et al., 1997; Seigenthaler & Lam, 1992). The attitude object specified in these measures has typically referred to respondents' commitment to leisure activities.

Alternately, researchers who have drawn on consumer theory to understand commitment have conceptualized the construct in terms of recreationists' attitude toward a specific service provider or their service offerings. These authors have indicated that commitment is the attitudinal component of service loyalty (Backman & Crompton, 1991; Iwasaki & Havitz, 1998; Pritchard et al., 1999). Consistent with attitude theory (Zimbardo, Ebbesen, & Maslach, 1977), the variety of measures that have appeared in the leisure literature have, to varying degrees, attempted to measure three broad areas of recreationists' commitment to the service provider: affect, cognition, and behavioral intention (conative). The affective component consists of the recreationists' emotional attachment to the service provider or their service elements (e.g., programs, facilities, settings). The cognitive component refers to recreationists' beliefs and knowledge related to the service provider. And, finally, the conative component refers to respondents' behavioral ties in relation to the service provider (e.g., intention to visit, social ties).

Applications of this approach are reflected in several studies that have appeared in the leisure literature over the past decade. For example, Park (1996) measured respondents' commitment to an adult fitness program. His operationalization of commitment consisted of three dimensions that were consistent with the affective and conative components of attitudes. An affective dimension examined respondents' emotional attachment to the fitness program (e.g., "I feel as if this program's problems are my own"). The remaining two dimensions were representative of the conative component of attitudes: (a) normative loyalty referred to respondents' perception that he or she was obligated to maintain his or her commitment to the program (e.g., "I do not believe that a person must always be loyal to his/her program"), and (b) investment loyalty referred to their investments in the program (e.g., "It would be too costly for me to discontinue this program now").

More recently, Pritchard et al.'s (1999) conceptualization of agency commitment in the context of commercial leisure services (i.e., hotels and airlines) was comprised of four dimensions that correspond with the cognitive and conative components of attitudes. For the cognitive component, Pritchard et al. included items that measured the cognitive connection between the self and the service provider in addition to items examining respondents' perceived knowledge related to the service provider. For the conative component, Pritchard et al.'s items measured respondents' perceptions that their decision to utilize the service provider was freely chosen and not the product of external influences. They also used items that reflected respondents' unwillingness to alter their preferences.

Kyle et al. (2003) examined commitment in the context of the Appalachian Trail—a 2,200 mile linear trail extending from Georgia to Maine. Given that multiple agencies manage various sections of the trail, Kyle et al.'s measure examined respondents' commitment to the "Appalachian Trail." They conceptualized commitment in terms of two dimensions: place identity and place dependence. Place identity examined respondents' emotional attachment to the trail (e.g., "This trail means a lot to me"), which was consistent with the affective component of attitudes. Place dependence, their conative component, examined the degree to which respondents' perceived the trail to be unique in its ability to support their preferred leisure experience (e.g., "I enjoy hiking along the Appalachian Trail more than any other trail").

Lastly, reflecting a sociological approach to understanding commitment, Scott and Shafer's (2001) review of work related to specialization indicated that the progression from the general to the particular-a progression that describes the developmental processes related to the transition from novice to expert-is assessed in terms of the kinds of commitments recreationists accrue over time. Their references to commitment, however, more strongly reflects recreationists' attachments to specific activities rather than service providers. In spite of the differing level of specificity, there is some conceptual overlap with the literature reviewed above. For example, they suggested that the commitments which distinguish recreationists' place along the specialization continuum can be understood in terms of two components; personal and behavioral. Personal commitment embodied some of the elements described above such as the connection between the self and the activity (Yair, 1990) and affective bonds with an activity (Buchanan, 1985). Alternately, Scott and Shafer suggested that behavioral commitment is associated with the "costs" of activity withdrawal as reflected social ties to an activity (Buchanan, 1985; Shamir, 1988) and personal investments (e.g., lifestyle choices, equipment ownership) in an activity.

Although this research provides evidence in support of early suggestions indicating that agency commitment should be considered an attitudinal construct (Backman & Crompton, 1991; Pritchard, Howard, & Havitz, 1992), there is little consensus on how best to operationalize its attitudinal components. Part of this heterogeneity can be traced to various authors' loose adherence to attitude theory and the components of attitudes. It is also likely that authors have been sensitive to the study context where commitment was being observed; specifically, private versus commercial contexts. It is our contention that the psychological processes underlying commitment to commercial agencies differ from the processes underlying commitment within public service contexts.

Commitment to Public Leisure Service Providers and their Products

Recently, Kotler, Roberto, and Lee (2002) provided some insight into the nature of the differences concerning commitment to public agencies as opposed to commitment to commercial enterprises in their discussion of social marketing. They defined social marketing as "the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behavior for the benefit of individuals, groups, or society as whole" (p. 5). They indicated that the major distinguishing factor between social marketing and commercial sector marketing lies in the type of product being sold. In the context of commercial sector marketing, "the marketing process revolves primarily around the selling of goods and services. In the case of social marketing, the marketing process is used to sell behavior change" (p. 10). While some commercial entities engage in social marketing (e.g., cigarette manufacturers, alcoholic beverage producers), for most of these agencies the production of their goods is driven by the prospect of generating a profit though a high volume of sales. Alternately, in the context of public leisure service providers such as the public land management institutions, the volume of sales is of less concern as evidenced in growing visitation numbers (Cordell, McDonald, Lewis, Miles, Martin, & Bason, 1996). The challenge for these agencies centers on their responsibility to manage the resource for a variety of stakeholders. Many of these stakeholders, however, have conflicting preferences concerning the management of the resource. Consequently, these agencies must "sell" the idea that modifications to their own use of the resource will benefit themselves and the broader society.

For example, a conflict over the type of use permitted in a particular setting is a persistent issue confronting public land management agencies. To negotiate these conflicts, managers have had to confine use of certain groups to specific areas within the forest or park. Thus, these groups are encouraged to accept a compromise; limited long-term access in lieu of potentially no access in response to opposition from other stakeholders or through resource depletion. Examples of these compromises can be seen in multiple contexts: the separation of board riders from regular swimmers at beaches; the separation of skiers and snowboarders at ski resorts; the restriction of kayaking/rafting or fishing along specific sections of rivers; and the restriction of off-road vehicle (ORV) users, motorcycles, and snow mobiles to specific areas of forests. In these instances, the behavioral change being sold to recreationists may not always maximize their utility in the short term, but serves to benefit them and society in the long-term through the preservation of the resource and the avoidance of conflict.

The implications for the way in which we conceptualize agency commitment and the relationships recreationists share with service providers in the context of public goods is also evidenced in the work of Winter, Palucki, and Burkhardt (1999) and Borrie et al. (2002). Both of these investigations examined the effect of agency trust on respondents' attitudes toward the Forest Service Fee Demonstration Program. In Winter et al.'s investigation, they observed that trust was the strongest predictor of respondents' perceptions of the impact of fees, general attitudes toward recreation fees, and what respondents were willing to pay for daily and annual passes. Borrie et al. segmented their sample using several variables, of which included measures of trust. Consistent with Winter et al.'s observations, the segment emerging with the highest level of agency trust was also the most supportive of fees in addition to being the most frequent visitors to Forest Service sites. Combined, these findings indicate that trust is both an important component of recreationists' commitment to public leisure service providers and an important indicator of recreationists' willingness to accept a modification to their use (e.g., the payment of use and entrance fees).

Finally, research conducted by Raymond and McCarville (2002) provided some empirical support for the philosophical position articulated by Borrie et al. (2002) on the role of trust in sustaining lasting relationships. Working with "friends" groups organized to support one of two Canadian National Parks, Raymond and McCarville observed that strong attachments to settings do not always result in behavioral reciprocity. In the context of a historical park, they observed that many "friends" of the park seldom visited the site. In fact, some had no intention of returning to the park in the future while others had never even visited the site. Regardless, their psychological commitment scores were consistently high, reflecting congruent values between the "friends" groups, the Park Service, its mission, and the history embodied by the site. In contrast, they observed a more traditional relationship in a resource-based context, wherein highly committed "friends" returned regularly to the site because of the unique wildlife viewing opportunities afforded at the location. It should also be noted, again consistent with Borrie et al.'s observations, that high levels of behavioral loyalty in the form of repeat visitation may not be desirable or sustainable in contexts designated to protect fragile or unique ecosystems.

Conceptual Framework

The preceding review of work related to agency commitment appearing in the leisure literature illustrates the diversity of perspectives used by authors to conceptualize and measure the construct. We contend, however, that this plurality has inhibited our understanding of agency commitment and masked its potential utility for understanding leisure behavior. To begin to address these conceptual and measurement issues, we drew on several streams of research to develop a measure of recreationist commitment to public leisure service providers. Our conceptualization suggests that commitment is an attitudinal construct consisting of affective, cognitive, and conative components (Crosby & Taylor, 1983; Jorgensen & Stedman, 2001; Zimbardo et al., 1977). Further, our operation of commitment focuses on understanding the meanings constituents ascribe to the settings and facilities managed by the agency. This level of analysis is driven by several issues. First, in the context of many public leisure services, the most salient aspect of constituents' relationship with the managing agency can be understood by examining their relationship with the settings and facilities managed by the agency. We feel that in public leisure service contexts, the identity of the service provider is reflected in the settings and facilities they manage.

Second, from a social marketing perspective, to affect behavioral change an understanding of the meanings constituents ascribe to these settings and facilities provides insight on the viability of proposed management actions by revealing the identity of those who stand to be affected most by management decisions. Lastly, recent work that has drawn on theory related to social marketing also suggests that trust in the agency is seen to play an important role in determining recreationists' relationship with the agency and their support of agency initiatives.

Thus, our conceptualization of agency commitment consisted of five dimensions: place dependence, social bonding, affective attachment, place identity, and value congruence. First, place dependence and social bonding correspond with the conative component of attitudes given that they each touch upon individual behavioral commitments to the agency. For place dependence, the individual bond with the agency is based on the agency's ability to facilitate desired leisure experiences through their service offerings or settings and facilities. Several authors have suggested or observed that recreationists' attachments to specific leisure settings can be a product of their dependence on these settings (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams & Roggenbuck, 1989). Alternately, social bonding examines the degree to which recreationists' commitments are a product of their social investments. In the leisure literature, Buchanan (1985) was among the first to suggest that persistence in a line of behavior can be the product of individual social ties. Recently, Kyle and Chick (2002, 2004) also observed that their informants' ongoing commitments to an agricultural fair in central Pennsylvania was product of their social ties to other friends and family attending the fair.

The affective component of attitudes is represented by affective attachment. This dimension of commitment examines recreationists' emotional attachments to the setting and service provider. Scholars studying humans' attachments to place have illustrated across a diverse range of settings that this bond is often deeply rooted in emotion and affective sentiment (for review, see Low & Altman, 1992). In the context of recreationists' place bonding, several investigations have shown that emotional attachments to the setting correlated significantly with frequency and history of use of the setting (Bricker & Kerstetter, 2000; Kyle, Graefe, Manning & Bacon, 2004; Vorkinn & Riese, 2001).

Finally, the cognitive component of attitudes was represented by place identity and value congruence. Proshansky (1978) defined place identity in terms of "those dimensions of self that define an 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 . . ." (p. 15). Jorgensen and Stedman (2001) suggested that, as "a cognitive structure, place identity is a substructure of a more global selfidentification in the same way that one might consider gender identity and role-identity" (p. 234). Leisure research has also shown that over time recreationists' identities become intimately linked with the settings in which they engage in leisure behaviors (Bricker & Kerstetter, 2000; Kyle et al., 2003; Williams, Patterson, Roggenbuck, & Watson, 1992). Pritchard et al.'s (1999) commitment scale, which was tested using consumers' commitment to commercial leisure services, also included a dimension (i.e., "position involvement") examining similar processes. Alternately, value congruence included measures that examined the congruence between individual values and goals and the service provider's mission. The items measuring value congruence also provided an indication of agency trust. Drawing on the work of Earle and Cvetkovich (1995), Winter et al. (1999) indicated that trust could be "quantified in terms of perceived shared values, direction, goals, views, actions and thoughts" (p. 210). They also suggested that "decisions to trust involve a bridge between perceptions of an agency, institution or other, and our willingness to risk a belief, or trust in their actions" (p. 210).

With this in mind, the purpose of this investigation was to test a conceptualization of agency commitment that draws from literature examining recreationists' attachment to place and agency trust and that is grounded in attitude theory.

Methods

Sample and Context

To empirically test our conceptualization of commitment, we collected data from two public leisure service contexts within the United States: visitors to the Chattahoochee National Forest (CNF) in Georgia and subscribers to a magazine published each month by Cleveland Metroparks. In both contexts, the primary attitude object reflected in the scale items referred to a public leisure service provider and its settings and facilities.

Chattahoochee National Forest Study

Components of several sampling protocols were utilized to obtain our sample. First, sampling points throughout the CNF were stratified to reflect the diversity of settings and activities supported by these settings found within the forest. Consequently, sampling occurred at eight sites: two visitor centers, two trail heads, two-day use picnic/swimming areas, and two ORV use areas. Sampling occurred over 60 days beginning Memorial Day weekend 2002 through late October, 2002 Thus, seven to eight sampling days were dedicated to each site, spread across weekdays and weekends.

We utilized a systematic sampling design for sampling respondents onsite. Sampling occurred between 8:00 am and 6:00 pm in areas situated adjacent to the site's parking lot. Every third visitor was approached to participate in a short interview, lasting approximately three minutes. For groups of more than one, the individual with the most recent birthday was selected. At the conclusion of the interview, researchers requested the respondent's name and addresses to be sent a more extensive mailback survey instrument. From this, we obtained 1,353 useable names and address with 68 refusals. Of this sample, 42 names and addresses were incorrect, leaving us with 1,311 valid names and address.

The mailback questionnaire was administered using a modified Dillman (2000) procedure: (a) subjects were first sent a survey instrument two weeks following their onsite contact; (b) two weeks following this, a reminder/ thank you postcard was sent; (c) a second survey instrument was then sent to non-respondents approximately one month following the initial contact; (d) a second reminder/thank you postcard was also sent to non-respondents six weeks following their initial contact; and (e) a third survey instrument was sent to non-respondents approximately two months following their onsite contact. This procedure yielded 562 completed survey instruments (43% response rate).

The response rate, however, was below our expectation. We used two procedures to explore issues related to non-response bias. First, there were several identical items (e.g., previous visitation, time spent onsite, fee attitude questions) that we used in both the onsite and mailback surveys. We compared the responses of non-respondents to those of respondents for both the onsite and mailback questionnaires. No significant differences between respondents and non-respondents were observed.

We then conducted a follow-up telephone survey of non-respondents to test for potential non-response bias as well as to further explore reasons why respondents had not returned their survey instruments. Respondents' telephone numbers were collected from an internet-based search engine. Fifty telephone interviews were completed (eight respondents refused to be interviewed). The telephone survey lasted approximately three minutes. Questions on the telephone survey examined past visitation, fee-related issues, and visitor demographics. Again, we observed no significant differences between the telephone and mailback samples on all items. When asked why they had not returned their survey instrument, most respondents indicated that they had no time and that the survey instrument was too long. Beyond the length of the survey (i.e., 12 pages), there was also some redundancy in the survey instrument that was noted by respondents in the open-ended comments at the conclusion of the mailback survey. The redundancy related to the use of multi-item scales to measure related constructs (e.g., enduring involvement) and fee issues. Some respondents may have grown impatient with the repetitive nature of many of the survey items.

This low response rate, however, appears to be representative of a growing trend for mail surveys examining natural resource issues. Recently, Connelly, Brown, and Decker (2003) examined the response rates of 105 mail surveys conducted by the Human Dimensions Research Unit at Cornell University between 1971 and 2000. These surveys addressed a diverse range of natural resource-based topics across a variety of populations. Their analysis indicated that response rates dropped an average of .77 percent per year over the 30 year study period.

Cleveland Metroparks Study

Data were collected from subscribers to Cleveland Metroparks' Emerald Necklace publication. Cleveland Metroparks is a public leisure service provider in suburban Cleveland, Ohio. This park district manages and provides a variety of park-based leisure opportunities in the Cleveland area, including environmental and cultural education centers, walking and hiking trails, a metropolitan zoo, and various play fields and open spaces. They also provide a wide variety of environmental education programs. The Emerald Necklace is a monthly publication provided free of charge to residents who have registered to receive it. Non-residents pay a small fee for publication and postage. To receive the publication, individuals must request to have their name placed on the *Emerald Necklace* database, typically by placing their name on a register at one of the Cleveland Metroparks facilities or by calling the agency.¹ By requesting membership on the database, it is likely that this population shares a stronger attachment to Cleveland Metroparks than the average visitor or member of the public. The publication features information about Cleveland Metroparks facilities, services, and special programs that are offered each month. The database currently consists of approximately 50,000 subscribers.

From this subscriber database, 1,500 names and addresses were randomly drawn in the summer of 2002. Survey instruments were distributed

¹For this reason, it is possible that members of this database are generally more committed to Cleveland Metroparks and may not reflect the "average" visitor to Metroparks' settings and facilities.

using a modified Dillman (2000) procedure which involved the mailing of a survey instrument and cover letter, followed by a reminder/thank you postcard two weeks later, and a final survey instrument to non-respondents one month following the initial mailing. This procedure yielded 860 completed survey instruments (57.3% response rate). A non-response bias was not conducted.

Measures

First, given that both agencies manage a large and diverse number of settings and facilities, we felt that much of respondents' attachment to the agency would be reflected in their attachment to these settings and facilities. Consequently, we adapted items developed by Williams and Roggenbuck (1989) to measure humans' attachment to place. Our conceptualization consisted of three components that were consistent with Jorgensen and Stedman's (2001) conceptualization of place bonding (see Table 1): place identity (three items), place dependence (four items), and affective attachment (four items). Place identity examined the extent to which the CNF and Cleveland Metroparks' settings and facilities were embedded in respondents' self-system and were reflective of their own identities. Place dependence measured respondents' perceived dependence on the agencies' facilities and settings to provide desired leisure experiences. Finally, affective attachment referred to respondents' emotional bonds with the agency and its settings.

The literature related to place bonding and agency commitment also suggests that individual's attachment to an agency or place can also be the product of their social ties to the agency or setting. If meaningful social relationships occur and are maintained in specific settings, then it should also be likely that these settings and the managers of these settings share some of this meaning given that they provide the context for these relationships and shared experiences. For example, Gahwiler and Havitz (1998) observed the presence of distinct social worlds within their data. These social worlds differed with respect to their commitment to the agency-a Canadian YMCA. Also, as previously noted, Kyle and Chick (2002, 2004) observed that their informants' commitment to an agricultural fair and attachment to the fairground was a product of the relationships held with significant family and friends and the experiences shared with these family and friends. Thus, three items examined the degree to which social ties bound our respondents to the agency and settings managed by the agency (Kyle, Graefe & Manning, 2004).

Finally, our measure of trust (i.e., value congruence) was adapted from items developed by Winter et al. (1999) and Borrie et al. (2002). These three items examined the perceived congruence between the agency and individual goals, objectives, and values.

Analyses

Our analyses of the agency commitment scale progressed in three stages. First, we tested the plausibility of several different model configurations using

		Chattah Nationa	loochee Il Forest	Cleve Metroj	land parks ¹
		М	SD	М	SD
Place Dep	pendence	3.21	.76	3.83	.77
PD ₁	For the recreation activities that I enjoy, the Chattahoochee National Forest is the best place	3.39	.85	3.97	.86
PD ₂	Compared to the Chattahoochee National Forest, there are few satisfactory alternatives	3.12	.93	3.78	.91
PD ₃	I enjoy visiting the Chattahoochee National Forest more than any other forest	3.12	.93	3.74	.91
Affective	Attachment	3 35	83	4.07	70
	I am very attached to this Forest	3 46	.05 95	4.07	.70
AA_2	I feel a strong sense of belonging to this Forest	3.19	.97	3.89	.84
AA ₃	I have little, if any, emotional attachment to the Chattahoochee National Forest*	3.19	1.07	3.99	.97
AA_4	This Forest means a lot to me	3.57	.89	4.35	.70
Place Identity		3.13	.83	3.55	.75
PI_1	I feel the Chattahoochee National Forest is a part of me	2.98	.98	3.56	.90
\mathbf{PI}_2	I identify strongly with this Forest	3.17	.93	3.63	.86
PI_3	Visiting the Chattahoochee National	3.22	.93	3.43	.86
	Forest says a lot about who I am				
Social Bo	nding	2.34	.80	2.71	.70
SB1	If I were to stop visiting the Chattahoochee National Forest, I would lose contact with a number of friends	2.14	.96	2.21	.99
SB ₂	My friends/family would be disappointed if I were to start visiting other forests	2.14	.88	2.47	.89
SB ₃	Many of my friends/family prefer the Chattahoochee National Forest over other settings	2.76	.98	3.43	.82
Value Co	ngruence	3.41	.72	3.78	.65
VC,	The Forest Service shares my values	3.52	.84	3.91	.81
VC_2	The Forest Service has the same goals as me	3.32	.88	3.80	.76
VC ₃	The Forest Service does a better job of managing natural resources than other public land management agencies	3.37	.80	3.60	.81

 TABLE 1

 Agency Commitment Item Means

Note: All items measured along a 5-point Likert-type scale where 1 = Strong Disagree through 5 = Strongly Agree.

*Reverse coded

¹The items used in the Cleveland Metroparks survey were altered to reflect the degree of respondents' commitment to Cleveland Metroparks and their settings and facilities (see Appendix A)

the CNF data. The first model we examined was the *null model* which assumes that the dimensions of commitment are unrelated. We proposed the null model as a baseline from which comparisons to other models were made (Noar, 2003). Several confirmatory factor analytic (CFA) fit indices also rely on the information provided by the null model. The second model we tested was a one-factor model which considered agency commitment in terms of a single dimension rather than a five factor solution. Support for this model would suggest that agency commitment is a unidimensional concept. The third model, an uncorrelated factors model, tested the idea that our five dimensions of agency commitment are orthogonal. Support for this model would indicate that the dimensions of agency commitment are unrelated constructs. The fourth model considered agency commitment in terms of five correlated factors (correlated factors model). Retention of this model would indicate that individuals discriminate among the five factors, but they are intercorrelated with one another (Noar, 2003). Lastly, the final model that we tested suggested that agency commitment could be represented by a second-order factor that accounted for the relations among the five agency commitment dimensions (*hierarchical model*).

On the basis of prior empirical research and our earlier conceptual arguments, we hypothesized that the correlated factors and hierarchical models would best fit these data. The model of best fit was assessed based on consistency with previous theory and research, parsimony, and empirical indicators of fit. The goodness-of-fit indices that we used to empirically assess fit where the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the normed fit index (NFI; Bentler & Bonett, 1980), the comparative fit index (CFI; Bentler, 1990), the incremental fit index (IFI; Bollen, 1989), and the Akaike information criterion (AIC) (Akaike, 1987). Generally accepted values for each of these fit indices are (a) RMSEA values falling between .06-.08 (Byrne, 2000); (b) NFI values greater than .90 (Kenny, 2003); and (c) IFI and CFI values greater than .95 (Hu & Benlter, 1998). The AIC value alone has little substantive value but is used in the comparison of two or more models. Smaller values represent a better fit (Hu & Bentler, 1995). The AIC also allows for the comparison of non-nested models and penalizes model complexity (i.e., over-parameterization) (Byrne, 1998).

In the second stage of the analysis, we examined the psychometric properties of best fitting model emerging from stage one. Specifically, we examined the validity (i.e., convergent and discriminant) and reliability of the measures used in this conceptualization.

Finally, in the third phase of the analysis, the best fitting model emerging from stage one was then cross-validated with data collected from members of the *Emerald Necklace* database using LISREL's (version 8.51) multigroup confirmatory factor analysis. The procedure involved simultaneous tests of the model using both data sets. Given that these two agencies manage distinct settings that have the potential to support diverse leisure experiences, it could be possible that the nature of respondents' agency commitment may also vary. These differences would be reflected in their interpretation of the commitment scale items and the degree to which the dimensions of commitment capture this variation within each sample.

Results

Item Descriptives

Overall, respondents drawn from the Cleveland Metroparks' Emerald Necklace database expressed stronger commitment to the agency and their settings than did respondents' sampled in the CNF (see Table 1). For the CNF sample, items measuring value congruence received strongest support (grand M = 3.41, SD = .72), whereas the items measuring affective attachment received the strongest support among the Emerald Necklace subscribers (grand M = 4.07, SD = .70). Both samples indicated that social bonding was not a substantial factor underlying their commitment to the agency (CNFgrand M = 2.34, SD = .80; Cleveland Metroparks—grand M = 2.71, SD =.70).

Model Testing

The five models of agency commitment were tested using confirmatory factor analysis (CFA) in LISREL using data collected from the CNF visitors.² Table 2 provides a summary of the fit indices for each of the models. Following an initial test of each model, inspection the LISREL's modification indices indicated that significant improvement in model fit could be obtained by allowing several error terms associated with the observed measures to correlate (i.e., $\varepsilon_8 \leftrightarrow \varepsilon_5$ and $\varepsilon_{12} \leftrightarrow \varepsilon_{11}$). Byrne, Shavelson, and Muthén (1989) noted that "research with psychological constructs in general . . . has demonstrated that in order to obtain a well-fitting model, it is often necessary to allow for correlated errors; such parameter specifications are justified because, typically, they represent nonrandom measurement error due to method effects such as item format associated with subscales of the same

Model Comparisons									
Models	χ ²	df	RMSEA (90% CI)	NFI	CFI	IFI	AIC		
Null Model	4193.77	120	_	_		<u></u>	_		
One-factor	894.95	102	.15 (.1416)	.79	.81	.81	1069.77		
Uncorrelated factors	1498.74	102	.19 (.1820)	.64	.66	.66	1688.27		
Correlated factors	283.36	92	.073 (.064084)	.93	.95	.95	379.29		
Hierarchical	555.68	102	.098 (.09011)	.87	.89	.89	567.80		

TABLE 2

²The analysis presented here is based on the covariance matrix. The covariance matrix was constructed in SPSS using a listwise deletion procedure which left us with 405 cases.

measuring instrument" (p. 460). The common source of error variance in this study was attributable to similarity in item wording, questionnaire format, and level of measurement. These results indicated that the *correlated factors model* best fit the data ($\chi^2 = 283.36$, df = 92, RMSEA = .073, NFI = .93, CFI = .95, IFI = .95, AIC = 379.29). As previously mentioned, in this conceptualization of agency commitment, the dimensions of agency commitment (latent factors) were permitted to covary.

Psychometric Properties of the Agency Commitment Scale

We then examined the validity and reliability of the five correlated factor conceptualization of agency commitment. Two forms of construct validity were used in this assessment: convergent and discriminant validity. Convergent validity refers to the extent to which independent measures concur in their assessment of the same construct, whereas discriminant validity examines the extent to which the independent measures diverge in their assessment of these constructs (Byrne, 1998). Evidence of convergent validity is reflected in the strength of factor loadings and their associated significant tvalues along with estimates of the average variance explained (AVE). Fornell and Larcker (1981) suggested that factor loadings should exceed .707 for each item. Values falling below this threshold indicate that that latent factor is capturing less than 50 percent of the variation in the manifest item. Anderson and Gerbing (1988) also noted that significant t-values indicate the rejection of the H_o suggesting that the factor loadings are equal to zero. Lastly, AVE estimates for each latent factor provide an estimate of the variance captured by the construct in relation to the amount of variance due to measurement error. Fornell and Larcker suggested that values less than .5 infer that the validity of the indicators and the construct is questionable.

Overall, the factor loadings and *t*-values reported in Table 3 and the AVEs reported in Table 4 provide evidence in support of the agency commitment items' convergent validity. While the factor loadings for several items fell below the .707 threshold (i.e., PD_2 , PI_3 , SB_1 , and VC_3), on the balance of our other indicators (i.e., *t*-values³ and AVEs), we feel there is ample evidence to support the suggestion that each dimension's items are measuring the same latent construct.

Discriminant validity was then tested by (a) individually constraining the correlations among the latent factors to equal 1.0 and examining the effect on model fit, (b) examining the confidence intervals around each of the latent factor correlations, and (c) examining whether or not the AVEs for each latent factors. Bagozzi and Phillips (1982) suggested that perfect correlations between latent factors indicate that the two factors represent the same domain. A complimentary assessment of discriminant validity is to also determine whether the confidence interval (\pm two standard errors) around

³T-values are not provided for items used for scaling reference.

Measure and variable	λ	<i>t</i> -value	SE	Uniqueness	R^2
Place Dependence					
PD ₁	.75	_	_	.43	.56
PD_2	.54	10.65	.07	.70	.29
PD_3	.92	17.41	.08	.15	.85
Affective Attachment					
AA ₁	.82	_	—	.32	.67
AA_2	.92	24.01	.05	.15	.85
AA ₃	.72	16.61	.06	.48	.52
AA ₄	.73	16.63	.05	.47	.53
Place Identity					
PI1	.90	_	—	.20	.81
PI ₂	.84	24.06	.04	.29	.71
PI ₃	.65	15.35	.04	.58	.42
Social Bonding					
SB ₁	.61	-		.62	.37
SB ₂	.72	14.21	.08	.48	.52
SB ₃	.84	11.18	.13	.29	.71
Value Congruence					
VC ₁	.77	—		.40	.59
VC ₂	.91	14.74	.08	.17	.83
VC_3	.63	12.43	.06	.60	.40

 TABLE 3

 Confirmatory Factor Analysis—Chattahoochee National Forest

	1	2	3	4	5	α	Composite Reliability	AVE
1. Place Dependence		.80	.76	.72	.31	.79	.68	.57
L		(289.61)	(236.70)	(175.37)	(30.16)			
		[.7288]	[.6884]	[.6678]	[.2537]			
2. Affective Attachment			.86	.67	.35	.87	.88	.73
			(681.42)	(153.81)	(40.53)			
			[.7498]	[.5975]	[.2941]			
3. Place Identity			—	.72	.38	.83	.73	.65
				(184.79)	(46.82)			
				[.6480]	[.3244]			
4. Social Bonding					.42	.81	.66	.53
					(51.60)			
					[.3252]			
5. Value Congruence						.80	.71	.61

TABLE 4Construct Reliability and Factor Correlations

Note. Chi-square values reported in parenthesis (p < .001) and confidence intervals reported in brackets ($\varphi \pm 2\sigma_e$).

the correlation estimates of latent factors includes 1.0 (Anderson & Gerbing, 1988). Intervals that include 1.0 also indicate that the measures are reflecting the same construct. Finally, Fornell and Larcker (1981) suggested that the AVE calculated for each latent construct should be greater than the squared correlations between each of the constructs.

As shown in Table 4, all indicators of discriminant validity fell within the accepted ranges. Thus, we could confidently conclude that our scale is capturing distinct components of agency commitment.

Finally, we assessed the reliability of our agency commitment scale by calculating Cronbach alpha coefficients and composite reliability estimates for each dimension. Where Cronbach alpha provides an indication of the internal consistency of scale items for each factor, composite reliability estimates provide "a measure of the proportion of shared variance to error variance in the constructs" (Li, Harmer, & Acock, 1996, p. 233). Nunnally (1978) suggested that alpha coefficients should exceed .7 and Bagozzi and Yi (1988) indicated that composite reliability estimates should exceed .6. All of our indicators of reliability met these criteria.

Cross-Validation

In the third phase of the analysis and as an additional test of our agency commitment scale, we examined the measurement and structural components (i.e., factor structure, factor loadings, and factor variances/covariances) of the correlated factors model by cross-validating our conceptualization using data collected from the Emerald Necklace subscribers. In so doing, the measurement and structural properties of the commitment scale were compared simultaneously across the two samples using LISREL's multigroup CFA procedure.⁴ The multigroup procedure involved the testing of increasingly restrictive hypotheses concerning equality between the two samples in terms of: (a) factor structure (H_1) ; (b) factor loadings (H_2) ; and (c) factor variances and covariances (H₃). These hypotheses were tested sequentially by constraining the relevant elements of the model to be equal across groups. The effect of these constraints was examined using the χ^2 difference test (Byrne, 1998). In essence, these tests establish the degree to which our measures and conceptualization of agency commitment, reflected in the correlated factors model, apply to other public leisure service contexts (i.e., Cleveland Metroparks).

Table 5 presents a summary of the analysis. The correlated factors model (i.e., the baseline model) was first tested independently using the Cleveland Metroparks data. Overall, the model did not fit the data as well for the Cleveland Metroparks data as it did for the CNF data. Additionally, the IFI and CFI estimates were slightly below Hu and Bentler's (1998) suggested .95

⁴See Bollen (1989) and Byrne (1998) for a detailed discussion of the procedure. Also, the listwise deletion procedure used to construct the covariance matrix to be analyzed in LISREL left us with 695 cases from the *Emerald Necklace* sample.

1		5					
χ ²	df	$\Delta\chi^2$	Δdf	RMSEA	NFI	CFI	IFI
283.36	92			.073	.93	.95	.95
447.66	92			.076	.92	.93	.93
731.01	184			.075	.93	.94	.94
783.13	195	52.12***	11	.076	.92	.94	.94
739.77	192	8.76	8	.073	.93	.94	.94
1044.76	207	304.99***	15	.087	.89	.91	.91
750.67	198	10.9	6	.073	.92	.94	.94
	χ ² 283.36 447.66 731.01 783.13 739.77 1044.76 750.67	$\begin{array}{c c} \chi^2 & df \\ \hline 283.36 & 92 \\ 447.66 & 92 \\ 731.01 & 184 \\ 783.13 & 195 \\ 739.77 & 192 \\ 1044.76 & 207 \\ 750.67 & 198 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				

 TABLE 5

 Summary of Tests of Invariance

^aThe following factor loadings were permitted to be freely estimated across the two groups; λ_{21} , λ_{31} , and λ_{155} .

^bThe following variances/covariances were freely estimated across groups; ψ_{22} , ψ_{44} , ψ_{51} , ψ_{32} , ψ_{42} , ψ_{52} , ψ_{43} , ψ_{53} , and ψ_{54} .

***p < .001

cutoff. Taken together, however, these goodness-of-fit indices offer moderate support for the model ($\chi^2 = 447.66$, df = 92, RMSEA = .076, NFI = .92, CFI = .93, IFI = .93).

We then tested the form of the factor solution (H₁) across both samples. The fit indices from this test indicated that the five factor solution was an adequate representation of the data ($\chi^2 = 731.01$, df = 184, RMSEA = .075, NFI = .93, CFI = .94, IFI = .94).

In the second test (H_2) we constrained the pattern of factor loadings to be equal across groups. As shown in Table 5, the imposition of this constraint negatively impacted the goodness-of-fit indices for the model ($\Delta \chi^2 = 52.12$, $\Delta df = 11$, p < .001). Following Byrne's (1998) suggestion, independent equality constraints were then imposed on each element within the lambda matrix to test for matrix inequality. Consequently, all but three factor loadings (i.e., λ_{21} , λ_{21} , and λ_{155}) were constrained to be equal across the two groups. This finding indicates that the relationship between the manifest items and their latent constructs was, for the most part, consistent for both samples (see Appendix C for an examination of this variation).

Finally, our third test (H₃) examined the similarity in factor variances and covariances across groups. Factor variances provide an indication of how well a latent construct accounts for the variation in the manifest indicators. Alternately, factor covariances provide an indication of the shared variation of two latent factors. Similar to the tests of H₁ and H₂, we also constrained factor variances and covariances to be equal across the two groups. This significantly impacted model fit ($\Delta\chi^2 = 304.99$, $\Delta df = 15$, p < .001). We then tested the equivalence of each component within the matrix containing factor variances and covariances (ϕ). This procedure indicated that nine elements within the phi matrix were contributing to the matrix inequality and were subsequently freely estimated across groups (i.e., ψ_{22} , ψ_{44} , ψ_{51} , ψ_{32} , ψ_{42} , ψ_{52} , ψ_{43} , ψ_{53} , and ψ_{54} ; see Appendix C for an examination of this variation).

These tests illustrate that, for the most part, our agency commitment scale performed adequately across both public leisure service contexts. While there was some variation in the pattern of factor loadings and variance/ covariances of the latent constructs between the two samples (see Appendix B and C), the variation was not substantially adverse.

Summary and Conclusion

The purpose of this investigation was to propose and test a conceptualization of agency commitment grounded in attitude theory and applicable to public leisure service contexts. Our results provided strongest support for a first-order correlated factor model consisting of five dimensions: affective attachment, place identity, place dependence, social bonding, and value congruence. This model was then cross-validated using data collected from a second public leisure service context. The items we used to operationalize our conceptualization were adapted from past investigations studying psychological commitment processes within the context of public land management (Kyle et al., 2004; Williams & Roggenbuck, 1989; Winter et al., 1999). Specifically, these investigations examined the meanings individuals ascribe to natural environments and provide insight on the nature of their bonds to place. It was our contention that, for public leisure service providers and public land management agencies, in particular, in addition to including items that identify the service provider as the primary attitude object, items should also include reference to specific settings or facilities. In both of our study contexts, the most salient element of the services offered to the public are the agencies' settings and facilities. Consequently, recreationists' attachment to the service provider should be considered in terms of their thoughts, feelings, and behaviors related to these settings. We also drew on the work of Winter et al. (1999) and Borrie et al. (2002) who suggested that in the context of public land management, agency trust is an important indicator of various stakeholders' sentiment toward the agency and the agencies' management actions. Consequently, we adapted several items developed by Winter et al. to capture respondents' trust in the service provider.

With regard to our own agency commitment scale, while our analysis demonstrated that it was an adequate representation of the data collected from two public leisure service contexts, we would still encourage continued investigation. A distinct characteristic of our two study contexts concerns these agencies' management of public lands and their missions tied to environmental preservation and education. These missions place strong emphasis on the specific settings and humans interaction with these settings.⁵

⁵Cleveland Metroparks also provides a diverse range of other leisure services that are consistent many other municipal recreation agencies; e.g., open playing fields, recreation centers, basket-ball and tennis courts, etc.

Consequently, our measure of agency commitment was designed to capture the meanings respondents ascribed to the setting in addition to the service provider. Not all public leisure service providers, however, have such a deep reliance on settings that foster dependence, emotion, and identity affirmation processes. Many of the settings and facilities managed by such providers are human constructions situated in urban environments. Consequently, it remains to be seen if these settings and facilities elicit many of the positive psychological outcomes that have been associated with natural landscapes (Kaplan & Kaplan, 1989). Having said this, recreation places, be they built or natural, are social constructions that acquire meaning through interactions between individuals, groups, and the settings hosting the experience (Greider & Garkovich, 1994; Lee, 1973). Studies have shown that these places can be important places for a variety of reasons for a broad demographic (Henderson & King, 1999; Milligan, 1998). Thus, it remains to be seen whether our agency commitment scale is appropriate for public leisure service providers situated in more urban settings with few natural or open spaces. While our conceptualization of agency commitment was developed with public service providers in mind, private agencies interest in social marketing activities is increasing (Kotler et al., 2002). Consequently, issues of trust and meaning may also be of interest. It would be interesting to explore this scale's performance in private leisure service contexts also. Testing in these environments would both further our understanding of agency commitment across other leisure service contexts in addition to providing insight on the meanings recreationists associate with human influenced landscapes and structures.

While it has been our contention that in many public leisure service contexts recreationists' relationship with an agency can best be understood by examining the bonds they share with the settings and facilities managed by the agency, we acknowledge that in many contexts there is likely to be a disconnect between constituents' attachment to the resource and their trust in the agency responsible for managing the resource. In these contexts, individuals or groups may share deep and strong ties with a particular setting, yet despise the agency charged with managing the resource. Given public agencies' mandate to manage their settings and facilities for multiple uses and multiple publics, commensurate with this mandate, they must explore ways of reaching out to constituents and include their perspectives in management plans. To this end, our agency commitment scale may help identify these groups. Knowledge that there are significant numbers of visitors who share close bonds with agency resources but care little for the agency itself can be useful for accomplishing agency objectives. It is likely that these groups will be among the first to critique or oppose management actions that run contrary to the meanings they ascribe to the resource. Used in conjunction with other technologies, our conceptualization of commitment has the potential to identify both where and why specific groups oppose management actions. These data could then provide the platform for implementing a participatory-based planning framework that would integrate a variety of perspectives and ultimately engender constituent trust.

A final and important validation of our scale that has valuable practical implications concerns the establishment of the scale and construct's predictive validity. If the goal of social marketing is to influence behavior either by encouraging audiences to (a) accept a new behavior, (b) reject a potential behavior, (c) modify a current behavior, or (d) abandon a new behavior (Kotler et al., 2002), then the next step would be to examine how well the scale accounts for variation in recreationists' behavior relative to the agency (e.g., frequency of use, intensity of use, history of use, type of use). Our multidimensional conceptualization also suggests that the relationships recreationists share with the service provider are likely to differ. These differing relationships may manifest themselves in terms of differing patterns of use. An understanding of the different meanings recreationists ascribe to an agency and its settings has implications for the agency. For example, if recreationists' commitment to the agency lies in their dependence on the settings managed by the agency (e.g., opportunities for ORV use in the CNF and rollerblading along Cleveland Metroparks' linear trails), then behavior modification strategies that restrict use or access to the settings may present the agency with some problems given these recreationists' perceived lack of viable substitutes. Also, as discussed in the context of trust, efforts to manipulate behavior are likely to be better received by those trusting of the agency as opposed to those hostile toward the agency.

Lastly, our procedures for testing the psychometric properties of the agency commitment measure also demonstrated the utility of structural equation modeling software (e.g., LISREL, EQS, AMOS) for developing and testing scales. As we have demonstrated in this investigation, the strength of this approach lies in its reliance on theory to inform modeling decisions. As noted by Bollen (1989) in his seminal text on structural equation modeling, "Empirical results can reveal that initial ideas are in error or they can suggest ways to modify a model, but they are given meaning only within the context of a substantively informed model" (p. vi). Alternately, leisure researchers that have examined both agency commitment and other related social psychological constructs (e.g., leisure involvement, place attachment, specialization) have tended to rely on exploratory factor analytic techniques.⁶ The persistent use of exploratory factor analysis, while potentially useful for initial scale development (e.g., data reduction), lacks the power of these programs designed explicitly for the process of theory development. In the context of exploratory factor analysis, researchers have tended to rely on empirical indicators alone (e.g., factor loadings, eigenvalues, communalities) to inform their decisions concerning factor solutions. Consequently, issues related to the dimensionality of specific constructs go unresolved. This process inhibits

⁶See Pritchard et al. (1999) and Lee & Scott (2004) for notable exceptions.

our ability to develop sound instrumentation that transcend study contexts. Given these weaknesses, we would encourage investigators to more readily utilize the tools provided within the structural equation modeling programs. Sound examples are beginning to appear in our literature (e.g., Baldwin & Caldwell, 2003; Petrick, 2002; Pritchard et al., 1999) and should serve as a guide for future efforts.

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APPENDIX A

Agency Commitment Items for Cleveland Metroparks

For the recreation activities that I enjoy most, the settings and facilities provided by PD_1 Cleveland Metroparks are the best PD, Compared to the Cleveland Metroparks, there are few satisfactory alternatives PD₃ I enjoy visiting Cleveland Metroparks more than any other sites Affective Attachment AA, I am very attached to Cleveland Metroparks AA_{2} I feel a strong sense of belonging to Cleveland Metroparks and its settings/facilities I have little, if any, emotional attachment to Cleveland Metroparks and its settings/ AA_3 facilities AA_4 Cleveland Metroparks means a lot to me Place Identity PI_1 I feel Cleveland Metroparks is a part of me PI. I identify strongly with Cleveland Metroparks Visiting Cleveland Metroparks says a lot about who I am PI₃ Social Bonding SB_1 If I were to stop visiting Cleveland Metroparks' sites, I would lose contact with a number of friends SB₂ My friends/family would be disappointed if I were to start visiting other settings and facilities SB₃ Many of my friends/family prefer Cleveland Metroparks over other sites Value Congruence VC_1 Cleveland Metroparks shares my values VC_2 Cleveland Metroparks has the same goals as me VC_3 Cleveland does a better job of managing natural resources than other public land management agencies

Note: All items measured along a 5-point Likert-type scale where 1 = Strong Disagree through 5 = Strongly Agree.

Measure and Variable	λ	<i>t</i> -value	SE	Uniqueness	R^2
Place Dependence		***			
PD ₁	.75	_	_	.43	.56
PD_2	.70	17.66	.06	.50	.50
PD_3	.81	20.30	.06	.34	.66
Affective Attachment					
AA ₁	.82	_	_	.32	.67
AA_2	.92	24.44	.04	.15	.85
AA ₃	.72	17.73	.05	.48	.52
AA_4	.73	20.80	.03	.47	.53

APPENDIX B Confirmatory Factor Analysis—Cleveland Metroparks Sample

Place Dependence

Measure and Variable	λ	<i>t</i> -value	SE	Uniqueness	R^2
Place Identity					
\mathbf{PI}_1	.90			.20	.81
PI_2	.84	28.22	.03	.29	.71
PI ₃	.65	16.50	.04	.58	.42
Social Bonding					
SB ₁	.61		—	.62	.37
SB_2	.72	8.89	.15	.48	.52
SB ₃	.84	8.22	.19	.29	.71
Value Congruence					
VC ₁	.77	—		.40	.59
VC ₂	.72	17.43	.05	.48	.52
VC ₃	.63	14.14	.05	.60	.40

APPENDIX C

Construct Reliability and Factor Correlations—Cleveland Metroparks Sample

	1	2	3	4	5	α	Composite Reliability	AVE
1. Place Dependence		.80	.76	.72	.81	.62	.69	.57
		(388.54)	(229.45)	(209.98)	(289.21)			
		[.7481]	[.7082]	[.6678]	[.7587]			
2. Affective Attachment		—	.80	.54	.85	.84	.73	.65
			(448.01)	(105.41)	(432.50)			
			[.7486]	[.5058]	[.7991]			
3. Place Identity				.64	.78	.77	.66	.53
				(167.31)	(300.06)			
				[.5870]	[.7284]			
4. Social Bonding				—	.70	.60	.71	.61
					(167.60)			
					[.6674]			
5. Value Congruence						.63	.64	.50

Note. Chi-square values reported in parenthesis (p < .001) and confidence intervals reported in brackets ($\varphi \pm 2\sigma_e$)