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The Journal of Park and Recreation Administration (Print ISSN: 0735-1968 Online ISSN: 2160-6862) is published by the American Academy for Park and Recreation Administration (www.aapra.edu), Sagamore Publishing LLC, 1807 N. Federal Dr., Urbana, IL, 61801-1051.

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The Journal of Park and Recreation Administration (Print ISSN: 0735-1968, Online ISSN: 2160-6862) is published quarterly for the American Academy for Park and Recreation Administration by Sagamore Publishing LLC, Urbana, IL. 61801-1051. Periodicals postage pending at Urbana, IL, and at additional offices. POSTMASTER, please send address changes to the Journal of Park and Recreation Administration, Sagamore Publishing LLC, 1807 N. Federal Dr. Urbana, IL 61801-1051. E-mail books@sagamorepub.com.

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The Academy has established a videotape library of interviews with top professionals in the field. In addition to being of great historical value, the tapes in the *Legends in Parks and Recreation Library* contain many ideas on agency administration, working with board members, staff relations, organizational development, and creative management.

The Academy awards program has three components. The *Willard E. Sutherland Practitioner Award* is presented every three years for the best paper published by a practitioner in the *Journal of Park and Recreation Administration*. The Best Paper Award is awarded every three years in recognition of a master’s thesis or undergraduate paper that contributes the most to scholarly literature and improved practice of park and recreation administration. A similar award is given every three years for the best doctoral dissertation.

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EXECUTIVE SUMMARY: Since the inception of the Americans with Disabilities Act (1990), the recreation profession has made significant strides toward promoting inclusion for consumers with disabilities. What remain unknown are the gains and gaps related to inclusion, specifically current barriers to inclusion experienced by recreation organizations and ways in which professionals are addressing those barriers. Knowing and understanding barriers to inclusion experienced by agencies is important so individuals with disabilities can be full participants in their communities. This study examined barriers to inclusion and ways in which organizations are responding to the barriers from an ecological approach. A random sample of park and recreation organizations across the United States participated in a survey regarding administrative- and community-related barriers they have experienced when providing inclusive recreation services. The respondents were also asked to identify ways in which they have addressed the barriers. Where applicable, results were compared to a prior study to highlight the advances in inclusion and discuss current barriers. Respondents (N = 761) indicated that they experienced few administrative barriers (e.g., policies, administrative support) with the exception of financial barriers and marketing. It was recommended that organizations use nontraditional means to fund inclusive services and partner with disability-specific organizations to market inclusive services. Community responses to inclusion were also examined to fully understand barriers that may be beyond the scope of a recreation agency but that they may be able to influence. Respondents reported that they did not perceive resistance to inclusion by the general public, individuals with disabilities, or their family members or caregivers. The respondents’ perceptions of the general community toward inclusion differed from findings of other studies; thus, further examination is recommended. Future studies comparing results from an agency perspective with the general public, participants with disabilities, or family member or caregiver perspectives would be helpful to gain a complete understanding of recreation needs, barriers, and possibilities.
Important gains in the inclusion of individuals with disabilities in leisure environments have been made since the Americans with Disabilities Act (ADA; 1990) was written into law in 1990. These gains can be attributed to legal decisions, a shift in philosophy, and a new generation of leisure services providers and consumers (Spencer-Cavaliere & Watkinson, 2010). While the gains are important to note and recognize, there are still identifiable and significant gaps in service provision to individuals with disabilities.

Inclusion of individuals with disabilities in leisure services was driven by the ADA, research, advocacy on the part of individuals with disabilities and their caregivers, and a willingness of park and recreation professionals to meet the needs of these customers (Devine & Kotowski, 1999; Jones, 2003; Klitzing & Wachter, 2005). Public, nonprofit, and for-profit sectors of the park, recreation, and tourism industry have been required to comply with the ADA since its inception. In 1997 a group of recreation professionals and researchers examined the degree to which organizations within the public park and recreation arena were making accommodations based on the mandates of the ADA. That study also examined barriers that these organizations were encountering with the provision of inclusive recreation services (Devine & Kotowski, 1999). The most telling result was that few agencies were providing inclusive leisure services to their consumers with disabilities. This was problematic as the ADA had been law for more than six years when that study was conducted. Since then, the park, recreation, and tourism industry has made advances in not only compliance with the ADA but also with developing and adopting best practices, training personnel, and raising awareness about inclusion within and outside of their agencies (Klitzing & Wachter, 2005; Schleien, Germ, & McAvoy, 1996; Scholl, Smith, & Davison, 2005).

Research has added to the body of knowledge in inclusive recreation relative to the spirit and philosophy of inclusion (Bedini & Henderson, 1994), social acceptance in inclusive settings (Devine & Dattilo, 2000; Devine & Lashua, 2002), best inclusive practices (Klitzing & Wachter, 2005; Schleien et al., 1996; Wachter & McGowan, 2002), preparedness and training of staff to facilitate inclusion (Devine & McGovern, 2001; Sable, 1995), and the role of inclusion on health promotion (Sable & Gravink, 2005). However, little is known about the current application of these recommended practices or barriers encountered by recreation providers when planning or delivering inclusive services.

**Review of Literature**

The concept of inclusion encompasses individuals with and without disabilities engaging together in various aspects of community life, including recreation (Anderson & Kress, 2003). Devine and Dattilo (2000) note that inclusion in recreation contexts involves reducing individual barriers to recreation engagement by using adaptations and accommodations designed to maximize a person’s abilities. Inclusion of individuals with disabilities in a recreation context not only is required by law but also broadens the opportunities and leisure repertoire of these community members (Devine & Kotowski, 1999).

The first national study of inclusive recreation practices by park and recreation agencies (Devine & Kotowski, 1999) revealed two prominent barriers: a lack of funding
and a lack of trained and prepared staff. Respondents also reported a lack of knowledge about reasonable accommodations including how to design, implement, or evaluate accommodations. Approximately 50% of the respondents indicated that their physical environments were accessible, with the other 50% indicating a range in the degree of physical accessibility. Finally, respondents indicated a lack of staff awareness of the needs of individuals with disabilities and a lack of sensitivity toward these community members on the part of staff and peers without disabilities.

To determine the readiness of park and recreation agencies for inclusive recreation service provision, Devine and McGovern (2001) examined how well organizations were prepared in marketing, staff training, adaptive equipment, policy revision, and physical accessibility. Findings revealed that most respondents did not provide any specific marketing of inclusive services, contract with inclusion consultants or specialists, or retrofit physical areas for accessibility. Approximately 50% of organizations had conducted some training but not extensive staff training, purchased adaptive equipment, and revised policies to meet the mandates of the ADA. Respondents also indicated that they had not adequately reviewed or revised their policies and procedures to be in compliance with the ADA, and few agencies had conducted little if any marketing of their inclusion services. This study revealed a pattern of inadequately prepared recreation agencies to meet the mandates of the ADA and the needs of constituents with disabilities.

Extending the research on inclusive recreation service provision, Klitzing and Wachter (2005) examined structure, process, and outcome variables of best inclusion practices to determine inclusion benchmarks for the recreation industry. The benchmarks included outcome measures (number of participants in inclusive services as percentage of total service population), structure characteristics (resources and organizational structure used to deliver inclusive services), and process characteristics (types of recreation services provided and inclusion strategies used). Klitzing and Wachter reported a low range of number of inclusion participants across agencies (2%–14%) compared to the total population served. Structural characteristics revealed agencies had full- and part-time staff with at least one staff member being a Certified Therapeutic Recreation Specialist (CTRS). Each agency served preschoolers through older adults and a wide range of disability groups. The characteristics of the four agencies included providing a range of services to individuals with disabilities (i.e., segregated and inclusive), having extensive staff and volunteer training, using various inclusion strategies (i.e., adaptive equipment, inclusion companions, cooperative activities), and using several methods of program evaluation (i.e., participant or parent surveys, telephone interviews). Two of the agencies conducted individual inclusion plans for participants. This study offered several useful and significant ways to provide inclusion by applying best practices. Specifically, the option of a range of services for people with disabilities, extensive training for staff, and the use of multiple inclusion strategies were common among all agencies. Findings from this study provide benchmark strategies when providing inclusive recreation services. However, the authors noted that the number of individuals with disabilities receiving inclusive services was quite low compared to the number of agency participants overall. According to recent statistics, approximately 19% of the U.S. population lives with a disability (U.S. Census Bureau, 2010), raising the question, what barriers to providing inclusive recreation services are park and recreation agencies experiencing?

Building on the research of others (e.g., Devine & McGovern, 2001; Klitzing & Wachter, 2005), Schleien, Miller, and Shea (2009) examined best practices of park and recreation agencies in providing inclusive recreation services. Schleien et al. (2009) conducted semistructured interviews with 15 agencies perceived as leaders in inclusion and found an overarching theme in that administrators were critical in supporting and sustaining inclusive service delivery. Specifically, administrators designated it as a priority in service delivery and communicated that it is priority in all agency business. Another important finding of best practices was the designation of a staff person to facilitate inclusive services. All but two of the 15 agencies interviewed had a CTRS as their
inclusion facilitator. The authors found that a CTRS best served as an inclusion facilitator because these professionals are trained to plan and implement recreation programs, make adaptations, understand behavior management, and conduct program evaluation. Respondents also emphasized the importance of conducting training with all staff on inclusive practices. While most of the agency facilities were accessible and inclusion facilitators were aware of ADA facility accessible regulations, the facilitators still found a need to be very proactive in ensuring accessibility for future buildings areas. Inclusion facilitators did so by inviting themselves to planning meetings and asking to review plans for parks or recreation buildings. Schleien et al. (2009) found that funding for inclusive services continues to be a problem even for the best of agencies but reported that agencies that adopt promising practices have allocated funding for accommodations and adaptive equipment. Marketing was an area that all respondents indicated needed improvement. In particular, they noted most of their marketing efforts were conducted through direct marketing, but they felt the need to use other methods to reach a broader audience. Finally, Schleien et al. (2009) reported that evaluation on participation numbers and costs was common, but most agencies do not conduct outcome evaluations on inclusive services. Schleien et al. (2009) concluded that specific fundamentals to providing inclusive services are necessary, but for fundamental practices to be in place, a recreation agency must have a vision to welcome and accommodate all community members in services.

The recent emphasis on best practices resulting from the studies by Klitzing and Wachtzer (2005) and Schleien et al. (2009) highlights their importance for effective inclusive recreation service provision. Strides have been made in providing inclusive leisure services over the past 15 years, and litigation has helped define parameters of the ADA such as reasonable accommodation. However, a study to determine the current state of inclusion across the United States would provide a broader view of inclusive recreation practices, valuable information for training, further development of best practices, and insight into addressing limitations and barriers to inclusion.

The purpose of this study was to identify barriers to inclusive leisure service provision experienced by park and recreation agencies and approaches used to address the barriers. Questions under examination were as follows: What barriers to providing inclusive recreation services are encountered by park and recreation agencies? What solutions do park and recreation agencies use to address barriers to inclusion? For the purposes of this study, inclusion was defined as individuals with and without disabilities engaging together in various forms of leisure.

Method

Theoretical Approach

This study was approached using ecological theory. Ecological theory is based on the concept of interconnectedness between people and their environments by using a systems approach (Bronfenbrenner, 1979). A systems approach is defined as a network of components directly or indirectly related in a causal manner (Howe-Murphy & Charboneau, 1987). The rationale for using an ecological approach in this study was that it allowed barriers to inclusion and approaches used to address the barriers to be examined from multiple perspectives. Specifically, administrators were asked to identify barriers from three different perspectives or systems, administrative, personnel, and community systems. An approach instead of a framing or grounding in ecological theory was used because only administrators were asked to identify barriers to inclusion.

Subjects

This study was conducted in cooperation with National Recreation and Park Association (NRPA) and the National Institute on Recreation Inclusion (NIRI). Respondents surveyed were a stratified random sample of municipal park and recreation and private nonprofit recreation administrators throughout the United States whose organizations were registered as NRPA members (N = 3,794). Potential respondents were identified by
a staff person from NRPA, who also secured e-mails for survey distribution. Agencies were stratified according to community or consumer population size in which they were located or served. A stratified sample was chosen so that the sample selected would be representative of the population of park and recreation agencies registered as member agencies with NRPA (Dillman, Smyth, & Christian, 2009). In other words, a sample of potential survey respondents was drawn to mirror the entire NRPA agency population according to community or consumer population size. A response rate of approximately 662 usable surveys was needed to generalize findings and make accurate recommendations to the larger population of NRPA member agencies (Huck, 2008).

Instrument

The Inclusive Recreation for Individuals with Disabilities Questionnaire was developed in 1996 for purposes of collecting data for a national study (Devine & Kotowski, 1999). It was revised in 2006 and 2007 to reflect current ADA mandates and contemporary issues related to inclusion. The initial and current instruments used ecological theory as the approach (Bronfenbrenner, 1979) to obtain data on three categories: administrative, personnel, and community obstacles and solutions agencies used to address those barriers. The intent of the instrument is to understand the administrator’s operational system, their organizational system, and the community system. Thus, the ecological approach framed the process so researchers could examine the dynamic of the issues at different layers or points a park and recreation system uses when providing inclusive leisure services. The categories of questions from the initial instrument remained the same, as did most of the context (e.g., funding inclusion, changes in policies and procedures). One revision made was to eliminate asking respondents to rank the problems they encountered with providing inclusion services. Instead, questions addressed how organizations were providing inclusion services, what barriers they encountered, and which ways barriers were addressed. A Likert scale was used to respond to the question instead of a ranking scale. This change was made based on the research questions for the present study as well as on advancements in the body of knowledge related to inclusion. By eliminating a forced ranking, the researcher could better understand a greater range of barriers and solutions to providing inclusive leisure services. At the end of each section, there was an open-ended response option where respondents could add details, clarify choices, or offer a response that was not available.

Since this instrument was updated from a previous version, a new reliability coefficient and content validity were sought. A committee of field experts was formed and consisted of members of the National Institute on Recreation Inclusion (NIRI) Steering Committee (N = 15), park and recreation administrators whose agencies were not organizational members of NRPA (n = 5), a researcher in the area of recreation inclusion, and an expert in the area of survey research. First, content validity was sought from the committee. Drafts of the instrument were given to all for review and critique of content, design, clarity of wording, and length. The instrument went through seven reviews by committee members and was considered complete when all reviewers reached consensus on content validity. Once content validity was established, members of the NIRI Steering Committee were asked to complete the instrument four times over a four-month period to establish test–retest reliability. Using a Pearson’s Correlation, the reliability coefficient obtained was .84 (p < 05). The final instrument was an 80-item questionnaire (including demographic questions) with Likert scale (5 = always, 1 = never) and open-ended responses that took approximately 40 minutes to complete.

The questionnaire began with nine different demographic questions such as size of community or customer base, geographic location, and respondent’s position title. Next, respondents were asked to identify ways in which inclusive services are organized and who provides them. To identify organizational obstacles and solutions, questions focused on various administrative aspects of providing inclusion (e.g., has your organization encountered a lack of financial resources to providing inclusion? Has your organization encountered policies or procedures that are obstacles to providing inclusion?). Questions about personnel obstacles centered on adequate numbers of staff, hiring practices of inclusion-related staff, administrative support, level of knowledge about inclusion (i.e., the...
ADA, adaptations or accommodations) of current staff, outside resources used for inclusion, and staff training conducted. Agencies are required to comply with the ADA regardless of community sentiment or support, thus this study sought to understand issues raised in the community that were obstacles to inclusion. Sample questions included the following: Has your organization encountered resistance by the general public toward inclusion? Has your organization encountered resistance by individuals with disabilities toward inclusion? Has your organization encountered resistance by family members or caregivers of individuals with disabilities toward inclusion?  

**Data Collection and Analysis**

Data was collected using an electronic survey instrument. Electronic mail messages and the questionnaire were sent in June 2008 by an NRPA staff member to 1,680 administrators requesting their agency’s participation in the study. Messages were sent to administrators in all eight of NRPAs geographic regions, located in a wide variety of community or consumer population sizes and to private nonprofit agencies that served between 3,500 and 20,000 members. The message included the purpose and explanation of the study and a Web-based link to the survey. Instructions to the administrators were to have the person in their organization most familiar with the agency inclusive services complete the questionnaire.

The website used to collect data was a private company that allows users to create and post their own Web-based surveys. Data and user identities are secure using an encryption process and multi-machine backup system. To increase the response rate, three additional e-mails were sent only to individuals who had not yet responded weekly for three weeks following the initial message (Dillman et al., 2009). The ability to send response reminders was a feature available through the Web-based data collection system. Data were transferred to SPSS 15.0, and descriptive statistics and Spearman’s Rho correlations were used in the analysis.

The instrument also included open-ended response options, which were treated as support data for the questions posed. The responses to open-ended questions were categorized according to the topic (e.g., organizational obstacles) and question. Responses were analyzed according to the frequency of each response and used to further understand the quantitative data.

**Results**

Completed surveys were received from 761 agencies, a 45% response rate, which according to Dillman et al. (2009) is an adequate response rate for survey research. Additionally, this exceeded the needed response rate of approximately 662 usable surveys necessary to make generalizations to the population of NRPA member agencies. While steps were taken to increase response rate to yield the greatest number of completed instruments, there was still a 55% nonresponse rate. Nonresponse bias was assessed by comparing the demographics of responding agencies with those that did not respond, and the demographics were found to be similar (Huck, 2008).

Respondents were from all eight of the geographic service regions with the greatest number from the Southern (17.6%) and Great Lakes (17.5%) regions (see Table 1). The majority of the respondents were mid-level managers (i.e., assistant directors, assistant superintendents, program supervisor) (76%), followed by therapeutic recreation specialists (13%), and park rangers (11%). A chi-square cross-tabulation procedure was conducted to analyze the response difference between agencies based on the position held by the respondents, and no significant differences were found $\chi^2 (1, N = 662) = .99, p > .05$. As shown in Table 1, the size of the community or service base spanned all categories, but the majority of respondents served communities or had a service base of less than 25,000 people ($N = 163$), closely followed by communities of 50,000 to 99,999 ($N = 152$) and 25,000 to 49,999 ($N = 151$).
Administrative Barriers and Solutions

Administrative questions focused on organizational issues such as program coordination, fiscal issues, administrative support, policies and procedures, and marketing. The purpose was to determine organizational obstacles and how agencies addressed those obstacles.

Inclusive services provided. Respondents were asked to identify the recreation services they most often provide for individuals with disabilities and how those services were organized. Most respondents (26%) indicated that they provided separate (disability only) and inclusive services to consumers with disabilities (Table 2). This was closely followed by agencies that provide only inclusive services (24%) and those that provided separate inclusive and senior services (22%). The remaining respondents provided only separate services to individuals with disabilities (11%), inclusive and senior services (9%), or only senior services (8%). Some open-ended responses indicated that agencies did not provide any formal inclusion services, but provided accommodations when needed or requested. Respondents who indicated providing separate and inclusive services (8%) served populations sizes of 50,000 or greater. Those who responded that they provided only inclusive services or only senior services were predominantly in communities or had a service base of less than 25,000. Agencies that provided separate and inclusive services to individuals with disabilities was highly correlated with their services being coordinated by someone who had a disability-specific background ($r_{n = 105} = .88, p < .023$), such as a Certified Therapeutic Recreation Specialist (CTRS).
Program coordination. Knowing how inclusive services are organized can be helpful to understanding trends in human resource management and training. The most frequent response to how agencies organized their inclusive services was by a recreation professional with a generalist background (N = 295; 40%) rather than a disability-specific background (e.g., therapeutic recreation, special education). Of the respondents who indicated that they organized their services using someone with a generalist background, the majority (N = 175; 59%) served populations of less than 50,000. Most agencies that used personnel with disability-specific training to organize and facilitate their inclusion programs employed Certified Therapeutic Recreation Specialists (CTRS) and served larger communities. Almost 16% (N = 117) of agencies reported they had a generalist and a disability specialist jointly provide inclusive services, and 14% (N = 106) of respondents reported that no one particular staff person organizes or facilitates their inclusion services. The open-ended response for this section asked respondents to indicate if there were other program coordination arrangements not listed. No respondents listed any other options.

Fiscal issues. Respondents were asked if they encountered a lack of financial resources as an obstacle to providing inclusive services. While responses were mixed, the largest number of respondents indicated that it was sometimes a barrier (38.7%; N = 263). The next most frequent response sets were from those who indicated it was rarely a barrier (21.2%;

<table>
<thead>
<tr>
<th>Population Services Provided</th>
<th>Under 25k</th>
<th>25-49k</th>
<th>50-99k</th>
<th>100-249k</th>
<th>250-499k</th>
<th>500-799k</th>
<th>800k &amp; above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate &amp; Inclusive</td>
<td>30</td>
<td>38</td>
<td>30</td>
<td>20</td>
<td>29</td>
<td>17</td>
<td>34</td>
<td>198</td>
</tr>
<tr>
<td>Inclusive Only</td>
<td>47</td>
<td>42</td>
<td>34</td>
<td>16</td>
<td>12</td>
<td>11</td>
<td>21</td>
<td>183</td>
</tr>
<tr>
<td>Separate Only</td>
<td>10</td>
<td>30</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Separate, Inclusive, &amp; Senior</td>
<td>30</td>
<td>29</td>
<td>36</td>
<td>29</td>
<td>20</td>
<td>12</td>
<td>21</td>
<td>177</td>
</tr>
<tr>
<td>Senior Only</td>
<td>35</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>Inclusive &amp; Senior</td>
<td>11</td>
<td>8</td>
<td>26</td>
<td>13</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td>163</td>
<td>151</td>
<td>152</td>
<td>105</td>
<td>72</td>
<td>41</td>
<td>77</td>
<td>761</td>
</tr>
</tbody>
</table>
N = 144) and those who indicated it was often a barrier (16.3%; N = 111). Organizations for which it was sometimes a barrier predominantly represented a community population of 50,000 to 99,000. For those who indicated it was rarely a barrier predominantly served a population of 25,000 to 49,999 and 100,000 to 249,999. Agencies (9.1%; N = 62) indicating it was often a barrier predominantly represented service populations of under 25,000.

To better understand this barrier, agencies were asked various ways they addressed financial issues. For instance, respondents were asked if they had allocated funds in their operating budget for inclusive services. Approximately 46% of responses indicated that they had separate line items in their general operating budgets but not separate budgets. This finding is slightly fewer agencies than in 1999 (51%) allocating funds specifically for inclusion. Less than 25% (N = 130) indicated that they always allocated separate funds for inclusion, which is an increase of 16% compared to the 1999 study. A correlation analysis found that for agencies that indicated that funding was rarely a barrier had a moderate correlation to allocating separate funds for inclusion services ($r = .64, p < .047$). Other variables explored in addressing financial issues included obtaining grant funding, securing donations, conducting fund-raisers, receiving funds from other initiatives (e.g., percentage of accessible parking fines), increasing user fees, or using a special taxing district (see Table 3).

**Administrative support.** Questions that addressed administrative support inquired about philosophical assistance for inclusion services from upper level administration for providing inclusive services. Respondents were asked whether they experienced resistance to inclusion as an obstacle to providing services. The majority of agencies indicated that they never (47%; N = 365) or rarely (33.6%; N = 255) experienced a lack of support from upper level administrators to inclusive service provision. Only .6% (N = 4) indicated that they always or often (4.3%; N = 32) experienced a lack of support from administration. In the open-ended section related to this question, the most frequent comment provided by respondents regarding administrative support was a need for educating elected officials on administrative and service delivery mandates of the ADA to which they must comply.

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**Table 3**

*Funding Sources by Number of Respondents*

<table>
<thead>
<tr>
<th>Types of Funding</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grants</td>
<td>92</td>
</tr>
<tr>
<td>Secured donations</td>
<td>60</td>
</tr>
<tr>
<td>Conducted fund-raising</td>
<td>28</td>
</tr>
<tr>
<td>Increased user fees</td>
<td>43</td>
</tr>
<tr>
<td>Receiving funds from other means</td>
<td>16</td>
</tr>
<tr>
<td>Used special taxing district</td>
<td>101</td>
</tr>
</tbody>
</table>
Policies and procedures. Practices and service provisions are guided by policy in most park and recreation organizations. The intent of inquiries about agency policies and procedures in this study was to understand whether they were an obstacle to inclusive service provision. Results showed that they were not an obstacle. Respondents (31.4%; n = 238) indicated that their agency’s policies and procedures were never a barrier, and 41.4% (N = 315) replied that the policies and procedures were rarely a barrier to inclusive practices. For those who responded that policies and procedures were never a barrier, this finding was highly correlated with organizations having reviewed and revised policies and procedures to meet the mandates of the ADA ($r_s = .91, p < .021$), as was for those who responded that it was rarely a barrier ($r_s = .89, p < .015$).

Marketing. The purpose of asking questions related to marketing was to discern whether the direct marketing practices used by the agency were an obstacle to providing inclusive services. The results of whether adequate marketing was a barrier to inclusion had mixed findings. Collectively, 55% of respondents identified inadequate marketing as sometimes (32.8%; N = 249), often (17.1%; N = 130), or always (5.7%; N = 43) as a barrier to providing inclusive services. Whereas a total of 45% indicated it was rarely (26.7%; N = 203) or never (17.8%; N = 135) a barrier. Respondents in communities with 250,000 to 800,000 and over most frequently indicated that marketing was rarely or never an obstacle. Those in communities with under 25,000 to 49,999 most frequently indicated that marketing was sometimes an obstacle. Respondents were also asked whether the agency conducted direct marketing of inclusion services to individuals with disabilities as a way to address the marketing barrier. Findings indicated mixed results as well with the majority of agencies clustered around often (23.5%; N = 179), sometimes (37%; N = 282), or rarely (23.8%; N = 183) conducting direct marketing to individuals with disabilities. Agencies that found marketing to sometimes be an obstacle to providing inclusion services was negatively correlated with whether agencies conducted direct marketing with individuals with disabilities ($r_s = -.77, p < .013$). Direct marketing as an obstacle for inclusive service provision was also correlated with a lack of demand for inclusive services ($r_s = .68, p < .038; n = 352$) for respondents who indicated sometimes, rarely, or never conducting direct marketing. The most frequent open-ended comments, posted by respondents to marketing obstacles, was not knowing how to market to people with disabilities and difficulties in reaching this market. To address the marketing obstacle, respondents indicated they were working more closely with the departmental or agency marketing personnel, entering into collaborations with school systems, featuring pictures of individuals with disabilities in their marketing materials, and placing their welcome statement in prominent places in their marketing materials.

Perceptions of Community Barriers and Solutions

Exploring perceptions of community members’ responses to inclusion, from an agency perspective, was important to fully understand gaps that may be beyond the scope of a recreation agency. To that end, respondents were asked if they perceived resistance by the general public to be a barrier to inclusion. An overwhelming majority of respondents indicated that there was rarely (44%; N = 334) or never (33%; N = 251) resistance to inclusion on the part of community members who do not have disabilities. In fact, only 11 respondents (1.4%) indicated that there was often resistance to inclusion, and only one respondent indicated there was always resistance to inclusion by the general public.

Respondents were also asked if they encountered resistance to inclusion by individuals with disabilities or their family members or caregivers. Findings showed that for a majority of respondents (94%) there was little resistance encountered to inclusion on the part of individuals with disabilities. Similar results were found when asked about resistance they encountered from family members or caregivers to inclusion. Of these variables, there was only a significant correlation between the lack of resistance encountered by individuals with disabilities and services that were organized by a CTRS together with a recreation professional with a generalist background ($r_s = .87, p < .021$). There was no
significant correlation with variables and responses regarding participant family members or caregivers.

While respondents indicated a lack of resistance to inclusion from individuals with disabilities and their parents or caregivers, they also reported a lack of demand for inclusion. More than half of the responses indicated often (35.4%; N = 269) or sometimes (32.4%; N = 246) a lack of demand for inclusion services. A lack of demand for inclusion services was most frequently reported by organizations for which it was often or sometimes a barrier predominantly represented a community population of under 25,000 to 49,999.

Of all the open-ended items on the instrument, this topical area generated the most responses. The majority of these responses centered on other community resources needed for individuals with disabilities to engage in recreation services. The most common obstacle noted was a lack of accessible transportation (31%; N = 237). The next most frequently identified community-based obstacle was caregivers of those with disabilities who expressed preference for separate rather than inclusive recreation options for those in their care (27%; N = 211).

Discussion

It was clear from the findings that progress toward providing inclusive leisure services has been made over the past 10 plus years. However, efforts still need to be made in specific areas of service delivery to achieve an optimal level of inclusive leisure services. This section will discuss the findings in terms of gains in providing inclusive recreation services and gaps that continue within recreation and park organizations. Comparisons to a previous study (Devine & Kotowski, 1999; Devine & McGovern, 2001) will be made where applicable and recommendations will be included with the discussion.

Gains and Gaps in Inclusive Recreation Service Provision

Inclusive services provided. A number of administrative aspects to providing inclusive leisure services have made strides in decreasing barriers over the past 10 years. In particular, the number of agencies providing a wide array of inclusive services has dramatically increased from 11% to 89%. In the 1997 study, Devine and Kotowski (1999) reported that 43% of the agencies surveyed indicated that they were providing some level of inclusion services, although type of service was quite varied. Results from the current study indicated that 81% of the respondents were providing inclusion services to individuals with disabilities, with the type of service more consistent (see Table 4). Scholl et al. (2005) reported that key stakeholders (i.e., parents, recreation administrators, CTRS) agreed or strongly agreed that within five years, more children with disabilities will participate in inclusive programs. The increase in the number of agencies providing inclusive services may be reflective of the predicted trend reported by Scholl et al. Other previous studies (see Devine & O’Brien, 2007; Devine & Parr, 2008; Jones, 2003; Magill-Evans, Darrah, & Adkins, 2003) speculated that an increase in interest and demand for inclusion was driven by the experiences (e.g., inclusion in school settings) and expectations of individuals with disabilities to be included in community activities. Another explanation for this finding could relate to increased professional practices (Schleien et al., 2009) and continuing education opportunities (e.g., NIRI) designed to facilitate inclusion. Schleien et al. (2009) reported that park and recreation agencies conducted networking activities with disability service providers, advocacy groups, commissions on disability issues, and school systems. The purpose was to exchange information, promote inclusion services, and collaborate on services, to name a few. Networking of park and recreation professionals may also account for the increase in inclusive service delivery, as there may be increased demand for inclusion, greater awareness on the part of recreation practitioners as to the responsibility to provide leisure services to underserved groups, or a combination of any of these factors.
Program coordination. According to Schleien et al. (2009), an essential component of providing well-designed inclusive recreation services is having a designated staff member to facilitate or coordinate inclusion. This study found that 40% of agencies had a staff member who had a general recreation background coordinating their services, not a person with a disability-specific background, which poses advantages and disadvantages. One advantage is that it sends an organizational message that inclusion is the responsibility of all staff, not just those with disability backgrounds (e.g., CTRS). This practice has been encouraged by others (see Devine, 2003; Devine & Dattilo, 2000; Sable, 1995) to meet the spirit of the ADA and foster best practices. On the other hand, it could disadvantage the individual who is seeking inclusion, as the staff may not fully know or understand best inclusion practices, the person’s disability, or program modifications. It could also place other program participants in a disadvantageous position by appropriate program modifications not being in place. Finally, it could put service delivery staff in a difficult position having to negotiate accommodations or modifications that are not practical or effective. Having a person who has a disability-related background (e.g., CTRS) is important as that person brings a specific knowledge and experience base to the inclusion process (Anderson & Kress, 2003; Devine & McGovern, 2001; Schleien et al., 2009). Schleien et al. (2009) stressed the importance of having inclusion services coordinated or facilitated by someone with a disability background to best meet the needs of the individual with the disability and his/her peers in the recreation program. What may be optimal to meet the spirit of inclusion, mandates of the ADA, and the needs of all recreation participants is to have one staff person with a recreation generalist background and one with a disability-specific background work together to facilitate inclusion services.

Fiscal issues. In the 1999 nationwide study by Devine & Kotowski, a lack of financial resources was ranked as the greatest barrier to implementing inclusion. While there may never be a time in history when agencies have no financial challenges to service provision, they appear to be able to effectively incorporate the financial aspects of inclusion services into their budgets. This is encouraging as it could indicate that these services are an integral part of their service delivery system. On the other hand, it could indicate funding inclusion is not an organizational priority (Schleien et al., 2009). Most agencies are incorporating the costs of inclusive services into their general operating budgets rather than a separate budget. Almost 50% of respondents indicated they had specific line items in their operational budget for inclusive services, which may aid them in their budgetary process. In addition, this could indicate that inclusion is now thought of as common organizational practice, which was not the case 10 years ago.

Open-ended responses to fiscal questions indicated ways agencies were being creative in addressing costs to inclusion. For example, one agency in the Midwest stated that they charge a $1 surcharge to all their consumers for each program, place the surcharge in a separate account, and draw from that account when they need to make a modification.
or accommodation (purchase a piece of adaptive equipment, contract a sign language interpreter). This practice is legal within the parameters of the ADA to offset the cost of inclusion services, but findings demonstrated that it is not widely practiced. Another organization was able to secure a small percent (1%) of fines their municipality collected from those who park illegally in accessible parking spaces to fund accommodations. Few recreation organizations submitted grants, solicited donations, or conducted fund-raising to offset the cost of providing inclusive services. Using nontraditional means to fund recreational projects and services is fairly common practice in leisure service delivery systems (Hurd, Barcelona, & Meldrum, 2008). In particular, it is recommended that administrators consider using these means to secure donations, as organizations that make these funding sources available are often willing to support provisions for individuals with disabilities. On the other hand, while these are effective methods to supplement or offset the cost of inclusion service provision, they can also be time consuming for staff to plan, implement, and evaluate.

According to this study, agencies that serve communities of populations less than 25,000 continue to be the group that indicates having the most financial constraints related to inclusion. One way to address this barrier would be to form a cooperative among several agencies. Schleien et al. (2009) found that forming a cooperative among smaller agencies (i.e., populations > 25,000) and sharing inclusion resources such as a facilitator can be a fiscally effective mean to provide services.

**Administrative support.** Another gain in inclusive service provision over the past 10 years is with administrative support, policies, and procedures. Inclusion of individuals with disabilities in leisure services has increasingly become a common practice of service provision (Miller, Schleien, & Lausier, 2009). Support from administration may reflect the evolutionary social change from seeing and serving few people with disabilities in general recreation programs to greater inclusion. In addition, support from the “top down” for effective inclusion service has been found to be a preferred and important practice, thus administrators recognize and follow it (Schleien et al., 2009). In the past 10 years the profession has also experienced a significant increase in educational opportunities (e.g., NIRI) for administrators to learn about inclusion philosophies, principles, and practices, which may also account for the increase in support for inclusion.

**Policies and procedures.** Having discrimination-free policies and procedures is important to meeting the mandates of the ADA and the recreation needs of all customers. This study found a significant correlation between organizations having reviewed policies and procedures and a high response rate to organizational policies and procedures not being an obstacle to inclusion. This is a significant gain in the past 10 years. Policies and procedures not only provide a foundation for day-to-day operations, but also reflect an organization’s philosophy of service (Hurd et al., 2008). This gain may be due to recreation professionals having learned the need to coincide organizational philosophies with policies and practices since the inception of the ADA.

**Marketing.** According to Hurd et al. (2008), the underlying principle of marketing is to meet customer needs by using an exchange-based relationship. In other words, customers have needs, and organizations have products, services, or goods that will meet their needs. More than half of the respondents (56%) indicated that marketing was a barrier to inclusion. This finding continues to be a gap that has been virtually unchanged in 10 years (Devine & McGovern, 2001). A large number of respondents (68%) indicated a lack of adequate marketing skills or an understanding of how to market to individuals with disabilities. Not surprisingly, this finding was positively correlated with a lack of demand for inclusive services, thus raising the following questions: Is lack of demand for inclusive services a result of a lack of marketing? Would effective marketing increase demand for services? More important, marketing is about meeting the needs of consumers (Hurd et al., 2008) and raises the following question: Are the leisure needs of individuals with disabilities being met in their communities?

Those agencies indicating successful marketing of inclusive services partnered with disability-specific agencies or centers for independent living, providing an opportunity
for directly marketing inclusion. Schleien et al. (2009) reported that inclusion facilitators found that parents of children with disabilities are closely networked and encouraged word-of-mouth marketing of services. Thus, it is recommended that to increase adequacy of marketing, agencies partner with disability-related agencies in their communities including parent and consumer support groups, disability advocacy groups, and centers for independent living. Conducting direct marketing, such as meeting with parent groups or special educators, is also recommended as a preferred practice to reach consumers with disabilities (Schleien et al., 2009). Other methods that may be useful include featuring pictures of individuals with disabilities in marketing materials, placing a welcome statement in prominent places, or having feature stories about inclusive programs in agency materials, on websites, or on social media sites.

Community Perspectives

The attitudes of the general public toward inclusion are historically more positive, in particular with those who have personal and frequent contact with those with disabilities (Scholl et al., 2005). However, negative attitudes toward inclusive practices remain the most predominant barrier toward inclusion in various contexts including recreation for individuals with disabilities (Disability Statistics Compendium, 2009; Tsai & Fung, 2009). Responses in this study to questions related to the community’s response to inclusion counter findings from other recreation inclusion studies and disability-specific organizations (Bedini, 2000; Devine & Parr, 2008; Disability Statistics Compendium, 2009; Tsai & Fung, 2009).

Respondents perceived that there was little to no resistance to inclusive service provision on the part of community members who do not have disabilities. This is not only a significant change in 10 years, but it also counters findings from other recent studies (Block, Klavina, & Flint, 2007; Devine, 2003; Devine & O’Brien, 2007; Devine & Parr, 2008; Tsai & Fung, 2009). It is difficult to draw explanations of this finding given the conflicting results from previous studies, but one explanation might be due in part to the respondents. The majority of the respondents were mid-level managers (i.e., assistant directors, assistant superintendents, and program supervisors) who might have limited contact with participants. Typical duties of professionals in these positions are administrative rather than direct service delivery (Hurd et al., 2008), thus respondents may be unaware of resistance by the general public toward inclusion. If they do not directly or indirectly hear resistive comments or concerns from consumers without disabilities, they may assume no resistance exists. Another explanation could be the increased knowledge and skill base of personnel who facilitate and support inclusive services. According to the findings, agencies that serve populations greater than 50,000 people tend to hire personnel with disability-related backgrounds. Thus, these staff may be training service delivery staff in inclusive practices, promoting a philosophy of inclusion, and aiding in inclusion-related problem solving. Previous studies that examined best practices in inclusion have recommended hiring a professional with a disability-specific background (e.g., CTRS, Inclusion Certificate) to facilitate the factors that must be present for successful inclusion practices (Devine & O’Brien, 2007; Wachter & McGowan, 2002).

Miller et al. (2009) reported that the most prevalent accommodation cited by inclusion facilitators and administrators was the use of inclusion support staff. The role of this staff was to provide individualized assistance to the participant with the disability. While this practice was not examined in the current study, it may be possible that inclusion support staff are addressing individualized barriers experienced by the participant with the disability, thus buffering the role participants without disabilities must play in the inclusion process. Finally, there could also be response bias to this question on the part of respondents. When the questionnaires were sent to recipients, they were asked to have the staff member most familiar with the agency’s inclusion practices complete the instrument. It can be assumed that person is also responsible for the agency’s inclusion services, thus may be bias in his/her perception of how able-bodied participants perceive the inclusion experience.
Accompanying this finding was the result that caregivers and individuals with disabilities are open to inclusive leisure services. Previous studies have found that caregivers and consumers with disabilities sometimes have mixed feelings about participation in inclusive leisure environments due to negative attitudes, stereotypes, and socially constructed notions about individuals with disabilities (Bedini, 2000; Devine, 2003; Devine & O’Brien, 2007; Tsai & Fung, 2009). However, these previous studies have examined the perceptions of consumers and caregivers, not service providers. One explanation for this disconnect could be that service providers are not aware of the concerns of individuals with disabilities or their caregivers when it comes to engagement in inclusion. Findings from previous studies have shown that people with disabilities perceive a lack of social acceptance by their peers without disabilities (Devine, 2003; Devine & O’Brien, 2007; Henderson, Bedini, & Hecht, 1994;) and experience a lack of reciprocity in the interactions between people with and without disabilities in inclusive contexts (Bedini, 2000; Devine & Parr, 2008). Parents of youth with disabilities fear harassment, exclusion, or patronization in inclusive contexts (Tsai & Fung, 2009). Given the contradiction in previous examinations and these findings, further investigations are recommended.

Respondents identified several community resources as a barrier to inclusion in the “Perceptions of Community Barriers and Solutions” section, including a lack of accessible transportation. This highlights that variables outside of the agency can impact inclusive services. To address the issue of community resources, agencies may be in the position of advocating with other community organizations to provide services. Advocacy could take the form of providing input at public meetings, organizing participants with disabilities to conduct self-advocacy with agencies, or partnering with agencies to provide services not typically provided by park and recreation organizations.

Another barrier noted by respondents was a lack of caregivers support for inclusion. Addressing resistance issues with caregivers requires a bit of tact and empathy. As Jones (2003) noted, parents of children (youth and adult) with disabilities typically experience rejection of their children in recreation programs from multiple directions. For instance, Jones reported that parents identified negative attitudes toward the inclusion of their children in recreation programs from administrators, staff, and the community in general. These parents perceived it much “safer” to engage in separate recreation programs designed only for people with disabilities. Fear of rejection might explain resistance to inclusion from caregivers. While this study found that resistance to inclusion is not an administrative barrier, it may still exist within certain agencies. Actions should be taken to educate administrators on the mandates, principles, and spirit of inclusion if this is the case within an agency (Devine & O’Brien, 2007).

**Limitations and Future Research**

While this study provides insight from the leisure service provider perspective, it raised some questions that would best be answered by consumers or caregivers. For instance, service providers perceived little to no barrier to inclusive leisure engagement relative to general community members, caregivers, or individuals with disabilities. This study did not seek input from these constituencies and thus was unable to compare their perspectives to the service provider. In addition, due to the possibility of response bias, perspectives of participants should be sought and compared to those of the respondents.

Even though the demographics were found to be similar, findings should be viewed with some caution in relation to the nonresponse rate. Additionally, incomplete surveys cannot be eliminated using an electronic data collection tool. However, each question included a tally of responses and nonresponses, and any question with less than the needed response rate (N = 662) was not included in the correlation analyses.

Another limitation of this study was that only agencies who were members of the National Recreation and Park Association were included in the subject pool. The respondents provided valuable information that has allowed a better understanding of inclusive leisure practices, but they represent only the public and a small percentage of
the private nonprofit sectors of leisure service delivery. To understand the entire leisure industry, a more comprehensive study should be conducted that includes various sectors of the tourism industry including theme parks, destination resorts, travel destination sites, cruise ships, museums, historical sites as well as outdoor and adventure recreation organizations, camps and campgrounds, state and national parks, and other private nonprofit organizations that provide leisure services.

Finally, a number of respondents indicated barriers external from their agencies posed barriers to inclusion of individuals with disabilities in services they provide. This study did not examine communities at large to understand those barriers, as it was beyond the scope of this study. However, understanding these barriers may assist leisure service providers in their planning and implementing of inclusive services as well as assisting consumers with disabilities with support services they may need to engage in leisure. Thus, it is recommended community supports needed to promote and facilitate inclusion be studied in the future to better understand the inclusion process.

**Conclusion**

The purpose of this study was to identify barriers to inclusive leisure service provision experienced by park and recreation agencies and their approaches used to address the barriers. Some comparisons were able to be made with a previous study that examined very similar questions. From the comparisons and findings from this study, it appears that the recreation and park industry has improved many aspects of practice related to inclusion. In particular, more agencies are providing inclusive services, and the services are being coordinated by people who have a general rather than disability-specific background. Having services provided by someone with a generalist background can be positive as it sends an organizational message that it is everyone’s job to provide inclusion, not just the professionals with disability-specific backgrounds. However, previous studies have found that the most effective inclusion services are organized by someone with a disability-specific background such as CTRS. Collaborating with other community organizations is another recommendation from this study. These types of collaborations can serve a multitude of needs from increased community services to connecting with potential donors, to writing and submitting grants. Gaps are still apparent in funding resources and conducting better marketing of inclusive services to increase engagement of consumers with disabilities in leisure services.

**References**


The Influence of Visitor Characteristics on State Park Physical Activity Levels

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Julie S. Son

EXECUTIVE SUMMARY: Parks represent a promising setting from which to study and increase physical activity levels. Despite this promise, few investigations have examined user characteristics and recreation experience preferences in relation to park-based physical activity levels. This study measured self-reported physical activity at several state parks and examined the extent that visitor sociodemographics, recreation behaviors, and recreation experience preferences were related to park-based physical activity at moderate and vigorous levels.

Systematic sampling was employed to survey visitors at six Pennsylvania state parks (N = 1,139 visitors representing an 82% response rate). Visitors provided information on their sociodemographics (e.g., age, income), behaviors (e.g., use frequency, park activity types), and experience preferences (e.g., nature connection, physical fitness, social relationships). Furthermore, respondents were asked questions about their participation in vigorous and moderate physical activity at the park during their visit. Visitors who indicated moderate and vigorous physical activity were also asked about the number of minutes for each activity level, and this was converted to minutes per visit day. Logistic regression was used to examine the extent that sociodemographics, behaviors, and experience preferences predicted participation in moderate and in vigorous activity during the park visit. Multiple linear regression was used to examine whether these variables predicted minutes of participation in moderate activity.

Respondents were more likely to participate in moderate (59%) rather than vigorous (16%) physical activity levels during their park visit. Mean self-reported minutes of moderate physical activity was 47.7 minutes per visit day (including those who reported 0 minutes of moderate activity) and 72.8 minutes among those who participated in moderate activity. Mean minutes of vigorous activity was 9.6 minutes per visit day (including those reporting 0 minutes of vigorous activity) and 54.8 minutes among those who participated in vigorous activity. Thirty seven percent reported no physical activity during their state park visit (e.g., no moderate and no vigorous activity).
Education, picnicking, camping, hiking, walking, and physical fitness motives were positively related to participation in moderate park-based physical activity. Among those who participated in moderate activity, hiking, and walking were positively related to minutes in moderate activity per visit day, while picnicking and the nature connection motive were negatively related to minutes in moderate activity per visit day. Income, education, challenge/adventure motives, and physical fitness motives were positively related to participation in vigorous park-based physical activity, while age, beach use, walking, nature connection, and relationship building motives were negatively related to vigorous activity participation.

Results suggested that demographics, activity type, and desired psychological experience preferences played a significant role in shaping park-based physical activity levels, but their influence varied depending on the intensity level (moderate vs. vigorous) and duration. Agencies that wish to increase park-based physical activity should consider these findings in their efforts to make parks more attractive to people whose characteristics, recreation activities, and desired experiences correspond with different levels of physical activity. To sustain or increase participation in moderate activity during state park visits, managers could promote camping as a way to be active in parks as well as provide walking and hiking opportunities. These facility, program, and promotional efforts could target visitors with lower education profiles, as they were less likely to engage in moderate activity. Study results demonstrated that picnicking and camping were not necessarily synonymous with sedentary behavior, and managers should be cautious in de-emphasizing these recreation opportunities because they could be associated with other types of physical activity within state parks. State park agencies that wish to incorporate more participation in vigorous activity at their parks could target older and low income visitors in their promotions and increase the provision of facilities and features that promote challenge/adventure-based and physical fitness opportunities that would fulfill the experience preferences of vigorously active park visitors. As researchers continue to examine the contextual factors that influence park-based physical activity levels, they will be better positioned to provide sound policy and managerial guidance to achieve physical activity goals through public parks.

**KEYWORDS:** Physical activity, state parks, recreation experience preferences, sociodemographic characteristics

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Public parks represent a promising environmental context from which to increase population-based physical activity levels. Park settings exist in practically every neighborhood or community within the United States, are often available for use at no cost or low cost to the public, and provide opportunities for intrinsically enjoyable leisure pursuits (Godbey & Mowen, 2010). It is not surprising then that a number of research and community initiatives are focusing on the contributions of parks to physical activity. Evidence suggests that many park visitors report being physically active in these spaces, particularly at moderate levels (Larson, Whiting, & Green, 2010; Payne, Orsega-Smith,
Godbey, & Roy, 2005; Wilhelm-Stanis, Schneider, & Anderson, 2009; Wilhelm-Stanis, Schneider, Shinew, Chavez, & Vogel, 2009), but that physical activity can vary across different types of parks (Shores & West, 2010; Wilhelm-Stanis, Schneider, Shinew, et al., 2009). Moreover, certain park environmental characteristics are associated with higher levels of physical activity (Kaczynski & Henderson, 2007; Wendel-Vos, Droomers, Kremers, Brug, & Van Lenthe, 2007; Wilhelm-Stanis, Schneider, Shinew, et al. 2009).

**Background**

Park-based physical activity literature has emphasized the role of environmental variables, particularly park proximity, capacity (e.g., number of parks, acreage), and activity features (e.g., trails, ball fields) as they relate to physical activity. For example, a national study of U.S. adults found that perceived proximity to parks was related to self-reported physical activity (Brownson, Baker, Housemann, Brennan, & Bacak, 2001). A more recent systematic literature review concluded that a majority of studies regarding parks and physical activity reported at least some positive association between park proximity and activity levels (Kaczynski & Henderson, 2007). In terms of park capacity, researchers have found that having more parks and more park acreage in an area also corresponded with higher physical activity levels within the surrounding population (Active Living Research, 2010). For example, one study found that adolescent females who had more parks within a mile of home also achieved higher physical activity levels than those with fewer parks close to home (Cohen et al., 2006).

Certain park features (e.g., playgrounds, sport fields) have also been associated with high levels of park-based physical activity. For example, several observational studies have determined that park spaces that contain sport fields, trails, basketball courts, and playgrounds were associated with higher levels of moderate to vigorous park activity levels (Floyd, Spengler, Maddock, Gobster, & Suau, 2008; Rung, Mowen, Broyles, & Gustat, 2011). Rung et al. (2011) found that the presence of park supporting features also corresponded with park use and physical activity levels. Here, the presence of drinking fountains was associated with an increased number of park users and total energy expenditure levels, while the presence of benches and picnic tables was associated with lower mean energy expenditure levels. In addition, a study that focused on park use for physically active recreation found that parks with paved trails were 26 times more likely to be used for physical activity than parks without paved trails (Kaczynski, Potwarka, & Saelens, 2008).

**Park User Characteristics and Physical Activity**

Although current evidence illustrates the importance of park environmental characteristics for promoting physical activity, we know less about the role of park user characteristics in relation to different types/levels of park-based physical activity. Several user characteristics have been identified as important correlates to recreation participation and setting preferences such as visitor sociodemographics (Cardenas, Henderson, & Wilson, 2009; Casper & Babkes-Stellino, 2008; Ho et al., 2005; Winter, Jeong, & Godbey, 2004); behaviors, including activity type (Mowen, Graefe, & Williams, 1998); and recreation experience preferences (Leahy, Shugrue, Daigle, & Daniel, 2009; Payne et al., 2005). In fact, recreationists are often segmented by sociodemographics, behaviors, and experiences for the purpose of targeting recreation agency strategies to improve service delivery, increase utilization, and attract new visitors (Backman, 1994; Donnelly, Vaske, DeRuiter, & King, 1996; Floyd & Graman, 1997; Jun, Kyle, & Mowen, 2009; McCool & Reilly, 1993). These same user characteristics might also be useful in differentiating, segmenting, and targeting park visitors according to various physical activity levels. For example, if park and recreation administrators had a better understanding of how demographics, behaviors, and experience preferences correspond to different physical activity levels (e.g., moderate, vigorous), they may be better able to develop focused program, facility, and promotional efforts to increase park-based physical activity levels. Demographic characteristics have
been examined across various levels of leisure-time physical activity and park-based physical activity, and key findings from these studies are now discussed.

**Sociodemographics and overall leisure-time physical activity.** Evidence from the leisure-time physical activity literature supports the notion that sociodemographics can differentiate overall leisure-time physical activity. Data from national self-report surveys indicate that age, sex, race/ethnicity, education, and income are significant correlates of leisure-time physical activity levels in the United States. Generally, women are less active than men, older adults are less active than younger adults, and people in lower income groups report less activity than people in higher income groups. Furthermore, being married is associated with higher levels of physical activity, and non-Hispanic whites are more active than racial/ethnic minority group members (Brown, Yore, Ham, & Macera, 2005; Carlson, Densmore, Fulton, Yore, & Kohl, 2009; Hughes, McDowell, & Brody, 2008).

**Sociodemographics and park-based physical activity.** Recent evidence suggests that demographic characteristics also correspond with park-based physical activity. For example, studies have found that children were more likely than adults to be active in parks (Floyd et al., 2008; Larson et al., 2010), males were more likely than females to be active during park visits (Floyd et al., 2008; Gobster, 2005; Larson et al., 2010; Son, Mowen, & Kerstetter, 2008), and higher socioeconomic status was positively related to moderate and vigorous park activity (Floyd et al., 2008).

The demographic composition and size of social groups in parks may also influence physical activity, particularly when there are children in the group (Kuiack, Irving, & Faulkner, 2007). Gobster (2005) found that group size was negatively related to trail-based physical activity levels. Visitors who came to the trail alone or in small groups were more likely to achieve vigorous levels of physical activity (Gobster, 2005). Floyd and colleagues assessed the adult–child composition of visitors and found that park-based physical activity among children was lower in the presence of a parent or non-parental adult (Floyd et al., 2011). However, does the presence of a child influence adult physical activity during park visits? Additional research might yield insights into the role of group characteristics as related to park-based physical activity.

**Park visitation behaviors and physical activity.** Visitation characteristics or behaviors (e.g., type of trip, activity type) may also correspond to different park activity levels. Unlike community parks, state and national parks often provide overnight accommodations for multiday use. Camping in the park for multiple days (being an overnight user) could increase the probability of physical activity compared to day users. Few park-based physical activity studies have been conducted in parks with overnight camping facilities, and this type of use might yield different contributions to moderate and vigorous activity than day use alone. Furthermore, recreation activity choices (e.g., walking, hiking, picnicking) can contribute to varying levels of physical activity. The Compendium of Physical Activities often classifies energy expenditure profiles (measured through metabolic equivalents – METS) by recreation activity and even by intensity level within the same activity (Ainsworth et al., 2000). A recent study of recreation participation and physical activity in U.S. national forests concluded that hiking, walking, cross-country skiing, bicycling, and backpacking all had relatively high MET values, while relaxing, pleasure driving, picnicking, and visiting nature centers had relatively low MET values (Kline, Rosenberger, & White, 2011). Do these activity types also contribute to physical activity within a state park context, and what is their relative impact on moderate and vigorous physical activity levels compared to other user characteristics?

**Experience preferences and physical activity.** Conceptual frameworks of park use and physical activity (Bedimo-Rung, Mowen, & Cohen, 2005; Buchner & Gobster, 2007) have acknowledged the importance of desired park experiences or motivations in shaping recreation behaviors and physical activity. One tenet within the leisure research literature is that experience preferences are an important element of recreation choice behaviors (Manfredo, Driver, & Tarrant, 1996). That is, activity type alone is insufficient in explaining why people visit parks and the type of experience that they are striving to
achieve (Anderson & Fulton, 2008). A recreation experience preference scale developed, modified, and tested by Driver and others classifies different motivations and desired experiences associated with recreation participation. These experience characteristics are a common way to classify/segment park visitors, and a number of studies have examined the connections between recreation experiences, park setting preferences, and preferences for park management activities (Anderson & Fulton, 2008; Bright & Porter, 2001; Cole & Hall, 2008; Leahy et al., 2009; Yuan & McEwen, 1989).

Recent studies in both the public health and park and recreation literature are beginning to demonstrate the linkages between motives/experience preferences and physical activity. For example, a number of studies have concluded that the intensity or level of motivation is a positive direct and/or indirect predictor of leisure-time physical activity and park-based physical activity. Haughton McNeill, Wyrwich, Brownson, Clark, and Kreuter (2006) found that intrinsic (rather than extrinsic) motivations were a positive predictor of walking mediated through self-efficacy, while Hubbard and Mannell (2001) and Son et al. (2008) found that motivation was a positive predictor of recreation activity level mediated through constraint negotiation. However, these studies focused on intrinsic and extrinsic motivations or on motivational intensity rather than on a broad range of recreation experience preference or motive types. They also examined motives in relation to overall leisure-time physical activity rather than park-based physical activity. A subsequent study by Wilhelm-Stanis, Schneider, and Russell (2009) addressed these gaps by examining the contribution of recreation experience preferences on park-based physical activity in a single state park context. They found both direct and indirect (through negotiation) positive effects of recreation experience preference levels on park-based physical activity.

These recent studies have demonstrated the importance of motives in directing physical activity. However, it is also important to examine the type of motive/experience and its relative importance (or intensity) in terms of its contribution to both moderate and vigorous activity levels because individual, social, and environmental factors are likely to be differently influential for different levels of physical activity (Courneya & McAuley, 1994; Titze, Stronegger, & Owen, 2005). Understanding the exact nature of these motive–activity relationships could better inform efforts for increasing physical activity within parks. One might expect that physical fitness experience preferences or motivations would correspond with higher levels of park-based physical activity, but what about other important outdoor recreation experiences such as nature connection, relationship building, and challenge/adventure? A recent trail study found that health and exercise motives (and not social interaction, enjoying nature) predicted recreation activity levels at urban trails (Spruijt-Metz et al., 2009). Could other experience preferences, beyond physical fitness, be positively or negatively related to park visitors’ physical activity levels? If they are, what are the implications for physical activity management initiatives in parks?

**Study Purpose**

Emerging physical activity studies illustrate the promise of park settings for increasing physical activity across a broad cross-section of the nation. There is ample evidence supporting the importance of park proximity and specific park features in relation to physical activity levels in urban parks, but there may not be a clear understanding of park-based physical activity at various levels (e.g., moderate, vigorous), particularly in state parks with overnight camping opportunities. Moreover, there is a dearth of evidence that examines the contribution of individual park user characteristics (particularly recreation experience preferences) in shaping park-based physical activity. Further evidence examining the relative influence of park user demographics, behaviors, and desired experiences upon park-based physical activity levels is warranted. This study addresses these gaps by assessing physical activity levels in state parks and by testing whether visitor demographics, behaviors, and experience preferences relate to moderate and vigorous physical activity levels. Key research questions addressed in this study are as follows:
Research Question 1: To what extent do state park users report being physically active at moderate and vigorous levels during their visit?

Research Question 2: Which individual state park user characteristics (e.g., demographics, behaviors, and desired recreation experiences), if any, predict or relate to the presence of park-based moderate or vigorous physical activity?

Research Question 3: Which individual state park user characteristics (e.g., demographics, behaviors, and desired recreation experience), if any, predict or relate to time spent participating in moderate and vigorous park-based physical activity?

Methods

Data Collection

Study data came from a larger statewide research initiative at Pennsylvania state parks and involved on-site visitor intercepts at six parks in summer 2008. These parks were purposely selected by the project’s sponsor (Bureau of State Parks) as being representative parks from each of the six state planning regions that were geographically distributed across the state. The parks ranged from 423 to 21,122 acres; were situated in the western (Ohiopyle, Pymatuning), central (Parker Dam, Greenwood Furnace), and eastern (Lackawanna, Ridley Creek) parts of the state; and generally offered campground facilities, angling opportunities (e.g., lakes, streams), public beaches, picnic areas/pavilions, paved and unpaved multiuse trails, historic features, and environmental education centers/programming. Ohiopyle State Park also offered white-water boating opportunities with a number of recreation outfitters operating in the park. Three of the parks were relatively close to urban population centers (Ohiopyle, Lackawanna, Ridley Creek), while three were situated in rural areas farther away from cities (Parker Dam, Greenwood Furnace, Pymatuning). Despite efforts made to select diverse and representative study sites from different regions, the reader is cautioned that these six parks may not be fully representative of all 120 parks within this state park system. For example, small, low use, or remote state parks were not represented in this study.

A systematic sampling plan was developed to survey visitors over 90 randomized sampling dates at different locations within each of the parks. Predefined park sampling zones (e.g., campgrounds, trailheads, boat launches, beaches, picnic areas) were selected through collaborative researcher–park manager discussions. To acquire a systematic sample of visitors, sampling was randomized across weekdays and weekends throughout June, July, August, and the beginning of September between the hours of 11 a.m. and 7 p.m. each day. The number of days that interviewers were in the field each week ranged from two to five and was dependent on predicted visitation patterns. Visitor intercept locations included popular day use areas, campgrounds, and trailheads. Interviewers approached every other individual or group they encountered in a visitor intercept location and requested participation in an on-site survey. If the interviewer encountered a group, he or she asked the group member with the birthday closest to the day of the interview to respond to the survey. The interviews lasted, on average, from 15 to 20 minutes. Interviewers asked visitors questions and entered their responses using handheld smart phone survey software. Of the 1,396 visitors who were approached across the six parks, 1,139 agreed to participate for a response rate of 82%.

Measurement

Dependent variable: Park-based physical activity. The measure of park-based physical activity was a self-report of whether the respondent had engaged in any moderate and/or in any vigorous physical activity during their park visit. These questions were adapted and modified from physical activity assessments used in the Behavioral Risk Factors Surveillance System (BRFSS; Centers for Disease Control and Prevention [CDC], 2009) and questions in the Physical Activity in Parks Survey (Walker et al., 2009). Vigorous activities cause large increases in breathing or heart rate, while moderate activities cause
small increases in breathing or heart rate (CDC, 2009). In this study, respondents were asked, “Did you or will you participate in any moderate physical activity during this trip, for example, walking, bicycling, canoeing at a moderate pace?” and “Did you or will you participate in any vigorous physical activity during this trip, for example, jogging, walking, or bicycling at a vigorous pace, breaking a sweat, heart beating rapidly?” If respondents indicated they had participated in moderate and/or vigorous activity, they were further asked, “How much time in minutes did you (or will you) spend in moderate physical activity and in vigorous physical activity for this trip?” Because some visitors reported overnight stays, minutes in vigorous and moderate activity were recalculated on a per visit day basis, dividing total minutes by the number of days at the state park.

The language used in these physical activity questions was similar to the BRFSS, which asks about moderate and vigorous activity, but included examples of specific park activities to make the questions more relevant for physical activity within a state park context. Another difference was that park activity questions did not specify a minimum consecutive time period (e.g., for 10 minutes at a time), rather they assessed, through follow-up questions, minutes of moderate and vigorous activity on a per visit day basis. The BRFSS also assesses the number of days in a typical week for moderate and vigorous activity and asks how long respondents engage in that activity during a typical day. Because of these inconsistencies, the reader is cautioned that the study measure was not identical to BRFSS physical activity questions and should not be directly compared to studies that use this overall leisure-time physical activity variable. As with many self-report survey measurements, it is also likely that respondents may have overreported their activity duration, and this very criticism has spurred increased use of objective methods in assessing physical activity (Sallis & Saelens, 2000).

**Independent variables: Demographics, behaviors, and experience preferences.**

The independent variables in this study were visitor sociodemographics, behaviors, and experience preferences. Sociodemographic characteristics measured in this study included visitors’ sex, age, household income, education, and the presence of children in the group. While race/ethnicity has been also identified as an important demographic construct for distinguishing recreation behaviors (Hutchison, 1987; Stamps & Stamps, 1985; Washburn, 1978), our sample yielded insufficient diversity from which to conduct statistical comparisons. For the purpose of simplicity in subsequent multivariate analyses, categorical demographic variables (household income, education, sex, and presence of children in the group) were treated as dichotomous variables. A household income of $40,000 was used as a cut point to dichotomize the income variable with lower household incomes classified as $0 to $39,999 and higher household incomes classified as $40,000 and above. Education was also treated as a dichotomous variable with high school or less treated as lower educational attainment and more than high school as higher educational attainment. Asking respondents to indicate the ages of people that traveled with them assessed the presence of children in the group. Those who indicated that their group contained members under age 18 were classified as groups with children, and those without group members under age 18 were classified as groups without children. Respondent age was directly assessed by asking visitors their year of birth. This year was converted to age and retained as an interval variable for subsequent multivariate analyses.

Respondents were also asked about their participation in various types of recreation activities at the park during that particular visit. Specifically, the interviewer first asked visitors to free list any activities that they had done or planned to do during their trip and verified/checked off responses from a predetermined list. Seven activities that were indicated by at least 200 respondents were selected for inclusion as independent variables in multivariate analyses (0 = no participation in this recreation activity and 1 = participation in this activity). These seven activities were picnicking, relaxing, camping, hiking, fishing, beach use, and walking. Respondents were also asked whether their visit to that park involved an overnight stay or was a day trip, and this dichotomous variable was used as a predictor variable in subsequent multivariate analyses. Finally, to assess park
visitation frequency, visitors were asked the question, “Including the current visit, how many total trips did you make to this state park over the last twelve months?” Visitors were also asked to respond to a series of items adapted from the Recreation Experience Preference (REP) Scale (Driver, 1977, 1983; Manfredo et al., 1996). These experience preferences are commonly understood to assess the importance of motivations or reasons for recreation participation. Respondents were asked to indicate the importance of 14 different reasons for visiting that state park on a 5-point Likert-type scale ranging from 1 (extremely unimportant) to 5 (extremely important). The exact wording of each individual item is illustrated in Table 1. These particular items were selected on the basis of previous leisure research and from prior studies in this state park system in particular. They were intended to address five key domains or underlying reasons for visiting these state parks (nature connection, stress and anxiety reduction, challenge/adventure, physical fitness and health, and relationship building). However, it is important to note that, due to space limitations in the survey instrument and the extensiveness of the original REP scale (representing over 20 domains), our measures were not an exhaustive list of possible experience items.

Data Analysis
Both descriptive and inferential statistics were used to address the research questions posed by this study. Means and frequencies were used to assess the self-reported physical activity levels of state park visitors as indicated by Research Question 1. Means and frequencies are also presented for the independent variables: sociodemographics, behaviors, and experience preference subdomains. A confirmatory factor analysis was used to test whether the 14 experience preference items fit the hypothesized five experiential domains.

For Research Question 2, simultaneous logistic regression was used to examine whether sociodemographics, behaviors, and experience preferences predicted participation in moderate and vigorous physical activity at these state parks. For the logistic regression all independent variables were entered simultaneously and are reported in the full models. Only significant variables were then entered into a subsequent logistic regression and are presented in the “trimmed” models. Nagelkerke pseudo R² values were used to assess the overall strength of the models, while odds ratios and significance were reported for each predictor variable. Nagelkerke’s R² is a quasi measure of explained variability used to display the approximate amount of variance explained by the logistic regression analysis (Huck, 2012).

For Research Question 3, ordinary least squares regression was used to examine whether sociodemographics, behaviors, and experience preferences predicted minutes in both moderate and vigorous park-based physical activity (only among those who indicated participation at each level). Beta weights and traditional R² values are reported. Original results including all independent variables are reported in the full models along with “trimmed” models showing only the significant predictor variables from a stepwise analysis.

Results

Descriptive Demographics, Behaviors, and Experience Preferences
Adult park visitors who participated in this study had a mean age of 44.7 (SD = 12.8), with 66.4% reporting a household income of $40,000 or more and with 64% indicating that they had education beyond the high school level. Males made up 53.2% of the sample, and 50.2% of the sample indicated that their visitation group included children under age 18. When asked about their state park visitation behaviors, a majority (64.3%) noted that their park visit was a day trip (no overnight stay in the park). Respondents also reported a mean of 2.8 visits (SD = 2.1) to the study park within the past 12 months. In terms of recreation activity type, the top activities mentioned by at least 200 respondents were picnicking (31.5%), relaxing (28.7%), camping (25.5%), hiking (24.3%), fishing (23.9%), beach use (33.3%), and walking (18.1%).
Confirmatory factor analysis verified the hypothesized five experience domains. The forced classification of these items into their respective domains was consistent with prior leisure research using the REP scale and resulted in acceptable reliabilities and goodness-of-fit statistics (Table 1). The first factor included three items that pertained to stress/anxiety reduction and improving mental health and was labeled as “Stress/Anxiety Reduction” with a scale reliability of $\alpha = .804$ and a mean of 4.34 (SD = 0.67). The second factor included two items: enhancing family relations and strengthening relationships with companions. This factor was labeled as “Relationship Building” and had a reliability of $\alpha = .786$ and a mean of 4.19 (SD = 1.11). Factor 3 included four items that pertained to learning about nature and connecting with the outdoors. This factor was labeled as “Nature Connection” with a scale reliability of $\alpha = .805$ and a mean of 3.75 (SD = 0.87). Factor 4 included two items related to physical fitness and health and was labeled as “Physical Fitness” with a scale reliability of $\alpha = .848$ and a mean of 3.64 (SD = 0.77). Factor 5 included three items that pertained to adventure/challenge and skill building. This factor was labeled as “Adventure/Challenge” with a scale reliability of $\alpha = .717$ and a mean of 3.45 (SD = 1.08). Stress/anxiety reduction was perceived as the most important experience preference or reason for visiting the state park, while adventure/challenge was the least important experience preference. Factor loadings, scale/item means, and scale reliabilities for these five experience preference domains are illustrated in Table 1 along with key statistics from the confirmatory factor analysis.

### Table 1

**Descriptive Statistics, Confirmatory Factor Analysis, and Reliability Analysis of Recreation Experience Preference Items**

<table>
<thead>
<tr>
<th>Factor (REP Labels)**</th>
<th>Factor Loading</th>
<th>Scale Mean/Item Mean</th>
<th>$\alpha$ if item Deleted</th>
<th>$\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress and Anxiety Reduction (n = 964)</td>
<td></td>
<td>Scale M = 4.34</td>
<td>--</td>
<td>.804</td>
</tr>
<tr>
<td>Improving Mental Health</td>
<td>.79</td>
<td>4.27</td>
<td>.719</td>
<td></td>
</tr>
<tr>
<td>Reducing Stress</td>
<td>.69</td>
<td>4.46</td>
<td>.730</td>
<td></td>
</tr>
<tr>
<td>Reducing Anxiety</td>
<td>.83</td>
<td>4.28</td>
<td>.750</td>
<td></td>
</tr>
<tr>
<td>Relationship Building (n = 1096)</td>
<td></td>
<td>Scale M = 4.19</td>
<td>--</td>
<td>.786</td>
</tr>
<tr>
<td>Strengthening Relationships with Companions</td>
<td>.96</td>
<td>4.10</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Enhancing Family Relations</td>
<td>.68</td>
<td>4.27</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Nature Connection (n = 1087)</td>
<td></td>
<td>Scale M = 3.75</td>
<td>--</td>
<td>.805</td>
</tr>
<tr>
<td>Learning about the Natural Environment</td>
<td>.81</td>
<td>3.51</td>
<td>.717</td>
<td></td>
</tr>
<tr>
<td>Connecting with Nature</td>
<td>.78</td>
<td>4.13</td>
<td>.719</td>
<td></td>
</tr>
<tr>
<td>Connecting with the Outdoors</td>
<td>.77</td>
<td>4.27</td>
<td>.778</td>
<td></td>
</tr>
<tr>
<td>Learning about the area’s Cultural History</td>
<td>.59</td>
<td>3.07</td>
<td>.798</td>
<td></td>
</tr>
<tr>
<td>Physical Fitness and Health (n = 1087)</td>
<td></td>
<td>Scale M = 3.64</td>
<td>--</td>
<td>.848</td>
</tr>
<tr>
<td>Improving Physical Health</td>
<td>.88</td>
<td>3.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving My Level of Physical Fitness</td>
<td>.83</td>
<td>3.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenge/Adventure (n = 1083)</td>
<td></td>
<td>Scale M = 3.45</td>
<td>.717</td>
<td></td>
</tr>
<tr>
<td>Challenge My Abilities</td>
<td>.65</td>
<td>3.32</td>
<td>.555</td>
<td></td>
</tr>
<tr>
<td>Improving Outdoor Skills</td>
<td>.64</td>
<td>3.38</td>
<td>.557</td>
<td></td>
</tr>
<tr>
<td>Providing a Sense of Adventure</td>
<td>.61</td>
<td>3.64</td>
<td>.735</td>
<td></td>
</tr>
</tbody>
</table>

* Chi Square = 353.7 (df 59), GFI = .96, NNFI = .96, RMSEA = .067, RMR = .033
** Measured on a 5-point scale where 1 = extremely unimportant and 5 = extremely important
Research Questions

Research Question 1: To what extent do state park users report being physically active at moderate and at vigorous levels during their visit? Results indicated that a majority of visitors (59.1%) reported participating in moderate physical activity during their park visit (Table 2). The mean number of total moderate activity minutes (including those reporting no moderate activity) was 47.7 minutes per visit day, while the mean for those indicating some moderate activity was 72.8 minutes per visit day, and these respondents were included in subsequent OLS regression. Fewer visitors reported engaging in vigorous physical activity during their park visit (15.8%). The mean number of total vigorous activity minutes (including those who reported no vigorous activity) was 9.6 minutes per visit day, while those who did participate in vigorous activity achieved 54.8 mean minutes per visit day (Table 2). Due to the small number of respondents that reported participating in vigorous physical activity, there was insufficient statistical power to conduct an OLS regression analysis on the number of minutes of vigorous physical activity (Cohen, Cohen, West, & Aiken, 2003). As a result, a decision was made to exclude this analysis from the study. Finally, the percentage of state park visitors who reported no moderate and no vigorous activity was also assessed, and these sedentary park visitors made up 37.1% of the sample (Table 2).

Table 2

<table>
<thead>
<tr>
<th>Physical Activity Measure</th>
<th>% or Mean</th>
<th>N</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you participate in any moderate physical activity during this trip (e.g., walking,</td>
<td>59.1%</td>
<td>665</td>
<td></td>
</tr>
<tr>
<td>bicycling, or canoeing at a moderate pace)?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of minutes spent in moderate physical activity per visit day for those</td>
<td>72.8 min.</td>
<td>665</td>
<td>47.1</td>
</tr>
<tr>
<td>reporting some moderate physical activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of minutes spent in moderate physical activity per visit day*</td>
<td>47.7 min.</td>
<td>1124</td>
<td>70.6</td>
</tr>
<tr>
<td>Did you participate in any vigorous physical activity during this trip (e.g., jogging,</td>
<td>15.8%</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>walking, or bicycling at a vigorous pace, breaking a sweat, heart beating rapidly)?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of minutes spent in vigorous physical activity per visit day for those</td>
<td>54.8 min.</td>
<td>177</td>
<td>29.3</td>
</tr>
<tr>
<td>reporting some vigorous physical activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of minutes spent in vigorous physical activity per visit day*</td>
<td>9.6 min.</td>
<td>1124</td>
<td>28.0</td>
</tr>
<tr>
<td>Reported no moderate or vigorous physical activity while visiting the state park</td>
<td>37.1%</td>
<td>417</td>
<td></td>
</tr>
</tbody>
</table>

* Includes visitors who did not report activity at these levels.
Research Question 2: Which individual state park user characteristics (e.g., demographics, behaviors, and desired recreation experiences), if any, predict or relate to the presence of park-based moderate or vigorous physical activity? Logistic regression of moderate physical activity participation was statistically significant at \( p \leq .01 \). Walking (OR = 7.145), hiking (OR = 7.171), camping (OR = 3.888), education (OR = 1.704), physical fitness motives (OR = 1.687), and picnicking (OR = 1.420) were significantly and positively related to participation in moderate physical activity during the park visit. While swimming/beach use was significantly related to moderate physical activity in the full model, it was not significant at the .05 level in the trimmed model (Nagelkerke R\(^2\) = 0.391 for the trimmed model; Table 3). Results indicate that the odds of visitors reporting some moderate physical activity during their visit were about 7 times greater for those participating in walking or hiking and nearly 4 times greater for those who camped. Visitors who felt that physical fitness was an important reason/motive for their visit and those with higher education levels were also more likely to report being moderately active.

For vigorous park-based physical activity participation, the logistic regression model was also statistically significant at \( p \leq .01 \). The physical fitness motive (OR = 2.715), income (OR = 2.407), adventure/challenge motive (OR = 2.002), and education (OR = 1.802) were associated with increased odds of participation in vigorous activity, while the nature connection motive (OR = 0.400), walking (OR = 0.425), beach use (OR = 0.486), and the relationship building motive (OR = 0.746) were associated with decreased odds of vigorous activity participation (Nagelkerke R\(^2\) = 0.355 for the trimmed model; Table 4).

Research Question 3: Which individual state park user characteristics (e.g., demographics, behaviors, and desired recreation experience), if any, predict or relate to time spent participating in moderate and vigorous park-based physical activity? As indicated previously, the OLS regression of minutes in vigorous activity yielded an insufficient power to assess the contributions of all independent predictors and was subsequently removed from subsequent analysis and interpretation. Mean minutes in moderate physical activity, however, yielded a significant regression model at \( p \leq .01 \). Tolerances and variance inflation factor statistics were within acceptable limits (e.g., tolerances > 0.20 and inflation factors < 3) for this model. Hiking (\( \beta = 0.24 \)) and walking (\( \beta = 0.12 \)) were significant and positive predictors of minutes of moderate park-based physical activity, while the nature connection motive (\( \beta = -0.13 \)) and picnicking (\( \beta = -0.16 \)) were negative predictors (R\(^2\) = 0.104 in the trimmed model; Table 5).

Discussion and Implications

State Park Physical Activity Levels

Parks have been touted by many organizations and in national initiatives as a context for people to achieve recommended levels of physical activity. Public health officials and researchers are interested in parks because of their potential to help Americans increase their physical activity through recreation. A conceptual model of parks contribution to physical activity suggests that getting people to visit parks is a first step toward using parks as a platform to increased leisure-time physical activity, but that other factors work in tandem to influence physical activity once at the park (Bedimo-Rung et al., 2005).

The current study sheds light on how individual user characteristics correspond to varying levels of park-based physical activity within the context of a state park system. Visitors to these state parks were more likely to report moderate than vigorous activity, and this was consistent with prior studies (Larson et al., 2010; Payne et al., 2005; Wilhelm-Stanis, Schneider, & Anderson, 2009). The average number of minutes in moderate activity per visit day (47.7 minutes for the entire sample and 72.8 minutes among those who engaged in moderate activity) exceeded recommended daily amounts. This data suggests that state parks are a promising venue for promoting moderate physical activity levels. Like their community park counterparts, state parks provide another low cost public resource for achieving recommended physical activity levels at moderate levels and should be communicated as such.
State park visitors were much less likely to engage in vigorous activity (15.8%), and as a result, the average minutes of moderate activity across the entire park sample was only 9.6 minutes. However, among those who did participate in vigorous activity, the average minutes greatly exceeded the daily amount at 54.8 minutes. These findings are generally consistent with the work of Larson et al. (2010) and Wilhelm-Stanis, Schneider, and Anderson (2009), who found that respondents were more likely to participate in moderate activity than vigorous activity. The present study also found that a sizable percentage of visitors (37.1%) reported no moderate and no vigorous activity during their visit, which corresponds somewhat with observational studies that report high percentages of sedentary park behavior (Floyd et al., 2008). These results suggest that there is additional potential to increase the proportion of park users who engage in vigorous physical activity.

Table 3
Logistic of Regression of Participation in Moderate Levels of Park-Based Physical Activity

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Model</td>
<td>Full Model</td>
<td>Trimmed Model</td>
<td>Trimmed Model</td>
</tr>
<tr>
<td>Sociodemographic Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age¹</td>
<td>0.995</td>
<td>(.980 – 1.012)</td>
<td>1.04**</td>
<td>(1.034 – 1.054)</td>
</tr>
<tr>
<td>Sex²</td>
<td>1.157</td>
<td>(.781 – 1.716)</td>
<td>1.14**</td>
<td>(1.03 – 1.27)</td>
</tr>
<tr>
<td>Income³</td>
<td>0.824</td>
<td>(.546 – 1.245)</td>
<td>1.04**</td>
<td>(1.034 – 1.054)</td>
</tr>
<tr>
<td>Education⁴</td>
<td>1.836**</td>
<td>(1.207 – 2.792)</td>
<td>1.704***</td>
<td>(1.254 – 2.315)</td>
</tr>
<tr>
<td>Presence of Children⁵</td>
<td>1.280</td>
<td>(.840 – 1.952)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight vs. Day use⁶</td>
<td>1.624</td>
<td>(.840 – 3.142)</td>
<td>1.42**</td>
<td>(1.031 – 1.954)</td>
</tr>
<tr>
<td>Frequency of park use⁷</td>
<td>1.029</td>
<td>(.943 – 1.123)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picnic⁸</td>
<td>1.606*</td>
<td>(1.039 – 2.482)</td>
<td>1.42**</td>
<td>(1.031 – 1.954)</td>
</tr>
<tr>
<td>Relax⁸</td>
<td>0.680</td>
<td>(.442 – 1.045)</td>
<td>1.04**</td>
<td>(1.034 – 1.054)</td>
</tr>
<tr>
<td>Camping⁹</td>
<td>2.938**</td>
<td>(1.443 – 5.986)</td>
<td>3.888***</td>
<td>(2.658 – 5.688)</td>
</tr>
<tr>
<td>Fishing¹¹</td>
<td>0.938</td>
<td>(.578 – 1.522)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming/Beach use¹²</td>
<td>0.568*</td>
<td>(.365 – .822)</td>
<td>0.871</td>
<td>(0.635 – 1.195)</td>
</tr>
<tr>
<td>Experiential Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature Connection¹³</td>
<td>0.913</td>
<td>(.679 – 1.226)</td>
<td>1.045</td>
<td>(1.034 – 1.054)</td>
</tr>
<tr>
<td>Stress and Anxiety Reduction⁴</td>
<td>0.743</td>
<td>(.543 – 1.016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenge and Adventure⁹</td>
<td>1.193</td>
<td>(.918 – 1.549)</td>
<td>1.687***</td>
<td>(1.465 – 1.931)</td>
</tr>
<tr>
<td>Physical Fitness and Health⁹</td>
<td>1.882***</td>
<td>(1.485 – 2.385)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship Building⁹</td>
<td>1.045</td>
<td>(.863 – 1.265)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.098**</td>
<td></td>
<td>0.057***</td>
<td></td>
</tr>
</tbody>
</table>

N = 761
* p < .05, ** p < .01, *** p < .001
¹ Age coded as continuous variable, actual age in years.
² Sex coded as male = 0 and female = 1.
³ Income coded as less than $40,000 = 0, $40,000 and above = 1.
⁴ Education coded as high school or less = 0 and more than high school = 1.
⁵ Children in group coded as no children under 18 in group = 0 and one or more children under 18 = 1.
⁶ Overnight user coded as = 0 and day user coded as = 1.
⁷ Frequency of park use coded as continuous variable, number of reported visits during past 12 months to that park.
⁸ Activity participation coded as no participation during visit = 0 and participation during visit = 1.
⁹ Experiential characteristics coded as 1 = extremely unimportant to 5 = extremely important.
An analysis of state park visitation frequency revealed that respondents only visited the study park a mean of 2.8 times over a 12-month period. These frequencies were somewhat lower than those found in previous neighborhood park physical activity studies but are consistent with one study that found state park visitation frequencies at eight times per year, an average of less than once per month (Wilhelm-Stanis, Schneider, & Anderson, 2009). From this frequency data, it appears as though state park visits alone did not provide enough bouts of activity to contribute to individuals' overall physical activity patterns over the course of a typical week.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Vigorous Physical Activity</th>
<th>Reporting No Vigorous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio</td>
<td>95% CI</td>
</tr>
<tr>
<td>Sociodemographic Characteristics</td>
<td>Exp(B)</td>
<td>Full Model</td>
</tr>
<tr>
<td>Age^1</td>
<td>0.959***</td>
<td>(.938 – .981)</td>
</tr>
<tr>
<td>Sex^2</td>
<td>0.619</td>
<td>(.377 – 1.017)</td>
</tr>
<tr>
<td>Income^3</td>
<td>2.165**</td>
<td>(1.210 – 3.873)</td>
</tr>
<tr>
<td>Education^4</td>
<td>1.798*</td>
<td>(1.013 – 3.192)</td>
</tr>
<tr>
<td>Presence of Children^5</td>
<td>1.011</td>
<td>(.589 – 1.736)</td>
</tr>
<tr>
<td>Behavioral Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight vs. Day use^6</td>
<td>2.143</td>
<td>(.969 – 4.740)</td>
</tr>
<tr>
<td>Frequency of park use^7</td>
<td>0.933</td>
<td>(.827 – 1.052)</td>
</tr>
<tr>
<td>Picnic^8</td>
<td>0.962</td>
<td>(.558 – 1.657)</td>
</tr>
<tr>
<td>Relax^5</td>
<td>0.955</td>
<td>(.562 – 1.760)</td>
</tr>
<tr>
<td>Camping^8</td>
<td>1.060</td>
<td>(.485 – 2.318)</td>
</tr>
<tr>
<td>Hiking^8</td>
<td>0.924</td>
<td>(.527 – 1.617)</td>
</tr>
<tr>
<td>Fishing^8</td>
<td>1.083</td>
<td>(.590 – 1.988)</td>
</tr>
<tr>
<td>Swimming/Beach use^8</td>
<td>0.461**</td>
<td>(.259 – .820)</td>
</tr>
<tr>
<td>Walk^9</td>
<td>0.396*</td>
<td>(.191 – .821)</td>
</tr>
<tr>
<td>Experiential Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature Connection^9</td>
<td>0.396***</td>
<td>(.191 – .821)</td>
</tr>
<tr>
<td>Stress and Anxiety Reduction^9</td>
<td>0.949</td>
<td>(.262 – .598)</td>
</tr>
<tr>
<td>Challenge and Adventure^9</td>
<td>1.838***</td>
<td>(.607 – 1.483)</td>
</tr>
<tr>
<td>Physical Fitness and Health^9</td>
<td>3.099***</td>
<td>(2.139 – 4.490)</td>
</tr>
<tr>
<td>Relationship Building^9</td>
<td>0.745*</td>
<td>(.590 – .940)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.119*</td>
<td></td>
</tr>
</tbody>
</table>

N = 757
* p < .05, ** p < .01, *** p < .001
1 Age coded as continuous variable, actual age in years.
2 Sex coded as male = 0 and female = 1.
3 Income coded as less than $40,000 = 0, $40,000 and above = 1.
4 Education coded as high school or less = 0 and more than high school = 1.
5 Children in group coded as no children under 18 in group = 0 and one or more children under 18 = 1.
6 Overnight user coded as = 0 and day user coded as = 1.
7 Frequency of park use coded as continuous variable, number of reported visits during past 12 months to that park.
8 Activity participation coded as no participation during visit = 0 and participation during visit = 1.
9 Experiential characteristics coded as 1 = extremely unimportant to 5 = extremely important.

An analysis of state park visitation frequency revealed that respondents only visited the study park a mean of 2.8 times over a 12-month period. These frequencies were somewhat lower than those found in previous neighborhood park physical activity studies but are consistent with one study that found state park visitation frequencies at eight times per year, an average of less than once per month (Wilhelm-Stanis, Schneider, & Anderson, 2009). From this frequency data, it appears as though state park visits alone did not provide enough bouts of activity to contribute to individuals’ overall physical activity patterns over the course of a typical week.

Table 4
Logistic of Regression of Participation in Vigorous Levels of Park-Based Physical Activity
However, beyond these state park visits, respondents could have also visited local parks or gyms for their physical activity (Wilhelm-Stanis, Schneider, & Anderson, 2009), and state parks could be still promoted as a way to “mix-up” or diversify peoples’ physical activity options. Indeed, parks are just one of the commonly reported settings for physical activity. Other frequently cited destinations for physical activity include neighborhood streets, homes, private gyms, and workplace facilities (Huston, Evenson, Bors, & Gizlice, 2003; Wilhelm-Stanis, Schneider, & Anderson, 2009). For example, Huston et al. (2003) found that streets and roads (41.7%), homes (37.6%), private gyms (10.5%), and public parks (8.6%) were common settings for physical activity. Moreover, Wilhelm-Stanis, Schneider, and Anderson (2009) found that 15.9% of their respondents indicated streets/ sidewalks, 11.9% cited other park and recreation areas, and 11.9% cited the study park (Afton State Park) as their most important place for physical activity.

Future studies could examine a wider range of park settings within the same study design (including local, regional, state, and national parks) and use objective measures of park-based physical activity (e.g., using accelerometers) to verify if different types of parks yield different levels of on-site activity or if the combined visits to different parks

Table 5

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Full Model</th>
<th>Trained Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.10</td>
<td>.19</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.90</td>
<td>4.30</td>
</tr>
<tr>
<td>Income</td>
<td>-2.68</td>
<td>4.87</td>
</tr>
<tr>
<td>Education</td>
<td>5.21</td>
<td>4.91</td>
</tr>
<tr>
<td>Presence of Children</td>
<td>-1.66</td>
<td>4.75</td>
</tr>
<tr>
<td>Behavioral Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight vs. Day use</td>
<td>12.42</td>
<td>7.37</td>
</tr>
<tr>
<td>Frequency of park use</td>
<td>0.14</td>
<td>1.09</td>
</tr>
<tr>
<td>Picnic</td>
<td>-13.75</td>
<td>4.74</td>
</tr>
<tr>
<td>Relax</td>
<td>-5.52</td>
<td>4.93</td>
</tr>
<tr>
<td>Camping</td>
<td>-5.65</td>
<td>7.18</td>
</tr>
<tr>
<td>Hiking</td>
<td>20.82</td>
<td>4.77</td>
</tr>
<tr>
<td>Fishing</td>
<td>6.15</td>
<td>5.40</td>
</tr>
<tr>
<td>Swimming/Beach use</td>
<td>3.80</td>
<td>5.01</td>
</tr>
<tr>
<td>Walk</td>
<td>15.89</td>
<td>5.17</td>
</tr>
<tr>
<td>Experiential Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature Connection</td>
<td>-7.56</td>
<td>3.76</td>
</tr>
<tr>
<td>Stress and Anxiety Reduction</td>
<td>-4.98</td>
<td>3.77</td>
</tr>
<tr>
<td>Challenge and Adventure</td>
<td>1.12</td>
<td>3.10</td>
</tr>
<tr>
<td>Physical Fitness and Health</td>
<td>2.71</td>
<td>3.11</td>
</tr>
<tr>
<td>Relationship Building</td>
<td>1.38</td>
<td>2.37</td>
</tr>
<tr>
<td>Constant</td>
<td>92.39</td>
<td>18.69***</td>
</tr>
</tbody>
</table>

N = 469

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

1 Age coded as continuous variable, actual age in years.
2 Sex coded as male = 0 and female = 1.
3 Income coded as less than $40,000 = 0, $40,000 and above = 1.
4 Education coded as high school or less = 0 and more than high school = 1.
5 Children in group coded as no children under 18 in group = 0 and one or more children under 18 = 1.
6 Overnight user coded as = 0 and day user coded as = 1.
7 Frequency of park use coded as continuous variable, number of reported visits during past 12 months to that park.
8 Activity participation coded as no participation during visit = 0 and participation during visit = 1.
9 Experiential characteristics coded as 1 = extremely unimportant to 5 = extremely important.
The Influence of Visitor Characteristics Upon Physical Activity Levels

This study also found a number of demographic, behavior, and experience variables related to physical activity, with implications for management. In addition to linking findings to prior studies, there are a number of recommendations for increasing activity levels of those less likely to be active as well as strategies for attracting more active users to visit state parks.

**Demographics.** Demographic characteristics were significantly related to the physical activity levels and duration in expected ways, but their effect was modest in the models tested. Study results were consistent with prior research of general leisure-time physical activity and park-based physical activity in that education and income were positively correlated to physical activity and that age was negatively correlated to physical activity (Brown et al., 2005; Carlson et al., 2009; Floyd et al., 2008; Hughes et al., 2008; Son et al., 2008). In the present study, education was the only demographic variable that related to participation in moderate activity and minutes in moderate activity. Here, visitors with higher education levels were more likely than visitors with lower education levels to report moderate activity and spend more time in moderate activity during their park visit. However, a wider range of demographic variables were significant predictors of park vigorous activity (e.g., people with higher education and income levels were more likely to participate in vigorous activity, while older adults were less likely to participate in vigorous activity). The finding that age was negatively related to physical activity levels is consistent with prior physical activity literature (Booth, Owen, Bauman, Clavisi, & Leslie, 2000; Pate et al., 1995; Sallis, Hovell, & Hofstetter, 1992) and indicates that there may be the potential to increase vigorous activity for older adults within park settings. Collectively, these results suggest that targeting low income and less educated visitors and older adults might be an advisable strategy for those agencies interested in increasing physical activity within parks.

**Behaviors.** In terms of moderate physical activity, park behaviors were among the strongest predictors of participation and minutes. Activity type, in particular, has been defined by the intensity and duration of activity, although this can depend on the individual participant (Ainsworth et al., 2000; Kline et al., 2011). This study found both expected and unexpected findings concerning the influence of activity type and physical activity. Walking and hiking were the strongest predictors of participation in moderate physical activity, while hiking was the strongest predictor of minutes in moderate activity, and these two activities are typically classified at moderate levels within the Compendium of Physical Activities (Ainsworth et al., 2000). However, picnicking and camping, which are often assumed to be sedentary, were likewise associated with increased odds of being moderately active. Perhaps those who picnic or camp in parks are doing other forms of physical activity during their visit. Studies using direct observation (e.g., momentary ecological assessments) of park features and physical activities in urban settings with ethnically diverse visitors have found that picnic areas were associated with sedentary activity (Floyd et al., 2008; Rung et al., 2011), but those who picnic in parks might also do other activities during their visit (such as walking or camping) or might even walk a distance to get to picnic areas. In their efforts to promote physical activity, park agencies should be careful not to de-emphasize places such as picnic areas as they could be important support features for moderately active recreationists.

No study, to the authors’ knowledge, has examined the influence of camping on physical activity levels, and we found this behavioral variable to be a significant predictor of participation in moderate activity. This makes sense given that campers are at the park for a longer period of time and likely do other forms of physical activity, beyond recreation activities during their entire park stay. For example, setting up camp, doing camp chores, and walking from the campground area to get to another part of the park, may involve moderate activity (Wilhelm-Stanis, Schneider, & Anderson, 2009). In light of this finding,
park systems that offer camping might consider promoting these facilities as a good way to achieve recommended physical activity levels, particularly at moderate levels.

In terms of vigorous activity, fewer park behaviors emerged as significant predictors. This may be because the activities analyzed in this study (reported by at least 200 respondents) did not include activities one would expect to be vigorous (e.g., running, bicycling). Some negative significant relationships were found, however. Beach use and walking were negatively related to vigorous activity participation. This is not surprising as walking is often considered a moderate activity with MET levels lower than other forms of recreation (Kline et al., 2011). Moreover, beach use can involve sedentary behaviors such as lying around and sunbathing as well as active behaviors such as swimming. While efforts could be made to target these recreation pursuits for vigorous activity, the very nature of beach recreation suggests that it may be a difficult target. One simple strategy could be to encourage more minutes of swimming while at the beach. Another more targeted approach could be to develop sporting events or active recreation programs for beach areas, such as volleyball. However, care must be taken to ensure that these active initiatives do not discourage or displace visitors who may use beaches for sedentary behavior.

Recreation experience preferences. As noted by Anderson and Fulton (2008), activity type alone does not explain why people participate in park behaviors and what outcomes they receive. Some park visitors may value physical fitness experiences in their park visits, whereas others may value socialization or nature connection. Yet a single activity type (e.g., walking, camping, picnicking) could provide recreationists with opportunities to realize a variety of these experiences. Furthermore, park visitors may not visit parks for the reason of being more physically active, but rather they visit to relax, contemplate, forget about or cope with their day-to-day stresses and hassles (Iwasaki & Schneider, 2003), or strengthen their relationships. A core premise behind the current study is that demographics and behaviors are not the only user characteristics that correspond to park-based physical activity levels. Consideration of park experience preferences or motivations is also warranted. A number of recent studies in the public health and park and recreation literature have demonstrated the importance of motive type and intensity in relation to physical activity (Haughton McNeill et al., 2006; Hubbard & Mannell, 2001; Son et al., 2008). These studies, however, either consider motivation as intrinsic or extrinsic or focus entirely on motivation intensity rather than motivation type. The current study sought to discern how the different types (and levels) of recreation experience preferences contributed to moderate and vigorous park-based physical activity.

Similar to the work of Spruijt-Metz et al. (2009), the present study found that visitors who valued physical fitness experiences (e.g., the importance of this reason for visiting the state park) also reported higher participation in moderate and vigorous activity. These visitors were realizing these experiences through their physical activity behaviors. However, there are a host of other reasons for visiting parks, and it is important to assess how these types of experiences contribute to physical activity. While physical fitness experiences were a positive predictor of moderate activity participation, nature connection experiences were a negative predictor of minutes in moderate activity. Those who valued nature as a reason for their park visit spent fewer minutes in moderate activity, and this somewhat surprising result is discussed in greater detail below.

In terms of vigorous activity participation, recreation experience preferences emerged as some of the strongest predictors compared to other model variables. Physical fitness experiences were, again, the most robust predictor of participation and minutes. However, other experience preferences emerged as both positive and negative predictors. For example, those who visited for challenge/adventure reasons also reported higher participation in vigorous activity and minutes of vigorous activity. Conversely, those who visited for nature connection and relationship building reasons were less likely to participate in vigorous activity.

The finding that nature connection was negatively related to minutes of moderate activity and participation in vigorous activity is a perplexing one. While one might expect that nature-based experiences contribute to physical activity, this relationship may not be
universal across all park user populations or settings. That is, nature-based experiences for many park visitors could be realized with little bodily movement and exertion. For example, those who briefly drive through a park or who sit on the beach (e.g., engaging in sedentary park behaviors) may look for and encounter wildlife and park scenery to fulfill their nature-related experience preferences. In other words, perhaps study participants, who rated nature connection as an important reason for their visit, engaged in outdoor recreation that involved fewer minutes of moderate activity and no vigorous activity, such as brief encounters with wildlife and natural park features. Perhaps also they sought out and experienced environmental interpretation programs where they were less likely to engage in moderate or vigorous activity (e.g., campfire and nature center programs) but were still able to learn about nature and the area’s cultural history.

Conversely, visitors who engaged in higher level vigorous activity may have focused primarily on maintaining the intensity of their park exercise levels and did not use their park visits to learn about or connect with nature. The finding that physical fitness motives were positively related to vigorous activity tends to support this rationale. Such explanations, however, are speculative, and additional research should continue to examine if the importance of park nature experiences is positively or negatively related to park-based physical activity levels. Regardless of the exact nature of these relationships, it appears that recreation experience preferences were more predictive of vigorous activity than moderate activity. Managers who wish to increase vigorous activity at their parks could create new features or accentuate existing opportunities that fulfill physical fitness and adventure/challenge experiences, such as fitness events and extreme or skill-based recreation facilities (e.g., climbing areas, bouldering fields). They might also explore ways to encourage vigorous activity among visitors who prefer nature connection and social relationship experiences. For example, they could develop programs that provide vigorous activity opportunities while weaving in nature-based messaging and social/group interaction.

In addition to these program and setting approaches, managers could also make visitors aware of physical activity opportunities within their parks by placing in-park point-of-decision prompts to walk or be active during their park visit. Such messaging could reinforce the notion that certain park features and activities available in the park are sources of recommended physical activity levels. The reader is cautioned, however, that aggressively promoting vigorous activity in natural resource parks can entail risk; visitors may not want to be vigorously active when seeking nature connection and/or relationship experiences. Only a minority of visitors in our study participated in vigorous activities, and the least important experience preferences cited were physical fitness and challenge/adventure. Rather, stress/anxiety reduction, relationship building, and nature connection were the most important, and managers should not sacrifice the provision of these experiences in their physical activity initiatives, particularly if they are inconsistent with the organization’s core mission (e.g., environmental protection, nature education).

It is worth pointing out that sedentary park behaviors are not a negative phenomenon. When promoting physical activity, park agencies need to be careful to design facilities, programs, and promotions that do not place value judgments on sedentary park use and do not conflict with the recreation experiences desired by sedentary users. Once at a park, recreationists have the freedom to choose their type of recreation activity and their desired level of physical activity. For some visitors, parks provide an opportunity to be still, experience nature, and contemplate life through park activities that involve no moderate and no vigorous activity (e.g., sitting on a park bench or by the water). These park visits could still have significant implications for other health benefits such as reduced stress and anxiety (Orsega-Smith, Mowen, Payne, & Godbey, 2004). Park and recreation agencies are charged with providing a broad spectrum of recreation opportunities that accommodate both physically active and sedentary park visitors. To integrate multiple recreation experiences within a given setting, it may be possible to be strategic and purposively redesign park facility and support features using subtle approaches. Perhaps as Buchner
and Gobster (2007) have described, physical activity opportunities could be enhanced through stealth facility design (e.g., placing walking opportunities between parking areas and attractions).

Conclusion

The current study adds to a body of literature describing the relationship of park visitor characteristics, behaviors, and experiences with park-based physical activity levels. While study results may not be generalizable to all state parks and certainly are not generalizable to local parks, they do demonstrate consistent patterns with prior research. A majority of state park visitors were moderately active during their visits. However, they did not visit these settings frequently, which reduces their potential for achieving recommended levels of physical activity through park use. It is also clear that demographics, behaviors, and experience preferences corresponded with moderate and vigorous activity in different ways (Courneya & McAuley, 1994; Titze et al., 2005). Our results indicate that certain park user demographics, camping, activity type, and desired psychological experiences played a significant role in shaping park-based physical activity, but that their influence varied depending on the intensity level (moderate vs. vigorous). Visitors who camped, hiked, and walked for physical activity reasons were generally the most active. However, picnicking, which is often assumed to be sedentary, was positively related to participation in moderate physical activity.

Our findings are not by themselves prescriptive. They do not suggest physical activity promotion strategies as an imperative for state parks. However, state park agencies that wish to increase physical activity should consider these findings in their efforts to make parks more attractive to people whose characteristics, recreation activities, and desired experiences correspond with active use at the different levels. For example, to sustain or increase moderate activity levels in state parks, managers could consider providing overnight camping as well as walking and hiking facilities and programs. These efforts could be targeted toward visitors with lower income profiles, as they were less likely to engage in moderate and vigorous activity. Agencies that wish to incorporate more vigorous activity into their state parks could target older, low income, and low education visitors in their promotions and highlight the challenge/adventure and physical fitness experience opportunities available at the park or provide additional facilities or features that might fulfill these experience preferences.

Future studies should incorporate objective physical activity measurements into their study design and explore the impact of individual user characteristics on physical activity across a broader cross-section of parks, including neighborhood, regional parks, and even national parks. Given that parks represent only one context from which to be physically active, it is important to assess the degree to which park visits contribute to overall levels of physical activity compared with other domains of daily living. For example, future research should examine whether park visits provide an opportunity for people to be more physically active than they are in their typical day. Studies could also continue to assess the amount of physical activity that occurs in parks compared to other environmental contexts (e.g., home, work, transit; Wilhelm-Stanis, Schneider, & Anderson, 2009). Park and recreation administrators must carefully consider both their constituents and their mission statement to make informed physical activity decisions without sacrificing the existing character of parks that appeals to sedentary visitors. As researchers continue to study contextual factors that influence park-based physical activity levels, they will be in a better position to provide sound policy and managerial guidance to achieve physical activity goals through park and recreation services.
References


The Role of Elements of Theory of Planned Behavior in Mediating the Effects of Constraints on Intentions: A Study of Oregon Big Game Hunters

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EXECUTIVE SUMMARY: This study aimed to explore the degree to which the antecedents of theory of planned behavior (TPB) (i.e., attitude, subjective norms, and perceived behavioral control [PBC]) mediated the relationship of hunting constraints with deer hunting intention. The data were collected using a mail back survey in 2009. The sample consisted of 359 hunters randomly selected from the list of the hunters who had purchased an Oregon big game (deer, elk, and/or bear) hunting license in 2008. The TPB elements exhibited moderate to strong negative correlations with the four constraint dimensions (site and management; partner and health; skill and confidence; and time, distance, and money), except for the correlation between subjective norms and partner and health. The mediation analysis showed that constraints affected deer hunting intention directly and indirectly through the elements of the TPB, especially the PBC. Management implications suggested in the manuscript include the possibility of reducing the impacts of constraints on hunting intention, by enhancing level of confidence (PBC) of the hunters through methods such as skill enhancement training, increasing harvesting success through game population management, and extending hunting opportunities in public and private lands. We also suggest the development of promotional programs targeting women and minorities. Future research might focus on extending the TPB by integrating constraints to offer a more practical dimension to the TPB. Conversely, constraint research may examine the role of attitude, subjective norms, and PBC on constraint negotiation.

KEYWORDS: Theory of planned behavior, deer hunting, constraints, hunting participation, mediation effects

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The TPB model, proposed by Ajzen (1991), states that an individual’s participation in a behavior depends on the intention of the person to participate in that behavior, and the intentions themselves depend on attitudes, subjective norms, and perceived behavioral control (PBC) the person is believed to have on the behavior (Ajzen, 1991). The constraints negotiation model (Jackson et al., 1993), on the other hand, proposes a person’s eventual leisure behavior depends upon the successful negotiation of the constraints, which are organized in a sequential manner.

Mannell and Kleiber (1997) suggested that the attitudes, subjective norms, and PBC could affect the formation of leisure preference (the immediate descriptor of participation in the constraints theory). Similarly, Wigfield and Eccles (2000) also suggested that choice, preference, and performance of the individuals can be explained by their beliefs (e.g., attitudes, subjective norms, and PBC) about how well they succeed in that activity and the extent to which they value the activity. These arguments indicate that the TPB elements (attitude, subjective norms, and PBC) have relationships with constraints that determine preference and participation. On the other hand, Ajzen (1988) claimed that the effects of non-TPB variables on behavioral intention are likely to be mediated by the antecedents of the intention (i.e., attitudes, subjective norms, and PBC). If the above suggestions are true, the relationship of constraints with behavior intentions might be also mediated by TPB elements. However, there have been very limited attempts to investigate the relationships of the constraints with the variables related to the attitudinal models describing participation (Hubbard & Mannell, 2001), including the intention and its predictors (attitudes, subjective norms, and PBC) of the TPB (Walker, Jackson, & Deng, 2007).

An attempt made by Alexandris and Stodolska (2004) to establish the relationships between constraints and TPB predictors showed that the attitudes, subjective norms, and PBC have negative relationships with the perceived leisure constraints. Another study by Alexandris, Barkoukis, and Tsormpatzoudis (2007) found these attitudinal variables mediated the relationships of different constraint dimensions with behavioral intention to participate in physical exercise. How these relationships hold true for outdoor recreational activities, including hunting, has been not yet tested. Accordingly, the aim of the present study was to test the degree to which the elements of the theory of planned behavior act as mediators of the relationship between constraints and intention to participate in deer hunting. More specifically, we examined the mediating role of the elements of the theory of planned behavior on the relationships of four different constraint dimensions (site and management; health and partner; confidence and skill; and time, distance, and money) with deer hunting intention. The hypotheses we examined were (a) each of the four constraint dimensions have significant negative relationships with deer hunting attitudes, subjective norms, PBC, and intention; (b) attitudes mediate the effects of four constraint dimensions on deer hunting intention; (c) subjective norms mediate the effects of four constraint dimensions on deer hunting intention; and (d) PBC mediates the effects of four constraint dimensions on deer hunting intention.

**Literature Review**

**Theory of Planned Behavior**

The theory of planned behavior (Ajzen, 1991) is an extension of the theory of reasoned action (Ajzen & Fishbein, 1980). The theory states that an individual’s participation in a specific behavior depends on the intention of the person to engage in that behavior.
Intention, in turn, could be determined by (a) the individual’s attitudes toward the behavior, (b) the influence of subjective norms (perceived social norms) toward the behavior, and (c) the influence of perceived level of control (PBC) on the behavior. According to Ajzen (1991), attitudes are the affective and instrumental evaluations of performing a behavior by an individual, based on his/her behavioral beliefs concerning the consequences of engaging in the behavior. Subjective norms are the perceived social pressures on the individual to perform or not to perform a particular behavior. The PBC reflects an individual’s perceptions about her/his capability of successfully engaging in the behavior (Ajzen, 1985) and is represented by the perceptions of whether the behavior can be performed both in terms of self-efficacy (easy or difficult) and controllability (perceived extent of control: a little or a lot) taking into account the individual’s perception of skills, resources, and opportunities needed to perform a behavior (Ajzen, 1991). The PBC component was introduced to address the criticism that not all human behaviors are under the degree of volitional control (Ajzen, 1985, 1988; Ajzen & Madden, 1986).

The TPB has been applied to a variety of behavior studies and has received widespread support in recent years. A variety of meta-analytic reviews (Armitage & Conner, 1999, 2001; Conner & Armitage, 1998; Downs & Hausenblas, 2005a, 2005b; Godin & Kok, 1996) across health, leisure, and recreation behaviors have provided strong evidence on the ability of the theory in predicting behavioral intention and participation. These reviews showed that the TPB model has been widely used in the field of leisure and outdoor research. The same manuscripts showed that intention was a strong and reliable predictor of recreation activity participation. This body of work further showed that the TPB model described 39% to 55% of the variation in behavioral intention and 27% to 51% of variations in the reported or observed participation in a variety of recreation activities. Downs, Graham, and Yang (2006) found that attitude, subjective norms, and PBC could predict 55% of the variance in intentions, and intention and PBC could explain 51% variance in past exercise behavior. Armitage and Conner (2001) noted that TPB accounted for 39% variance in intentions and 27% of variance in behavior when behavior measures were self-reported.

These studies also showed that attitudes, subjective norms, and PBC were positively related to intention and reported or observed behaviors. Among the three predictors, PBC was a consistent and strong predictor of both behavioral intention and participation. The role of the attitudes and subjective norms depended on the type of behavior and strength of measure of normative components.

Two studies also used the TPB model to describe hunting behavior (Hrubes, Ajzen, & Daigle, 2001; Rossi & Armstrong, 1999). The study conducted by Hrubes et al. (2001) found that attitudes, subjective norms, and PBC contributed 93% in explaining behavioral intention of hunting, while intention described 62% variations in hunting participation. The study of Rossi and Armstrong (1999), however, found that the TPB model could explain 38% of the variance in hunting intention. However, neither of the hunting studies examined the claim of Ajzen (1988) that the effects of non-TPB variables (such as constraints) on intention are mediated by the TPB predictors.

**Constraints Model**

Constraints models are often found in the leisure participation literature, where constraints have been defined as “the factors that are assumed by researchers and perceived by individuals to inhibit or prohibit participation and enjoyment in leisure” (Jackson, 2000, p. 62). The term constraints includes not only the physical and external-to-the-individual constraints such as facility problems, but it also includes social constraints such as the lack of partner and psychological constraints such as confidence, fear, and perceived skills (Jackson & Scott, 1999). It has been argued that the social and psychological constraints have a direct influence on an individual’s preference for a specific activity (Crawford, Jackson, & Godbey, 1991).

Crawford and Godbey (1987) categorized constraints into intrapersonal, interpersonal, and structural constraints. Intrapersonal constraints are “internal” to an individual and are mainly related to the psychological states and attributes, such as lack of skills and perceived
health problems. Interpersonal constraints are related to an individual’s inability to find partners with whom to participate. Structural constraints are “external to an individual” and include factors related to lack of resources, facility, and financial problems. Crawford et al. (1991) proposed that these constraints are encountered hierarchically. Jackson, Crawford, and Godbey (1993) proposed that the constraints do not always lead to nonparticipation, rather the final outcomes (participation, nonparticipation, modified participation), in a large degree, depend upon the negotiation of these constraints with the development of appropriate strategies. The review of constraint research by Godbey, Crawford, and Shen (2010) and Jackson (2000) has found evidence in support of negotiation of leisure constraints and showed many individuals were participating in leisure activities (modified participation) even in the presence of constraints (e.g., Burns & Graefe, 2007; Carroll & Alexandris, 1997; Hubbard & Mannell, 2001; Scott & Jackson, 1996; Son, Kerstetter, & Mowen, 2008; Walker et al., 2007).

The efforts of works by Godbey et al. (2010) and Jackson (2000) also identified several dimensionality and measurement issues with constraint research, including the low internal reliability of the constraints dimensions. This was related to the differing nature of physical activities, the various characteristics of the study population (age, gender, physical or mental ability, family lifecycle, ethnicity, cultural practices, etc.), and the different stages of participation (starting a new leisure activity, pursuing higher or desired levels of specialization or quality of experience, etc.).

Like the TPB, constraints research also recognizes that leisure behaviors are not always under a degree of volitional control (Jackson & Scott, 1999; Smith & Biddle, 1999). In other words, if the activity is more strenuous, demands more time and resources, and requires special training and skills, volitional control will be reduced, and the individual may perceive constraints.

Constraints and TPB Components Relationships

There seems to be relationships between the three constructs of TPB and three types of constraints. For example, the attitudes concept seems related to the intrapersonal constraints in the sense that both represent an internal dimension of an individual. Likewise, subjective norms seem related to the interpersonal constraints. This occurs because both factors address the social interaction. In addition, PBC may be related to the structural constraints, as both factors are related to perception about resources and skill. The possible conceptual relationships among these variables have been suggested by many scholars (Hubbard & Mannell, 2001; Vallerand & Losier, 1999; Walker et al., 2007; Wigfield & Eccles, 2000). For example, Mannell and Kleiber (1997) suggested that the attitudes, subjective norms, and PBC could affect the formation of leisure preference, which depends on intra- and interpersonal constraints. Wigfield and Eccles (2000) and Eccles et al. (1983) suggested that choice, preference, and performance of individuals can be explained by their beliefs (e.g., attitudes, subjective norms, and PBC). Walker et al. (2007) expressed concern over isolating intrapersonal constraints from other psychological factors such as attitude, subjective norms, and PBC. If the above suggestions are true, leisure constraints (especially intrapersonal constraints) should be a construct similar to attitudes, subjective norms, and PBC and should help to explain intention.

Furthermore, many authors have empirically verified and explained the constraints negotiation strategies and explored the influence of motivation on negotiation and perceived constraints (Alexandris, Tsormpatzoudis, & Grouios, 2002; Carroll & Alexandris, 1997; Hubbard & Mannell, 2001; Koca, Henderson, Asci, & Bulgu, 2009; Livenwood & Stodolska, 2004; Walker et al., 2007). Vallerand and Losier (1999) suggested that social factors and psychological mediators, including attitudes, values, and beliefs, serve as a force for intrinsic and extrinsic motivations whose influence on constraint negotiation has already been established. Parallel to this view, Hubbard and Mannell (2001) and Jackson and Rucks (1995) argued that personal control factor, a construct similar to PBC, may play a role in constraints negotiation. This would mean that the TPB predictors also might explain constraint negotiation through motivations.
Despite these suggestions, there have been very limited attempts to investigate the relationships between constraints and variables related to attitudinal models describing participation (Hubbard & Mannell, 2001; Walker et al., 2007). Dawson, Gyurcsik, Culos-Reed, and Brawley (2001) made one of the first attempts to examine the relationship between PBC and constraints. They found that the power of PBC in the TPB is related to the perceived resources (e.g., time, money, skills, and cooperation of other people) that an individual possesses, the existence or absence of perceived constraints, and perceived ability to overcome those constraints. This result supported Ajzen and Driver’s (1991) view that the perceptions of presence and strength of internal and external constraints decrease the intensity of the PBC. Alexandris, Barkoukis, Tsormpatzoudis, and Grouios (2003) provided evidence of the negative impact of constraints on intention to participate in physical activities. A similar study by Alexandris and Stodolska (2004) found negative relationships between the attitudinal variables included in the TPB with the perceived leisure constraints, but they did not clarify if the elements of the TPB mediated the constraints–intention relationship. Recently, Alexandris et al. (2007) found that the predictors of the TPB mediated the relationships of different constraints dimensions with behavioral intention. However, their findings are still far from conclusive, primarily because there are few other studies about outdoor recreation activities such as hunting to verify these relationships.

Mediation Effect Analysis

In statistics, mediation is a method used by researchers to explain the process or mechanism by which one variable affects another (MacKinnon, Fairchild, & Fritz, 2007). Psychologists often conduct research to establish whether and to what extent one variable affects another. However, the discovery that two variables are related to each other is only one small aim of psychology. Deeper understanding is gained when we comprehend the process that produces the effect (Preacher & Hayes, 2004). For example, it might be useful to know whether a training program leads to an increase in employee satisfaction by affecting employee attitudes toward job and/or by changing behavioral habits. In this example, attitudes and habits are potential mediators of the relationship between the training program and employee satisfaction. Mediation in its simplest form represents the addition of a third variable called mediator (M) between an independent variable (X) and dependent variable (Y), and the relationship is shown as X→ M →Y. However, in addition to the X→ M →Y mediation relationship, an incomplete mediation may also include a direct line between X and Y.

A mediating variable is different from a confounding variable (Z) in the sense that a confounding variable affects both X and Y, and ignoring Z leads to incorrect inference about the relation of X and Y. In one situation, Z may be related to X and/or Y, so that information about Z improves prediction of Y by X, but does not substantially alter the relation of X to Y. This is an example of a covariate. In another situation, Z may also modify the relation of X to Y such that the relation of X to Y differs at different values of Z. This is an example of a moderating or interaction effect. The distinction between moderating and mediating variables has been an ongoing topic of research (Baron & Kenny, 1986; Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). A mediator is a variable that is in a causal sequence between two variables, whereas a moderator is not part of a causal sequence between the two variables. More detailed definitions of these variables in a three-variable system may be found in Robins and Greenland (1992).

Methods

Survey and Instruments

A self-administered mail back survey was conducted in August and September 2009 with 2,000 Oregon big game (deer, elk, and bear) hunters using Dillman’s (2000) Tailored Design Method. A sample of names and addresses was randomly selected from an extensive database (N = 250,000) provided by the Oregon Department of Fish and Wildlife.
(ODFW). The database included the names and addresses of hunters who purchased the big game hunting license for the 2008 hunting season. A pre-study postcard was sent to each selected respondent. The surveys (containing a cover letter, a survey instrument, and a self-addressed stamped envelope) were mailed from a major research university mail center, with no reference to ODFW included on the envelope. Post-survey cards were mailed to nonrespondents requesting them to respond. The response rate was 20% (Table 1). The relatively low response rate in this case might be attributed to the fact that only two reminder requests were mailed (one without replacement questionnaire and a second one with replacement questionnaire) in a 15-day period. Dillman (2000) suggested incentives and one additional contact with nonrespondents via certified mail or its alternative. These steps may have had a substantial effect on response rate.

Table 1
Sampling and Response Rate

<table>
<thead>
<tr>
<th>Number of surveys mailed</th>
<th>Number of surveys returned due to incorrect addresses</th>
<th>Number of respondents received</th>
<th>Number of completed surveys</th>
<th>Response rate surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000</td>
<td>193</td>
<td>1,807</td>
<td>359</td>
<td>20%</td>
</tr>
</tbody>
</table>

The survey questions were related to the characteristics of the respondents, values, motivations of participation in hunting, quality of experience, and concepts related to the TPB model and hunting constraints. The TPB constructs were measured with multiple items and a 7-point semantic differential scale developed by Ajzen and Driver (1992), ranging from 1 (strong disagreement/negative feeling) to 7 (agreement/positive feeling). Following the suggestion of Ajzen (2002), the items were rephrased to represent participation in deer hunting in Oregon in the 2009 hunting season. Hunting intention (measured with three items) was treated as respondents’ conscious plan or decision to participate in deer hunting in Oregon during the 2009 hunting season. Attitude toward hunting (measured with six items) reflected a person’s evaluation of the benefits (affective and instrumental) of participation in deer hunting in Oregon in 2009. Subjective norms (measured with four items) represented respondents’ perceptions about what other people important to him/her think about his/her participation in deer hunting in Oregon during the 2009 hunting season. The PBC (measured with three items) characterized a person’s perceived level of confidence to participate in deer hunting in Oregon in the 2009 hunting season, taking account of all non-volitional forces, including resources and skills.

Hunting constraints were measured by asking the perceived frequency for 25 constraints items that they may face regarding hunting in Oregon. A 5-point scale, developed by Shinew, Floyd, and Parry (2004), ranging from 1 (never/not at all) to 5 (always/a lot) was used to measure the hunting constraints. Twenty-two of the constraint items were adopted from Shinew et al. (2004) and Burns and Graefe (2007), and three were added from hunting literature (Woods & Kerr, 2010).

Due to the absence of population data for comparing TPB and constraint items, nonresponse bias was examined using extrapolation method suggested by Armstrong and Overton (1977). This method assumes that subjects who respond less readily are similar to nonrespondents. Less readily has been defined as answering later or requiring more probing. The most common type of extrapolation is carried out over successive waves of a questionnaire survey, which refers to the response generated after follow-up postcards. Accordingly, we used Pearson’s Chi-square and independent sample t-tests, as appropriate,
to compare the profiles, number of years hunting, quality of experience, and means for dependent and independent variables between the hunters who responded before the second follow-up survey (n = 236) and hunters who responded after the second follow-up survey (n = 124). There were no significant differences between groups in the profiles and means of responses to TPB-related questions. In addition, we also compared representation of sex and age in the sample with the population and found no significant difference. For example, the mean age of the population was 52 years, sample mean was 51 years, and the male–female ratio was 86:14 in the population and 82:18 in the sample. These results suggested little or no differences between respondents and nonrespondents. Accordingly, no adjustments were made to the data to address the issue.

Data Analysis

IBM SPSS, Version 19 was used for descriptive and inferential analysis of the data. Principal component analysis (PCA) method of factor analysis using varimax rotation was applied to identify constraint dimensions. It was followed by a reliability test of the measurement scales by calculating Cronbach’s α. The PCA of the 25 constraint items produced an awkward combination of items grouped around seven dimensions that explained about 57% variance of the construct. Later, we adopted the communalities criteria, and each item having communalities extraction values below .3 were excluded. The five removed items were “like to do other things for recreation,” “don’t like to do things in outdoor,” “sites are closed,” “feeling of unwelcome by ranger/staff,” and “racial conflicts among users.” After removing the five items, PCA was rerun, producing four constraints dimensions.

A series of correlation and multivariate regression analyses were conducted to examine the mediating role of the TPB predictors. For this purpose, indexes were calculated for each construct by summing total item score for the respective construct and dividing it by the number of items for that construct. For example, to create the intention index, the scores for three intention items were summed and divided by 3.

Mediation effect analysis was performed using criteria as suggested by Baron and Kenny (1986, p. 1176). These authors suggest “a variable may be called a mediator, to the extent that it accounts for the relation between the predictor and the criterion.” They proposed that mediation is supported when the following four criteria are satisfied: (a) a significant correlation between the dependent and independent variables, (b) a significant correlation between the independent variables and the mediators, (c) the mediators should have a significant unique effect on the dependent variable when they are included alongside the independent variable in a multivariate test of these relationships, and (d) the effect of the independent variable on the dependent should be significantly attenuated or nullified when the mediators are included as independent predictors of the dependent variable. Pearson’s correlation was used to examine the first and second criteria. First, correlation of the constraints dimensions were examined with intention (dependent variables) and then among the four constraints dimensions with attitudes, subjective norms, and PBC (mediators). The third criterion was examined by conducting a series of separate multivariate regression analyses, in which attitude, subjective norms, and PBC (mediators) and constraint dimensions (independent variables) that passed the first and second criteria were regressed on intention. The assessment of the fourth criterion involved two sets of regression analyses. In the first set of analysis, intention was regressed on each of the four constraint dimensions separately. In the second set, stepwise regression was conducted in which one mediator, for example attitudes, was entered in the first step and four constraints dimensions in the second step, in four separate regression analysis. The same procedure was repeated for examining the third and fourth criteria for subjective norms and PBC.

Results

Profile of the Respondents

The respondents were predominantly male (82%) and white (98%). The mean age of the respondents was 50 years, while the presence of young respondents (aged 20 or below)
was less than 5%. On average, the respondents have been hunting in Oregon for nearly 27 years, and most of them had been hunting for more than 29 years (median = 29). Harvesting deer was the major motivation of big game hunting for the greatest proportion (45%) of respondents, followed by time with family/friends (18%) and solitude/escape from crowd or normal life. The harvesting success rate of deer hunters for the year 2008 was very low (38%). The quality of hunting experience, measured on a 6-point scale (1 = worst and 6 = excellent) indicated that the hunters were somewhat dissatisfied with their current big game experience in Oregon (mean = 2.81). Results of the t-test analysis showed that the mean scores of the quality of experience of the hunters who successfully harvested one or more deer (mean = 3.58) were significantly higher than those who did not harvest any deer (mean = 2.43) at a confidence interval of (t = 7.624, p = .000). The hunters reported that low deer population, reduced access, too many hunters, and increase in predator population were the important reasons of lower harvesting success.

**TPB Components**

Factor analysis of the scale measuring the TPB variables indicated the existence of four distinct dimensions, precisely representing the four TPB components (i.e., attitudes, subjective norms, PBC, and intention) and explained nearly 78% of the total variance. The loadings of the items included in each component were close to .700 or higher (Table 2). The Cronbach’s α for the subscales were also very high (0.953 for intention, 0.913 for attitudes, 0.899 for PBC, and .823 for subjective norms).

In general, the respondents possessed very positive attitudes toward participating in deer hunting (mean attitude index = 5.59) in Oregon during the 2009 hunting season (Table 2). The perceived influence of significant others on their decision to participate in deer hunting was also very positive (mean subjective norms index = 5.81). The hunters believed that they have higher levels of control over their ability to participate in deer hunting (mean PBC index = 5.80). Most important, the hunters expressed a highly positive intention to participate in deer hunting in the 2009 hunting season in Oregon (mean intention index = 6.11).

**Hunting Constraints**

The factor analysis, after removing the five items, produced four constraint dimensions (factors), which explained about 55% of the variance. The reliability (Cronbach’s α of the four constraint dimensions) was close to .70 or above (Table 3). These four constraint dimensions were somewhat consistent with previous constraints literature, representing the three types of constraints (intrapersonal, interpersonal, and structural) as suggested by Crawford and Godbey (1987). The first dimension was skill and confidence, consisting of six psychological (internal to the person) items representing intrapersonal constraints, for example, “lack of self-confidence” and “fear of sexual assault.” The second dimension was partner and health. It consisted of three items representing a mix of interpersonal and intrapersonal constraints, such as “your physical health,” “physical health of partner,” and “don’t have anyone to go with.” The third and fourth dimensions represented two subdimensions of structural constraints, namely, site and management dimension and time, money, and distance dimension. The site and management dimension included six items, for example, “sites too crowded,” “lack/difficulty to find deer,” and “inadequate facilities,” while the time, money, and distance dimension included five items, such as “lack of time,” “lack of transportation,” “sites far away,” and “lack of money.”

Among the four dimensions of hunting constraints, the site and management dimension (mean = 2.11) and partner and health dimension (mean = 1.90) were perceived to be more frequently realized by the respondents when participating in deer hunting in comparison to skill and confidence (mean = 1.29) and time, distance, and money (mean = 1.90) dimensions of the constraints. Crosstab analysis showed that the items “your health condition,” “no one to go with,” and “partner’s health condition” constraints were more frequently reported by older people.
Table 2

Means and Factor Loading of Items on TPB Components and Reliability of Scale

<table>
<thead>
<tr>
<th>TPB Components</th>
<th>Items</th>
<th>Mean score</th>
<th>s.d.</th>
<th>Factor loading</th>
<th>Cronbach α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td>I intend to participate in deer hunting in 2009</td>
<td>6.25</td>
<td>1.5</td>
<td>.867</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I will try to participate in deer hunting in 2009</td>
<td>6.04</td>
<td>1.6</td>
<td>.887</td>
<td>.953</td>
</tr>
<tr>
<td></td>
<td>I am planning to participate in deer hunting in 2009</td>
<td>6.04</td>
<td>1.6</td>
<td>.879</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>INTENTION INDEX</strong></td>
<td>6.10</td>
<td>1.5</td>
<td>(28.3%)</td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>For me hunting deer would be: unpleasant or pleasant</td>
<td>5.96</td>
<td>1.5</td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For me hunting deer would be: boring or interesting</td>
<td>5.59</td>
<td>1.8</td>
<td>.890</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For me hunting deer would be: unenjoyable or enjoyable</td>
<td>5.95</td>
<td>1.5</td>
<td>.773</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>For me hunting deer would be: socially harmful or beneficial</td>
<td>5.51</td>
<td>1.7</td>
<td>.869</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For me hunting deer would be: health-wise harmful or beneficial</td>
<td>5.75</td>
<td>1.7</td>
<td>.877</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For me hunting deer would be: economically harmful or beneficial</td>
<td>4.83</td>
<td>1.7</td>
<td>.683</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>ATTITUDE INDEX</strong></td>
<td>5.59</td>
<td>1.4</td>
<td>(22.3%)</td>
<td></td>
</tr>
<tr>
<td>Subjective norms</td>
<td>People important to me think I should hunt deer</td>
<td>5.75</td>
<td>1.4</td>
<td>.733</td>
<td></td>
</tr>
<tr>
<td></td>
<td>People whose opinions I value think I should hunt deer</td>
<td>6.13</td>
<td>1.1</td>
<td>.833</td>
<td>.823</td>
</tr>
<tr>
<td></td>
<td>People who are important to me will support my deer hunting</td>
<td>6.26</td>
<td>1.0</td>
<td>.800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>People who are important to me will go deer hunting</td>
<td>5.13</td>
<td>1.6</td>
<td>.730</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SUBJECTIVE NORMS INDEX</strong></td>
<td>5.81</td>
<td>1.0</td>
<td>(16.4%)</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>I am confident that I can go deer hunting</td>
<td>6.03</td>
<td>1.5</td>
<td>.660</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If I want to go deer hunting in 2009, I can go easily</td>
<td>5.87</td>
<td>1.5</td>
<td>.815</td>
<td>.899</td>
</tr>
<tr>
<td></td>
<td>Factors that influence my decision to go deer hunting are in my full control</td>
<td>5.50</td>
<td>1.7</td>
<td>.889</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>PBC INDEX</strong></td>
<td>5.80</td>
<td>1.4</td>
<td>(11.3%)</td>
<td></td>
</tr>
</tbody>
</table>

Total variance explained (78.2%)

Notes:

1. Each statement was asked for the context of Oregon in 2009 hunting season
2. The figure inside parenthesis indicates amount of variance explained by respective unobserved variable.
3. 1 indicates extremely disagree with the statement, and 7 indicates extremely agree for all, except for attitude-related items in which 1 indicates extreme negative attitude and 7 indicates extreme positive attitude.
Table 3
Means and Factor Loading of Items on Four Constraint Dimensions and Reliability of Measurement

<table>
<thead>
<tr>
<th>Constraints Dimensions</th>
<th>Constraint Items: Please describe the extent to which these items constrain your participation in deer in Oregon during 2009.</th>
<th>Mean score</th>
<th>s.d.</th>
<th>Factor loading</th>
<th>Cronbach α</th>
<th>Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill and Confidence</td>
<td>Lack of training in Oregon</td>
<td>1.43</td>
<td>0.7</td>
<td>.731</td>
<td>.719</td>
<td>14.7%</td>
</tr>
<tr>
<td></td>
<td>Lack of self-confidence</td>
<td>1.24</td>
<td>0.6</td>
<td>.691</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of skills</td>
<td>1.37</td>
<td>0.6</td>
<td>.684</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fear of sexual assault</td>
<td>1.18</td>
<td>0.5</td>
<td>.769</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fear of outdoors</td>
<td>1.17</td>
<td>0.4</td>
<td>.702</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fear of crime in hunting areas</td>
<td>1.40</td>
<td>0.7</td>
<td>.656</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SKILL &amp; CONFIDENCE INDEX</strong></td>
<td>1.29</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner and Health</td>
<td>Your physical health</td>
<td>2.06</td>
<td>1.2</td>
<td>.810</td>
<td></td>
<td>5.7%</td>
</tr>
<tr>
<td></td>
<td>Physical health of someone you like to hunt with</td>
<td>2.03</td>
<td>1.0</td>
<td>.792</td>
<td>.615</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't have anyone to go hunting with</td>
<td>1.88</td>
<td>1.1</td>
<td>.667</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>PARTNER &amp; HEALTH INDEX</strong></td>
<td>2.00</td>
<td>0.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site and Management</td>
<td>Sites too crowded in Oregon</td>
<td>2.58</td>
<td>1.1</td>
<td>.765</td>
<td>.776</td>
<td>26.5%</td>
</tr>
<tr>
<td></td>
<td>Inadequate facilities in Oregon</td>
<td>1.79</td>
<td>0.9</td>
<td>.742</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of/difficulty to find deer in Oregon</td>
<td>2.58</td>
<td>1.2</td>
<td>.708</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complex rules and regulation of hunting</td>
<td>2.33</td>
<td>1.2</td>
<td>.622</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of information about hunting in Oregon</td>
<td>1.64</td>
<td>0.8</td>
<td>.580</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conflict with other uses/users</td>
<td>1.78</td>
<td>0.9</td>
<td>.537</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SITE &amp; MANAGEMENT INDEX</strong></td>
<td>2.11</td>
<td>0.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time, Distance, and Money</td>
<td>Lack of time</td>
<td>2.35</td>
<td>1.2</td>
<td>.705</td>
<td>.664</td>
<td>7.8%</td>
</tr>
<tr>
<td></td>
<td>Can't afford hunting expenses</td>
<td>1.94</td>
<td>0.9</td>
<td>.677</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sites are far away from home</td>
<td>2.12</td>
<td>1.1</td>
<td>.638</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No opportunity to do what you want to perform in Oregon</td>
<td>1.75</td>
<td>0.8</td>
<td>.533</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of transportation</td>
<td>1.35</td>
<td>0.6</td>
<td>.533</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TIME, DISTANCE, &amp; MONEY INDEX</strong></td>
<td>1.90</td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Items excluded after initial steps of factor analysis</td>
<td>Like to do other things for recreation</td>
<td>2.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Don't like to do things in outdoor</td>
<td>1.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sites are closed when want hunt</td>
<td>2.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feeling of unwelcome by ranger/staff</td>
<td>1.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Racial conflicts among users</td>
<td>1.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54.7%</td>
<td></td>
</tr>
</tbody>
</table>

Note: The score of 1 indicates never felt that constraint, and 5 indicates always felt that constraint.
Correlations Between TPB Components and Constraints

Pearson’s correlation analysis indicated significant positive associations among the TPB variables (Table 4). Intention was strongly correlated to PBC \( (r = .618) \) and moderately correlated to attitude and subjective norms \( (r = .362 \text{ and } .424, \text{ respectively}) \). On the other hand, significant negative correlations were revealed between intention and the four constraint dimensions. Intention showed strong negative correlation with skill and confidence dimensions of constraints \( (r = -.457) \); and moderate correlation with time, distance, and money constraint dimension \( (r = -.372) \) and site and management constraint dimension \( (r = -.314) \); and low correlation with partner and health constraint dimension \( (r = -.153) \). The PBC exhibited significant moderate negative correlations with site and management \( (r = -.434) \); skill and confidence \( (r = -.463) \); and time, distance, and cost dimension \( (r = -.445) \) of constraints and weak but significant correlation with partner and health constraint dimension \( (r = -.199) \). Attitude and subjective norms, however, showed weak but significant negative correlations with each constraint dimension \( (r < -.300) \), except for the partner and health dimension, which showed insignificant correlation with subjective norms. Finally, weak to strong positive correlations were revealed among the constraint components.

### Table 4

**Correlations Among TPB Predictors and Four Constraint Dimensions**

<table>
<thead>
<tr>
<th>TPB predictors and constraints</th>
<th>Sub. norms</th>
<th>PBC</th>
<th>Site &amp; mgmt</th>
<th>Health &amp; partner</th>
<th>Skill &amp; confidence</th>
<th>Time, dist., &amp; money</th>
<th>Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>.442**</td>
<td>.343**</td>
<td>-.238**</td>
<td>-.226**</td>
<td>-.280**</td>
<td>-.253**</td>
<td>.362**</td>
</tr>
<tr>
<td>Subjective norms</td>
<td>.454**</td>
<td>-.206**</td>
<td>-.083</td>
<td>-.330**</td>
<td>-.257**</td>
<td>.424**</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>-.434**</td>
<td>-.199**</td>
<td>-.463**</td>
<td>-.445**</td>
<td>-.618**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site &amp; mgmt.</td>
<td>.227**</td>
<td>.431**</td>
<td>.487**</td>
<td>-.314**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner &amp; health</td>
<td>.244**</td>
<td>.272**</td>
<td>-.153**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill &amp; confidence</td>
<td>.479**</td>
<td>-.457**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time, distance, &amp; money</td>
<td></td>
<td>-.372**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).
Mediation Effects

The correlation analysis (Table 4) revealed that intentions were significantly associated with all constraint dimensions, supporting the first mediation criterion of Baron and Kenny (1986). The second criterion was also fulfilled, as all mediators (i.e., attitudes, subjective norms, and PBC) showed significant correlations with all four constraint dimensions (Table 4). The exception was subjective norms, which showed an insignificant correlation with partner and health dimensions. Following this, the mediation effect analysis of the subjective norms on partner and health dimension and intention relationship was excluded from further analysis. To test the third and fourth criteria, a series of regression analyses were performed separately for each of the three mediators (attitude, subjective norms, and PBC).

Mediation effects of attitudes. The results shown in the upper half of Table 5 indicate that attitudes satisfied the third criterion as well, as they contributed significantly to the prediction of intention when they were entered alongside the site and management ($b = 0.304$); partner and health ($b = 0.344$); skill and confidence ($b = 0.253$); and time, distance, and money ($b = 0.286$) in separate analyses. The lower half of Table 5 shows that all of the four constraint dimensions explained a unique variance on intention before including the attitudes in the model. The effects of all constraint dimensions, however, decreased after controlling for attitudes. Nonetheless, all effects were significant with the exception of the partner and health dimension, which failed to make a significant contribution after controlling for attitudes. These results indicated that attitudes mediated the influence of different constraints dimensions differently. Specifically, the effects of the partner and health dimension were fully mediated by attitudes, while the effects of the site and management; skill and confidence; and time, distance, and money were only partially mediated.

Mediation effects of subjective norms. Subjective norms satisfied the third criterion of mediation for the three constraint dimensions. Subjective norms contributed to the prediction of intention when entered alongside of site and management ($b = 0.375$); skill and confidence ($b = 0.307$); and time, distance, and money ($b = 0.652$) in separate analyses (Table 6). Regarding the fourth criterion, the three constraint dimensions explained a unique variance on intention before including the subjective norms in the model in separate regressions. The effects of each constraint dimension decreased after controlling for the subjective norms; however, the effects were significant, indicating failure of meeting the fourth criterion of the mediation. This implies that subjective norms partially mediated the effects of the site and management; skill and confidence; time, distance, and money constraint dimensions on deer hunting intention, leaving out partner and health.

Mediation effects of PBC. The PBC satisfied the third criterion, as it contributed significantly to predicting intention when it was entered alongside of site and management ($b = 0.594$); partner and health ($b = 0.612$); skill and confidence ($b = 0.518$); and time, distance, and money ($b = 0.565$) in separate analyses (Table 7). For the fourth criterion, the results indicated that the four constraint dimensions explained a unique variance on intention before including the PBC in the model. The effects of the partner and health and site and management were nullified after controlling for the PBC. These findings implied that PBC fully mediated the effects of site and management and partner and health dimensions on hunting intention while partially mediating the effects of skill and confidence and distance and money constraint dimensions.
The objective of the present study was to test the degree to which the elements of TPB act as mediators of the relationship between different constraint dimensions and deer hunting intention. Godbey et al. (2010) pointed out that the dimensionality of constraints is far more complex than it appears and questioned whether the three dimensions of constraints can be viewed as distinct categories, as suggested by Crawford and Godbey (1987). Accordingly, our first effort was to determine the constraint dimensions of hunting for further hypothesis testing. Our study revealed four constraint dimensions (skill and confidence; health and partner; site and management; and time, distance, and money). Similar constraint dimensions were reported by Alexandris et al. (2007) in their activity exercise study. Their intrapersonal constraints model included a psychological domain similar to the skill and confidence dimension of this study, while the interpersonal constraint dimension included lack of a partner, which is similar to partner and health in this study. Finally, the structural constraints were represented by two dimensions: the accessibility/financial dimension (similar to time, distance, and money in this study) and physical facilities (similar to site and management in this study).

### Table 5

Assessment of Third and Fourth Criteria of Mediation Effect of Attitudes on Constraints–Intentions Relationship

| Criteria 3: Effect of attitude (mediator) on intentions in presence of constraint dimensions |
|---|---|---|---|
| Dependent | Independent | $\hat{R}^2$ | Effect of attitude $(b)$ | $t$ | $P$ |
| Intentions | Attitudes + site & management | .181** | .304** | 6.175 | .000 |
| | Attitudes + partner & health | .131** | .344** | 6.812 | .000 |
| | Attitudes + skill & confidence | .264** | .253** | 5.363 | .000 |
| | Attitudes + time, distance, & money | .211** | .286** | 5.888 | .000 |

| Criterion 4: Effect of constraint dimensions on intentions after controlling for mediators (attitude) |
|---|---|---|---|---|---|
| Constraints dimension | Before including attitude | After controlling for attitude |
| | $B$ | $t$ | $P$ | $b$ | $t$ | $P$ |
| Intentions | Effect of site & mgmt. | -.314** | -6.248 | 0.000 | -.242** | -4.908 | .000 |
| | Effect of partner & health | -.153** | -2.933 | 0.004 | -.076 | -1.497 | .135 |
| | Effect of skill & confidence | -.457** | -9.701 | 0.000 | -.386** | -8.164 | .000 |
| | Effect of time, dist., & money | -.372** | -7.757 | 0.000 | -.300** | -6.181 | .000 |

Note: *Significant at .05. **Significant at .01
The presence of more than two dimensions of constraints of structural nature also verified the existence of subdimensions within structural constraints, as reported by Jackson (1993). Crawford and Jackson (2005) suggested that time- and cost-related constraints rank among the most frequent and powerful constraints on leisure activities, while the site and facility dimension was not emphasized as much. In this context, it could be considered an important finding that site and facility constitutes a separate component of structural constraints, in addition to time and costs. The site and facility dimension of constraints was also reported by Alexandris et al. (2007) and was separate from time and costs.

Table 6
Assessment of Third and Fourth Criteria of Mediation Effect of Subjective Norms on Constraints–Intentions Relationships

<table>
<thead>
<tr>
<th>Criteria 3: Effect of mediator (subjective norms) on intentions in presence of constraint dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Intentions</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Criterion 4: Effect of constraint dimensions on intentions after controlling for mediators (subjective norms)

<table>
<thead>
<tr>
<th>Constraints dimension</th>
<th>Before including sub-norms</th>
<th>After controlling for sub-norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of site &amp; mgmt.</td>
<td>(-.314**)</td>
<td>(-.237**)</td>
</tr>
<tr>
<td>Effect of partner &amp; health</td>
<td>Not included: Second criteria not satisfied</td>
<td></td>
</tr>
<tr>
<td>Effect of skill &amp; confidence</td>
<td>(-.457**)</td>
<td>(-.307**)</td>
</tr>
<tr>
<td>Effect of time, dist., &amp; money</td>
<td>(-.372**)</td>
<td>(-.282**)</td>
</tr>
</tbody>
</table>

Note: *Significant at .05. **Significant at .01
Table 7
Assessment of Third and Fourth Criteria of Mediation Effect of PBC on Constraints–Intentions Relationships

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Independent</th>
<th>$adjR^2$</th>
<th>Effect of PBC (b)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBC + site &amp; management</td>
<td>.381**</td>
<td>.594**</td>
<td>12.874</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>PBC + partner &amp; health</td>
<td>.380**</td>
<td>.612**</td>
<td>14.411</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>PBC + skill &amp; confidence</td>
<td>.416**</td>
<td>.518**</td>
<td>11.370</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>PBC + time, distance, &amp; money</td>
<td>.391**</td>
<td>.565**</td>
<td>12.252</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Criterion 4: Effect of constraint dimensions on intentions after controlling for mediators (PBC)

<table>
<thead>
<tr>
<th>Constraints dimension</th>
<th>Before controlling for sub-norms</th>
<th>After controlling for sub-norms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$t$</td>
</tr>
<tr>
<td>Effect of site &amp; mgmt.</td>
<td>−.314**</td>
<td>−6.248</td>
</tr>
<tr>
<td>Effect of partner &amp; health</td>
<td>−.153**</td>
<td>−2.933</td>
</tr>
<tr>
<td>Effect of skill &amp; confidence</td>
<td>−.457**</td>
<td>−9.701</td>
</tr>
<tr>
<td>Effect of time, dist., &amp; money</td>
<td>−.372**</td>
<td>−7.7576</td>
</tr>
</tbody>
</table>

Note: *Significant at significant at .05. **Significant at .01

One unique contribution of this research might be that the partner and health dimension of constraints represented an interaction between intrapersonal and interpersonal constraints. Generally, items such as “your health condition” would be regarded as intrapersonal, and items such as “partner’s health condition” and “no one to go with” would be regarded as interpersonal constraints. We found three items represented one dimension (partner and health). This could be explained on the basis of aging effects. Previous studies have shown that older people may face aging and health constraints more frequently and may face a difficulty in finding partners with which to participate in their desired activity (Burns & Graefe, 2007; Jackson, 1993; Lee, Scott, & Floyd, 2001). This finding further explains how intrapersonal constraints can influence interpersonal constraints and strengthens the view of possible interactions among intrapersonal, interpersonal, and structural constraints (Gilbert & Hudson, 2000; Scott & Munson, 1994). Furthermore, Godbey et al. (2010) suggested that for better understanding of the phenomenon, it is not sufficient to look into the constraints only; the underlying cause of the constraints must be looked into as well. In this case, it seems age may be more of a cause of the interpersonal constraints than of the constraint in itself.

The mediating effect analysis revealed some clear patterns. All of the TPB elements (attitudes, subjective norms, and PBC) mediated the effects of the four constraints dimensions on deer hunting intention, thus indirectly on deer hunting participation, in different ways. Some relationships were mediated partially, and some were mediated fully, while some did not mediate at all. We found that subjective norms did not mediate the
relationship of the partner and health dimension with deer hunting intention. These patterns suggest that constraints influence deer hunting intention both directly and indirectly through attitudes, subjective norms, and PBC. This also provides limited support of the claims made by Ajzen (1988) that the effects of variables not included in the TPB are mediated by the elements of the TPB.

Our results showed that attitudes fully mediated the influence of the partner and health constraint dimension (interpersonal constraints) on deer hunting intention but partially mediated the impacts on the other three constraint dimensions. These dimensions are the skill and confidence dimension (intrapersonal); site and management dimension (structural); and the time, distance, and money dimension (structural). This implies that the interpersonal constraints affected intention only indirectly through attitudes, while intrapersonal and structural constraints affected deer hunting intention both directly and indirectly through attitudes.

The negative relationships of attitudes with all constraints dimensions suggested that people who perceived the highest level of constraints of different types hold less positive attitudes toward deer hunting. Alternatively, higher positive attitudes might be helpful in negotiating the effects of constraint dimensions on deer hunting intentions, thus to hunting participation. This result contradicts the findings of Alexandris et al. (2007), who concluded that attitudes fully mediated the influence of structural constraints (i.e., accessibility and facilities dimensions) and that interpersonal constraints (partner dimension) mediated the relationship only partially. These differences in the research findings may be a result of the differences in activity type. Alexandris et al. (2007) mentioned that health programs were more of a volitional type and that the services were much more organized for the participants. Conversely, hunting is less volitional and is an activity that demands more effort, time, resources, and skills. This finding provides additional evidence for the argument that individual psychological forces, such as attitudes, are less important if the activity desired is not under total volitional control, as suggested by Ajzen and Madden (1986).

In terms of the mediating effects of subjective norms, some clear patterns were revealed. Subjective norms partially mediated the effects of the structural constraints (site and management as well as time, distance, and money dimensions) and intrapersonal constraints (skill and confidence dimension) on deer hunting intention. As noted previously, subjective norms failed to mediate the effects of partner and health dimension (interpersonal constraints), perhaps because of the role of age-related constraints leading to lack of partner. These findings imply that, other than the partner and health dimensions, the structural and intrapersonal constraints affected deer hunting intention directly and also indirectly through the subjective norms. Alexandris et al. (2007) did not find any role of subjective norms in this regard. This finding supports the notion that participation in health and exercise is more of an internal psychological need than a social need, hence less influenced by external forces such as social and structural constraints, especially when the activity is easily available and under volitional control.

PBC was revealed as the strongest mediator, fully mediating the effects of the partner and health dimension (interpersonal constraints) and site and management dimension (one category of structural constraint). PBC also partially mediated the effects of the skill and confidence dimension (intrapersonal constraints) and the time, distance, and money dimension. These results support previous studies suggesting perceived behavioral control is the most powerful predictor of intention and behavior within the TPB (Armitage & Conner, 1999, 2001; Conner & Armitage, 1998). This finding implies practitioners could potentially target PBC and try to enhance the confidence (PBC) of hunters so they can overcome the effects of constraints on intentions.

The relatively weaker mediating roles of attitude and subjective norms and stronger roles of PBC provide evidence to support the proposition of Ajzen and Madden (1986) and Kimiecik (1992). These findings suggested the strength of internal (psychological) and external constraints (interpersonal and structural) are determined by PBC. This means, in
the context of deer hunting, that PBC could play a more important role in mitigating the effects of constraints on intentions than on attitude and subjective norms. This finding also suggests that deer hunting is not under total volitional control, which may explain why PBC has been more effective in reducing the relationship of constraints on intentions. In essence, volitional control is decreased as adequate resources (e.g., time, money, skills, and cooperation of other people) and perceived opportunities are decreased. If resources are made available and hunters’ skills and confidence are developed, the role of attitude and subjective norms may then become more important.

Management Implications

The results of this study are relevant and may be useful to resource managers and other practitioners in many ways. State game management budgets are often heavily funded by hunting license fees and state grants derived from federal excise taxes on shooting and hunting arms and ammunition. As the number of hunting licenses drop and hunters cease purchasing hunting gear, it can be surmised these sources of revenue will be reduced (Duda, Jones, & Criscione, 2010; U.S. Fish and Wildlife Service [USFWS], 2006). It may also result in a decline in the hunting industry and negatively impact industry jobs. Furthermore, hunters help to manage healthy populations of game by keeping populations in check and reducing other deer-management problems (e.g., Lyme disease control, roadside accidents, crop damage), which are a vested interest of many state agencies.

Using the study site to illustrate an example of this issue, the number of hunting licenses sold in Oregon has decreased by nearly one third (29%) between 1980 and 2008. During the same time, the population of Oregon has increased from 2.6 million to 3.8 million. Accordingly, this disparity between population growth and hunting has effectively halved the hunting participation rate (from 15% of the population to 7%) during this time frame. This situation begs for urgent action by resource managers, including developing public–private partnerships that can be used to create awareness within the hunting community and supporting industry. Opportunities must be created, or in other words, capacity needs to be created that will create opportunities to hunt and cause an increase in hunting participation.

Resource managers may also want to focus on creating opportunities for others and on recruiting efforts causing non-hunters to begin hunting. Target groups may be the families of current hunters—particularly the children, grandchildren, and spouses of hunters—as the tradition of hunting is often passed down from generation to generation. Previous research has shown that parents and family are the most important agents of introduction to hunting (Responsive Management, 2008), and family involvement also has a strong positive association with length of time involved with hunting (Enck, Decker, & Brown, 2000). Hunting promotional programs could potentially focus on the benefits of quality family time spent in nature. In the long term, policy makers may want to focus recruiting efforts on young hunters, women, and minorities, as the proportion of hunters in these social groups is very low. Recent surveys have shown that, although only 20% of U.S. hunters are female, there has been a sharp increase in hunting participation by women in recent years (USFWS, 2006). Because women make up about half of the total U.S. population, this may be an opportunity for state resource managers. This is particularly promising given the increasing cultural changes and greater societal acceptance of women hunters. Similar efforts should also be focused on recruiting minorities, in particular the U.S. Hispanic population, the most rapidly growing racial/ethnic minority group.

This study suggests hunters faced many constraints (site, management, partner, health, time, distance, and money). If these constraints are not mitigated, future recruitment may also be negatively affected. In addition, we suggest the elements of TPB (attitude, subjective norms, and PBC) reduced the negative effect of constraints on hunting intentions, which is itself a reliable predictor of motivational behavior. This finding conveys very important meaning for the practitioners.

The finding that our survey population consists of relatively older, highly experienced hunters suggests that skill and confidence constraints may be of little importance to
resource managers and already well established. However, responsible entities should ensure the constraints identified in this study are addressed in developing new recruitment efforts. The development of skills training programs may increase hunter confidence and possible fears related to crime and safety.

Resource managers could possibly address many issues within the site and management constraint by implementing traditional social carrying capacity solutions. These management actions may include managing game populations and extending hunting opportunities. This could be done through increasing public–private partnerships that may allow for access to private hunting areas.

A recent report (Responsive Management, 2008) suggests many interested youths could not participate because of age restrictions. Exposing these interested youths to hunting education programs may result in a sustained level of interest that may be otherwise lost over time. Likewise, lottery systems also have the potential to restrict people from hunting. Policy makers may want to review existing policies related to these concerns in the hope that additional new hunters could be attracted. Another consideration may be to simplify hunting rules and better communicate management priorities and hunting-related rules and regulations, as these seemed to be the most important items within the site and management constraint.

There’s not much managers can do to reduce the time, distance, and money constraints; however, the distance component (i.e., hunting sites are far away) of this constraint dimension might be addressed by resource planners. Studies have shown that two thirds of hunters traveled more than 60 miles for hunting, and 42% travel more than 120 miles (Montgomery, 2010). In such situations, managers could identify new hunting sites in different areas. If needed, a private landowner could be taken into confidence for this purpose, once again highlighting the need for greater public–private partnerships.

The stronger role of PBC in mediating different dimensions of constraints implies that practitioners should target perceived behavior control to reduce hunting constraint effects on people’s intentions to participate in deer hunting. Alexandris et al. (2007) suggested consultation, education, psychological support, design, and delivery of appropriate programs are among the strategies that should be applied, all of which could enhance the influence of the PBC in minimizing the negative impacts of constraints on intentions. Gigliotti (2004) described that consumptive hunters’ sole focus is on successful harvesting. According to Gigliotti, if resource managers have an intimate knowledge of the hunter group, they can plan to satisfy their needs and quality of experience. The actions required for achieving such a goal will be similar to the one already discussed in preceding sentences in the context of constraint management.

**Future Research**

The successful mediation effect of the TPB elements in influencing the constraints–intentions relationship might be an encouraging source of inspiration for researchers desiring to extend the theory of planned behavior by adding constraint dimensions to the TPB. Such an effort may be helpful for better understanding the intention and behaviors for different recreation activities including hunting.

From the constraints research point of view, until now only the negotiation role of motivations has been examined for mitigating the effects of constraints (Hubbard & Mannell, 2001) on leisure participation. The findings of this research indicate that higher positive attitudes, higher positive subjective norms, and higher PBC help to mediate the effects of constraint dimensions on deer hunting intentions. This is similar to the preferences of constraints theory, as both are the immediate predictor of participation. Some scholars (Mannell & Kleiber, 1997; Vallerrand & Losier, 1999; Wigfield & Eccles, 2000) have suggested that social and psychological mediators, including attitudes, values, and beliefs, serve as a force for intrinsic and extrinsic motivations whose influence on constraint negotiation has already been established. Therefore, these findings suggest to researchers that the psychological predictors of the TPB (attitudes, subjective norms, and PBC) may be useful variables to focus on as constraint negotiators in future studies and to expand our knowledge regarding why people participate in leisure and recreation activities despite the presence of constraints.
Overall, the intent of this paper was to examine the mediating role of the TPB elements in determining the relationship between constraint dimensions and a very specific group of recreationists: deer hunters in Oregon. Future research on other specific groups (e.g., archery hunters, fly-fishing anglers) would be welcomed as a way to continue to test the research questions outlined in this study. It would, for example, be extremely valuable to see the results of testing these research questions on different specialized user groups in one geographic region or within selected sociodemographic categories. This would enhance the ability of academics to replicate the relationships between variables tested in this study, tracking back to the original theory of planned behavior, and then provide the results to any number of field-based resource managers.

Finally, the partner and health constraint showed the least effect on intentions, while the TPB antecedents did not mediate the effects of subjective norms. Thus health constraints and subjective norms may be considered a low priority for resources managers and may be considered to be a topic largely beyond their control. Further research should focus on the role hunting plays in enabling people to get out into the woods, or afield, as the term is stated in hunting circles.

References


EXECUTIVE SUMMARY: Federal agencies operating along the border in southern Florida include the United States Coast Guard (USCG), United States Customs and Border Protection (CBP), Immigration Customs Enforcement (ICE), and the National Park Service (NPS). Each agency has its own mission concerning immigration, and problems have emerged regarding responsibilities and procedures for response to Cuban immigrant landings. The NPS Southeast Regional Director wanted to understand how Cuban immigrant landings are impacting law enforcement units in south Florida’s national parks. Personal communications with NPS managers and law enforcement officers indicated that Cuban immigrant landings affect at least three components of national park management: 1) workforce, 2) park operations, and 3) interagency coordination. To understand more about response to Cuban immigrant landings, the following research questions were proposed: How do federal agencies work together in response to Cuban immigrant landings within national parks? What knowledge and expectations do responding personnel have regarding tactics for response? What tactics should be emphasized during future response? Investigations like this have been conducted along the southwestern border with public land management agencies such as the NPS and border protection agencies such as CBP, but this was the first comprehensive investigation of federal agencies along the southeastern border and their response to Cuban immigration. Currently, very few coordinated policies or formal written procedures exist for the NPS to follow in coordinating with other federal agencies in response to immigrant landings (personal communication 1/12/11, NPS manager). Therefore, the purpose of this study was to reveal perspectives among federal agents, managers and law enforcement officers in terms of knowledge and expectations about tactics for response to Cuban immigrant landings within national parks in southern Florida. The concept of shared mental models (SMM) provided a framework for the research, and data were collected through the Q method, including semi-structured interviews. Results of the semi-structured interviews revealed three key areas in which federal agencies work together on the southeastern border:
communication, workforce, and budgets. Results of the subsequent steps in Q method revealed three factors, or perspectives, on response to landings: 1) Assess, React, and Transport; 2) Protect; and 3) Plan, as well as the tactics federal agents, managers and law enforcement officers would emphasize during future response. Future research is needed to assess perspectives among personnel in other parks in the region like Virgin Islands National Park, and to understand the impacts of immigrant landings to visitors and resources.

KEYWORDS: Immigrant landings, national parks, Cuban immigration, Q method, interagency coordination

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ACKNOWLEDGMENTS: Support for this study was provided by the NPS Southeastern Regional Director, as well as the Center for Socioeconomic Research & Education and the Gulf Coast Cooperative Ecosystem Studies Unit at Texas A&M University.

A rise in criminal activities has presented new management challenges for border protection and land management agencies situated along the United States borders. Those tasked with enforcing the law within national park boundaries have adapted to changing levels and types of crime, from illegal poaching in the late 1800s, vandalism, break-ins and other crime associated with parks near urban settings (Wynveen, Bixler, & Hammitt, 2007), to increasing numbers of marijuana plantations in the 1980s to the present day (Kirkwood, 2005; Milestone et al., 2011). National Park Service (NPS) law enforcement officers working in parks located on international borders encounter different types of border activity that can include drug smuggling, human smuggling, and human trafficking (Decker & Chapman, 2008; Spener, 2009; Zhang, 2007).

In order to understand changing activities in public lands and their impact, scholars have identified characteristics of U.S. Forest Service (USFS) law enforcement found to be helpful in coping with urban crime in national forests. These characteristics include force of officers’ personalities, availability of resources (i.e., money and people), persistent planning, collaboration, within and between, the USFS and other agencies and consistent communication regarding regulation changes (Chavez, Tynon, & Knap, 2004). Still, little is known about the capacity for NPS law enforcement officers to respond to border activity in urban and rural settings, with or without assistance from federal border protection agencies like U.S. Customs and Border Patrol (CBP) or the U.S. Coast Guard (USCG).

The Government Accountability Office (GAO) has called for improved interagency coordination on federal lands, citing increasing illegal border activity in remote, federal lands due to increased CBP security in populated areas and in urban border-crossings (GAO, 2004). CBP is responsible for protecting U.S. borders, but federal jurisdictions overlap where the Bureau of Indian Affairs, the Bureau of Land Management, the Fish and Wildlife Service, the USFS and the NPS manage significant portions of land along the U.S. borders (GAO, 2004). Despite their proximity to the border, land management agencies’ missions do not technically align with border security.

Public lands law enforcement officers are tasked with protecting visitors and natural resources from depreciative behavior that occurs within their agency’s jurisdiction. However, numerous activities such as arson, criminal damage, domestic violence, dumping of trash, marijuana cultivation and satanic cult activity have reportedly led some officers to feel more like city law enforcement than natural resources law enforcement (Chavez &
Tynon, 2000). On January 1, 2012, Park Ranger Margaret Anderson was shot and killed while using her vehicle as a roadblock to prevent a suspect from entering Mount Rainier National Park, Washington. Including Ranger Anderson’s murder at the turn of the new year, ten percent of all NPS law enforcement officer deaths have occurred during 2011, with nearly half occurring since 1990 (Cosgriff, 2012). In terms of border security, the safety of visitors and law enforcement officers has come into question following the death of Park Ranger Kris Eggle. Ranger Eggle was killed by drug cartel gunfire on August 9, 2002 while assisting CBP agents in pursuit in Organ Pipe Cactus National Monument, Arizona (NPS, 2003).

Though fatal incidents are rare, officials have recognized the need to improve communication among land management and border protection agencies in order to improve law enforcement officer safety and support. The GAO noted that some field-level coordination was occurring as CBP and NPS began to share threat assessments, but minimal national-level coordination strategies existed between CBP and federal land management agencies along the Mexican and Canadian borders as of 2004 (GAO, 2004). As a result, the GAO recommended “the Secretaries of Homeland Security, the Interior and Agriculture coordinate strategic and funding plans regarding federal borderlands…to ensure that federal law enforcement resources are being effectively focused on the areas of greatest need along the Mexican and Canadian borders” (GAO, 2004). In 2006, a Memorandum of Understanding (MOU) was established between CBP and land management agencies to provide consistent goals, principles and guidance for coordination, and another MOU was established in 2008 to provide better radio communications between CBP agents and land management agency law enforcement officers (DHS, 2011).

In 2011, an overview of border security initiatives on public lands was presented to the U.S. House Committee on Natural Resources, Subcommittee on National Parks, Forests, and Public Lands, and the U.S. House Committee on Oversight and Government Reform, Subcommittee on National Security, Homeland Defense and Foreign Operations (DHS, 2011). Initiatives such as the intelligence sharing and co-patrols were highlighted, but after seven years of MOUs and collaborative border security initiatives between DHS, DOI and USDA, there is no mention of marine borders, particularly the southeastern border of the U.S. This border region includes the Gulf of Mexico, Straits of Florida, Caribbean Sea and Atlantic Ocean. U.S. territories within the Caribbean include Puerto Rico and the Virgin Islands, and island nations in the area include Jamaica, Haiti, Dominican Republic, and Cuba.

Cuban Immigrant Landings

Cuban immigrant landings present a unique situation in southern Florida. In 1966, the Cuban Adjustment Act changed Cuban immigrant status from alien to that of refugee admitted for permanent residence. In 1994, President Bill Clinton’s administration met with the government of Cuba to discuss immigration policies and established the Cuba-United States Migration Accord. Through this agreement, the U.S. committed to process a minimum of 20,000 Cuban immigrants each year, Cuba pledged to discourage irregular and unsafe departures, the U.S. began returning Cubans interdicted at sea, and Cuba agreed to take no action against the returnees (Department of State [DOS] 2000, http://www.state.gov/www/regions/wha/cuba/fs_000828_migration_accord.html). A loophole was identified in the agreement that states that the U.S. agreed to return Cubans interdicted at sea. If Cubans make it to dry land, they may stay in the U.S. as communist refugees. This came to be known as the “wet foot, dry foot” policy. However, this policy applies to Cubans only; any Haitians, Dominicans, or other economic refugees fleeing poor financial situations are returned to their home country. Crossing the sea with the intent to live and work in the U.S. without going through the proper processes is an illegal act of immigration for all foreign nationals, but once Cubans touch dry land they become legal immigrants. Agencies in southern Florida are faced with two immigration scenarios: Cubans who want to be found upon arrival to the U.S. and have their status adjusted to eligibility for
permanent residence, and all other Caribbean immigrants who maintain “illegal” status and do not want to be found upon entry into the U.S.

The policy shift within the Cuban Adjustment Act per the 1994 Cuba-U.S. Migration Accord led to a decline in Cuban immigration until it became apparent that smugglers’ speedboats could cross the Straits of Florida faster than vessels previously utilized by immigrants. As the Coast Guard and other law enforcement units responded to immigration in metropolitan areas like Miami, smugglers began to search for isolated beaches and waterways where they could clandestinely drop migrants off. Smugglers also became more aggressive in their tactics, charging as much as $10,000 USD per migrant per crossing and forcing migrants to swim for U.S. shores in order to avoid arrest. According to Kyle and Scarcelli (2009), “the tightening of the Cuban Adjustment Act forced the evolution of the social organization of Cuban migration, initiating a trend away from traditional self-smuggling strategies toward more expensive, sophisticated professional smuggling syndicates” (p. 304).

Everglades National Park (EVER), located on the southern tip of Florida, and Dry Tortugas National Park (DRTO), a cluster of islands 70 miles west of Key West, Florida (see Figure 1), are often landing sites for Cuban immigrants due to their close proximity to Cuba. Both parks are also used as landing sites because of their isolation and distance from major ports and cities that house CBP, USCG, and Immigration and Customs Enforcement (ICE). The parks are also popular among recreational visitors with 934,351 visiting EVER and 75,171 visiting DRTO in 2011 (National Park Service [NPS] 2011, http://nature.nps.gov/stats/park.cfm).

![Map of the Straits of Florida, Cuba, and the National Parks in Southern Florida](image-url)
Cuban immigrants often land on isolated beaches within national park boundaries. A landing is defined as the instance when a group of Cuban immigrants arrives on U.S. soil in one event, regardless of the number of immigrants comprising the landing. According to NPS records, the total number of immigrants landing within park boundaries fluctuates from year to year (Figure 2). For example, DRTO personnel reported 37 landings comprising 855 immigrants in 2007, six landings comprising 108 immigrants in 2008 and four landings comprising 71 immigrants in 2009. The decrease in number of landings and total number of immigrants from 2007 to 2009 does not undermine the significance of the issue, however, because landings are unpredictable, costly, and potentially dangerous for NPS personnel (personal communication 1/20/10, NPS manager). The immigrants have no means of transporting themselves to an immigration processing office, so incident response must take place. Various agencies’ law enforcement officers usually respond to immigrant landings, but when landings occur in areas where agency jurisdictions overlap, responsibilities for response begin to overlap. When Cubans land within national park boundaries, NPS law enforcement officers are the first responders to the incident. It is unclear if some or all of the tasks NPS personnel are called to do during a response fall within or outside the overall NPS mission – to protect natural resources for the enjoyment of future generations. This mission differs from the collective mission of USCG, CBP and ICE under the Department of Homeland Security (DHS) – to secure the country and its freedoms.

Emergency Response Management

According to Boin and Hart (2010), the terms “crisis,” “emergency” and “disaster” can be used interchangeably. To manage such events is to prepare for and respond to unscheduled, undesirable, urgent and threatening contingencies. Characteristics of crises, disasters and emergencies include inflictions of psychological and physical damage and stripping organizations of available resources (Boin & Hart, 2010), negative disruptions of the state of social and economic conditions (Kapucu, 2005), required coordination of actions among multiple organizations and integration of multiple agencies and jurisdictions into a functioning response system (Kapucu, 2009).

![Figure 2](image.png)

* No data available for EVER 2004-2005

**Figure 2.** Total number of immigrants that landed in EVER and DRTO, 2004-2009
Cuban immigrant landings do not always inflict severe psychological or physical damage to those in the vicinity of the incident or to those who respond to it, but they do deplete organizations of available resources and require urgent coordination of actions among multiple organizations. Cuban immigrant landings are unscheduled, yet they are urgent events due to their unpredictability and occurrence in rural areas far from shelter or medical assistance. In response to these emergencies, a coordination of actions generates incident organizations and response systems (Smith & Dowell, 2000). Emergencies are not static events; however, they are constantly evolving, so response systems should be able to evolve and adapt (Kapucu, 2009). Generally, problems with interagency coordination occur when the structure of a response system is not compatible with the techniques of responding individuals or team decision-making (Smith & Dowell, 2000): “the problem of inter-agency coordination lies in the interaction between the structure of the emerging disaster management system and the techniques of individual and team decision-making” (p. 1154). This highlights the problem for NPS law enforcement: the response system that emerges as a result of immigrant landings will not work effectively if responding individuals and teams do not share priorities or even a general idea of how the response should be conducted. This problem is exacerbated when the response system involves multiple federal agencies sharing jurisdiction of the southeastern border of the United States.

Federal Interagency Coordination

In 2004, the GAO noted that land management agencies and agencies under DHS were not coordinating effectively where their missions and areas of responsibility overlap. In her study on public lands and border enforcement at the U.S.-Mexico border, Piekielek (2009) cited differing missions, agency culture and views of shared space as reasons for conflict. NPS managers seeking assistance from DHS in response to border crossings and immigrant landings reported a fear of losing their autonomy (Piekielek, 2009). Norton (2009) suggested that “contestation among organizations often involves a significant amount of time … and a temporally oriented view of organizational structures is necessary if we are to understand multistakeholder interaction in the development and implementation of policy initiatives” (p. 543). The implication is that some of the organizational politics and agency culture have become ingrained over time, and possibly present a barrier to coordination.

Conceptual Framework

The concept of shared mental models (SMMs) guided the structure for investigating immigrant landings. The theory of SMMs, as refined by Cannon-Bowers, Salas, and Converse (1993), suggests that team members hold compatible mental models that lead to common expectations for the task and team, which improves team performance. Scholars contend that team performance and effectiveness will improve when team members share adequate understanding of the task, team, equipment and situation (Cannon-Bowers et al., 1993; Mohammed & Dumville, 2001; Rouse, Cannon-Bowers, & Salas, 1992).

Mental models are defined as “mechanisms whereby humans are able to generate descriptions of system purpose and form, explanations of system functioning and observed system states, and predictions (or expectations) of future system states” (Rouse et al., 1992, p. 1300). Shared mental models are differentiated as:

knowledge structures held by members of a team that enable them to form accurate explanations and expectations for the task, and, in turn, to coordinate their actions and adapt their behavior to demands of the task and other team members (Cannon-Bowers et al., 1993, p. 228).

The term “shared” has different meanings in the context of mental models, including knowledge or expectations that are identical, distributed or overlapping among team members (Klimoski & Mohammed, 1994). Following the SMM construct as interpreted by Cannon-Bowers et al. (1993), knowledge and expectations must be shared, but mental
models need not be identical in order for teams to perform effectively. In other words, the contents of mental models must be shared among team members, but the structure or organization of the contents need not be the same for each team member. This issue is significant because “the most important function of SMMs is that they lead to common expectations of the task and team” (p. 235). Given their different missions, NPS, CBP, USCG and other agency personnel hold different knowledge and expectations of the task, team, equipment and situation in southern Florida. Holding non-identical mental models—the organization of knowledge and expectations—is acceptable, but interagency coordination in response to Cuban immigrant landings is difficult when agency personnel do not share knowledge or expectations about the response or understand who is responsible for what task.

The contents of mental models in the context of team performance should include knowledge that describes when and how team members should interact in order to accomplish a task, as well as models that create expectations about how events might unfold and how the team should respond (Cannon-Bowers et al., 1993). For example, team members may share identical knowledge or expectations about when team members should interact, but they may also have distributed or non-overlapping knowledge or expectations about how the team should respond to an event. Past research has shown that types of knowledge within mental models are distinguishable as declarative knowledge, generally defined as facts and rules about a task, procedural knowledge, which includes steps and actions required to carry out a task, and strategic knowledge, which is defined by the application of knowledge to a task (Banks & Millward, 2007; Cooke, Salas, Cannon-Bowers, & Stout, 2000). Empirical evidence suggests there is a positive relationship between SMMs and team performance, though it is not clear if sharing a particular type of knowledge enhances performances more than another (Banks & Millward, 2007). This study utilizes the SMMs construct to conceptualize the various types of knowledge and expectations that are held by federal agents, managers and law enforcement officers as they respond to Cuban immigrant landings.

In response to a failure of past research to adequately address the term “team,” Salas, Dickinson, Converse, and Tannenbaum (1992) drew from multiple scholars’ input to shape a definition:

A team is a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership (p. 4).

Salas et al., (1992) also suggested that types of teams exist on a continuum from highly structured, interdependent teams to teams with minimal interaction between members. In the context of southern Florida, NPS law enforcement officers, CBP agents and USCG law enforcement units operate as separate teams following their agency’s goals and missions. Arguably, once an immigrant landing occurs, law enforcement officers from each agency form a temporary team with minimal interaction between members. Interagency coordination is temporary because the interactions are interdependent toward a common goal for one event of immigrant landings. For example, when an immigrant landing occurs within EVER, NPS personnel contact CBP and request Border Patrol agents and vehicles to transport immigrants out of the park. When a landing occurs within DRTO, NPS personnel contact USCG and request Coast Guard personnel and vessels to transport immigrants off the island. Though these communications take place, each landing is different, thus communications about each landing are different, and different personnel respond to landings depending on their availability (personal communication 1/12/11, NPS employee). Little is known about the knowledge or expectations different personnel from different agencies have regarding Cuban immigrant landings, or how they believe response to landings should take place in the future.
Utilizing SMMs as a conceptual framework, this study aimed to reveal perspectives about response to Cuban immigrant landings, and was guided by the following research questions:

RQ1: How do the federal agencies operating along the southeastern border in Florida work together during responses to Cuban immigrant landings within national parks?

RQ2: What knowledge and expectations do responding personnel have regarding tactics for response to Cuban immigrant landings within national parks?

RQ3: What tactics should be emphasized in future responses?

Method

The aim of this study was to reveal perspectives among federal agents, managers and law enforcement officers in terms of knowledge and expectations about tactics for response to Cuban immigrant landings within national parks in southern Florida. Using the SMMs framework, perspectives were comprised of knowledge and expectations regarding past and future tactics for response. The specific parks relevant to this study were Everglades (EVER) and Dry Tortugas (DRTO) National Parks.

Semi-structured interviews were conducted to understand how federal agencies work together during responses to Cuban immigrant landings and to identify knowledge and expectations among agency personnel about tactics for response. Semistructured interviews also serve as a first step in the Q method (Brown, 1980; McKeown & Thomas, 1988), which was employed to reveal perspectives among federal agents, law enforcement officers and managers about response to Cuban immigrant landings.

It has been argued that the shared mental model construct should allow for varying perspectives reflecting belief structures (Mohammed & Dumville, 2001). Q method allows the researcher to explore similar and alternate points of view and is useful for identifying social perspectives about a particular conflict. Q method has become more prevalent in research that has examined natural resources and complex issues in the environment. For example, Addams and Proops (2000) showed that Q methodology could assess stakeholder conflicts in environmental controversies. Webler, Tuler and Krueger (2001) used Q method to understand perspectives on public participation in an environmental decision-making process. Tuler and Webler (2009) examined stakeholder perspectives about marine oil spill response, and Essen (2010) used Q method to identify knowledge communities in a sage-grouse management conflict.

Q studies comprise four phases: 1) gather the concourse, 2) generate Q sample, 3) conduct Q sorts, and 4) conduct post-Q sort interviews (Figure 3).

Gather the Concourse

In a Q study, the concourse is the population; it is a collection of all the comments and discourses about the study topic. The first step in data collection was to search news articles from southern Florida for comments about response to Cuban immigrant landings. This search produced 25 articles. Comments about response to Cuban immigrant landings were pulled from the news articles and included in an initial pool of statements called “Q statements.” Next, 21 semistructured interviews were conducted with key informants using snowball sampling. Interview participants included NPS supervisors, NPS law enforcement officers, CBP supervisors, CBP agents, and USCG commanders. All data collection was conducted from November 2010-January 2011. The interview guide (Table 1) was structured around shared mental model contents that are effective for team performance: knowledge and expectations about the task and team, equipment and situation (Cannon-Bowers et al., 1993; Mohammed & Dumville, 2001; Rouse et al., 1992). Interview participants were asked to share their experiences of past Cuban immigrant landings, including equipment utilized, tasks carried out, interactions within and between teams and with team members to understand how they work with personnel from other federal agencies and to identify their knowledge and expectations about tactics for response. Statements gathered from the interview were added to the initial pool of Q statements.
Figure 3. Four Steps in the Q Method Data Collection Process

Step 1: Gather the Concourse
- Step 1.1: Comprehensive search through newspaper articles and white papers.
- Step 1.2: Conduct semi-structured interviews.
- Step 1.3: Gather all things being said about a topic into an initial pool of statements.

Step 2: Generate Q Sample (Statements)
- Step 2.1: Identify representative, summarizing statements from the initial pool of statements. Remove redundant and unclear statements.
- Step 2.2: Write Q-statements on individual note cards.
- Step 2.3: Write normal distribution markers on individual note cards.

Step 3: Conduct Q Sorts
- Step 3.1: Instruct participants to read each Q statement before beginning sort.
- Step 3.2: Give condition of instruction; participants begin sorting the Q statements.

Step 4: Conduct post-Q sort interviews
Once the concourse was gathered into the initial pool of Q statements, a Q sample was generated. This entailed selecting representative, summarizing statements from the concourse to present to participants during the Q sorts. Summarizing statements were placed in categories of shared mental model contents for effective team performance: task, team, equipment, and situation. While reading through the concourse of news articles and interview transcriptions, statements describing tasks to be accomplished during a response were listed under the “task” category. Statements describing NPS, CBP, and USCG personnel knowledge, skills, and opinions about response to Cuban immigrant landings were listed under the “team” category. All descriptions of equipment and any experiences with utilizing different technologies were listed under the “equipment” category. Any opinions and experiences describing relationships, communication and other interactions between agencies were listed under the “situation” category. The purpose of seeking statements from multiple sources was to ensure that as many perspectives as possible were represented in the Q sample. Statements were edited for clarity and any redundant statements were removed from the list. In sum, the final Q sample comprised 31 statements.

Table 1

Interview Guide

1. Name, agency, position
2. Immigration can mean many different things in southern Florida. Describe the types of immigration your agency encounters.
   a. Which types of immigration (or what kind of scenarios) do you respond to?
3. Where does your agency have jurisdiction? (provide maps) Describe the area where your agency has authority and the means to respond to incidents involving immigration.
4. What are your tasks during a response to immigration at sea? What are your tasks during a response to immigrant beach landings?
   a. How do you come to know these tasks?
   b. Do the tasks change depending on the nationality of the immigrants? If so, how?
   c. Do the tasks change if the immigration occurs in public water or on public lands (i.e. national parks)? If so, how?
5. Describe the procedures/policy you follow during responses to immigrant beach landings in national parks.
   a. What are constraints to response?
   b. What works well or “goes smoothly” during responses?
6. Describe any “team(s)” you work with during a response to immigrant beach landings in national parks.
7. Describe any equipment you use during a response to immigrant beach landings in national parks.
   a. What equipment works well? Could other equipment, if any, do a better job?
8. How do you come to understand the situation – or details – regarding immigrant beach landings in national parks?
   a. How do you communicate with personnel in your agency and personnel in other agencies during responses to immigrant beach landings?
   b. In what ways is your communication effective/ineffective?
   c. Does an evaluation of the process take place afterwards? Is there any follow-up communication within or between agency personnel afterward the landing?
9. Are there other issues or concerns regarding response to immigrant beach landings that we have not discussed? If so, how are they addressed and mitigated?
that represented the knowledge and expectations that NPS, CBP and USCG personnel have regarding tactics for response to Cuban immigrant landings.

**Conduct Q Sorts**

Each statement in the Q sample was written on an individual note card in preparation for the Q sorts, and each note card was numbered 1 through 31. As the assembled comments and observations about a topic, Q statements are the sample in a Q study, not the people who sort the statements (Tuler & Webler, 2009). For this reason, Q method is appropriate for studies involving a small number of key informants (Addams & Proops, 2000). The next step in the Q method is for those informants to perform Q sorts. According to Webler et al. (2009), the number of participants a researcher should select for Q sorting is a tradeoff between two rules:

> The upper end is determined by the rule that it is wise to have more observations than variables in a study where statistics will be used to analyze the results … thus, for every three Q statements, have one participant.… The lower end is set by the need to have enough Q sorts to adequately summarize the perspectives that make up the concourse … for each perspective, you want at least three people to load highly on it (p. 22).

In this study, the upper end of Q sort participants was determined by the 1:3 ratio and 31 statements, so the researcher aimed for 10 or more participants to perform Q sorts. Q sort studies usually produce two to five perspectives (Webler et al., 2009), so the lower end of Q sort participants was determined by the rule that by at least three people should load onto each factor, or perspective. The potential minimum two perspectives required at least six Q sort participants for this study. Therefore, the researcher aimed to have 6-10 agency personnel participate in the Q sort step.

Participants for the Q sort were selected through snowball sampling and based on their availability. Seven personnel who participated in the semi-structured interviews were available to conduct Q sorts during a second meeting: three from CBP and four from the NPS. None of the USCG personnel who participated in semi-structured interviews were available to participate in the Q sorts due to their travel schedules during the time Q sort meetings were arranged.

The researcher met each Q sort participant individually and presented the Q sample for sorting. The following condition of instruction was read to guide each participant through the subsequent steps:

> When you think about past Cuban immigrant landings, what are your expectations about procedural responses to future Cuban immigrant landings in national parks? Please sort the statements to indicate the tactics that you are least likely to emphasize to most likely to emphasize in a future response to Cuban immigrant landings in national parks.

This condition of instruction was written to reflect the study’s research questions and to allow each participant to describe his or her expectations about how responses should be carried out. Participants were asked to sort the statements under distribution markers -3, -2, -1, 0, 1, 2 and 3 printed on notecards and placed on a table in a horizontal row. Participants then placed the Q statements printed on individual notecards on the table in a range from those they would least likely emphasize under distribution marker -3 to those they would most likely emphasize under distribution marker 3. After each participant completed their Q sort, the order and placement of Q statements under each distribution marker was recorded with a photograph and written on a notepad for data analysis.

**Conduct Post Q Sort Interviews**

Finally, Q sort participants were asked to explain their sort in a short, unstructured interview. Participants elaborated on how they interpreted the Q sample and if any
statements were missing which might represent another opinion about response to Cuban immigrant landings. None of the participants suggested additional statements.

Analysis

Once the Q sorts were completed, data were analyzed using PQMethod version 2.11, a free software program designed specifically for Q studies. It is important to make the distinction between Q method matrices and R method (survey) matrices, “the psychometrics of Q call for the correlation and factoring of persons as opposed to tests, traits and the like…” (McKeown & Thomas, 1988, p. 46). In other words, Q studies correlate people and their opinions (Brown, 1980; Stephenson, 1982). The correlation coefficients within the matrix illustrate which Q sort participants and which Q sorts correlate with each other, but little attention is usually given to the correlation matrix in a Q study, as it represents a transitional phase between raw data and factor analysis (Brown, 1980). The matrix contained seven Q sorts by seven participants.

Principal components analysis (PCA) was performed on the correlation matrix and yielded seven uncorrelated factors representing groupings of Q sorts based on their dissimilarity to one another (van Exel & Graaf, 2005). The number of factors extracted was determined by examining the number of loadings per factor. A factor was extracted if two or more Q sorts loaded significantly on it (Addams & Proops, 2000; McKeown & Thomas, 1988). Scholars have suggested that including at least seven factors in the factor rotation step preserves as much variance as possible (Brown, 1980; van Exel & Graaf, 2005).

Next, the PQMethod program helped determine how to define each factor. This was accomplished by flagging significant factor loadings, or normalized and weighted correlations between participants and factors (van Exel & Graaf, 2005). In other words, each Q sort participant emphasized certain statements about future response that defined the theme of each perspective in a statistically significant way. In this study, the standard error was 1/√31= 0.1796, where N is the number of statements. The z-scores at the p<.05 level were 1.96*0.1796 = 0.35 and the z-scores at the p<.01 level were 2.58*0.1796 = 0.46. Thus, factor loadings equal to or greater than 0.35 and 0.46 were significant at the .05 and .01 levels (Brown, 1980; McKeown & Thomas, 1988).

After the significant loadings were defined in PQMethod, varimax rotation was employed. Varimax rotation of the factors was done to improve their meaning and interpretation.

A three-factor solution was determined using the following criteria: factor loadings (> .35) analysis of the scree plots, eigenvalues (> 1.0) and the social and political setting to which the factors are organically connected (Brown, 1980; McKeown & Thomas, 1988). The three factors accounted for 74% of the variance (Table 2). A descriptive label was given to each factor. Characterizing statements are listed in the output from PQMethod upon completing factor analysis, rotation and computation of factor scores. Characterizing statements usually fall on the extreme ends of the ranking scale (shown as z-scores) for a factor, and they are used to produce a first description of the point of view represented by that factor (van Exel & Graaf, 2005).

PQMethod also generates distinguishing statements and consensus statements. Distinguishing statements are significantly different from other factors and were treated differently by participants in the Q sorts (Du Plessis, 2009). Consensus statements, however, maintain no significant difference between factors. A consensus statement fails to distinguish one factor from another because all factors may give a statement the same or similar score (Du Plessis, 2009). Consensus statements provide an idea of where participants aligning with each factor may find some common ground and ideas about which they possibly agree, while distinguishing statements highlight areas of potential conflict.
In terms of reliability, factor analysis identified three distinct factors that represent distinct patterns of response (Addams & Proops, 2000), and at least three Q sort participants loaded onto each factor. In other words, at least three Q sort participants defined each factor, or social perspective. In terms of validity, the Q sort participants sorted and defined their own perspectives about response to Cuban immigrant landings in national parks. The instrument used to measure participants’ opinions and attitudes about those responses was grounded in the opinions and attitudes provided by news articles and interviews with CBP and NPS personnel. The researcher did not approach the study with a pre-determined instrument, thereby eliminating some bias. Also, factor analysis is a validity check (McDonald, 1985) in that it measured what the researcher set out to measure—perspectives—by grouping patterns of response into three factors. These resulting factors, or social perspectives, were expressed and interpreted using supporting explanations from the participants’ interpretation of their own Q sorts. Factor analysis yields “a handful of underlying variables that account for changes among a much larger group of measured variables” (Tuler & Webler, 2009, p. 98). Text from the interviews in addition to key informants, news reports and relevant case studies provided a narrative that explained the complexities of each perspective.

### Results

The following section describes the differences and similarities between the three factors, or perspectives, that emerged from the Q sorts performed by federal agency personnel about response to Cuban immigrant landings: 1) Assess, React, and Transport; 2) Protect; and 3) Plan (Table 3). In this table z-scores are shown for all the statements and perspectives (factors). Z-scores serve as the basis for ranking the importance or emphasis for each statement (Essen, 2010).

#### Characterizing Statements

**Perspective 1: Assess, React, and Transport.** The Q sorts of all four NPS personnel defined Perspective 1: Assess, React, and Transport (*Reactors*, hereafter). These personnel emphasized statements about tasks involving the transportation of Cuban immigrants and relying on other agencies that have the assets needed to do so (statements 20, 18, 8). *Reactors* are more concerned about decisions that need to be made immediately after a landing occurs. They appear less concerned with elements of team interactions that could

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**Table 2**

*Factor Matrix with * indicating Defining Q Sorts*

<table>
<thead>
<tr>
<th>Q Sort Participants</th>
<th>Agency, Role</th>
<th>Perspectives (Factors)</th>
<th>Assesses, React, and Transport</th>
<th>Protect</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NPS, Supervisor</td>
<td></td>
<td>0.7590*</td>
<td>0.3534*</td>
<td>0.0800</td>
</tr>
<tr>
<td>2</td>
<td>CBP, Supervisor</td>
<td></td>
<td>0.2000</td>
<td>0.4577*</td>
<td>0.7681*</td>
</tr>
<tr>
<td>3</td>
<td>CBP, Agent</td>
<td></td>
<td>0.0415</td>
<td>0.9486*</td>
<td>0.1050</td>
</tr>
<tr>
<td>4</td>
<td>NPS, Supervisor</td>
<td></td>
<td>0.5764*</td>
<td>0.0589</td>
<td>0.5308*</td>
</tr>
<tr>
<td>5</td>
<td>NPS, Law Enforcement Officer</td>
<td></td>
<td>0.6937*</td>
<td>0.0184</td>
<td>0.3291</td>
</tr>
<tr>
<td>6</td>
<td>NPS, Law Enforcement Officer</td>
<td></td>
<td>0.8427*</td>
<td>-0.0826</td>
<td>0.0712</td>
</tr>
<tr>
<td>7</td>
<td>CBP, Supervisor</td>
<td></td>
<td>0.1320</td>
<td>-0.0211</td>
<td>0.8649*</td>
</tr>
<tr>
<td>% expl. Var.</td>
<td></td>
<td></td>
<td>31</td>
<td>18</td>
<td>25</td>
</tr>
</tbody>
</table>

* loading scores greater than 0.35 and statistically significant at p<0.05
Table 3

*Q Statements and Rankings for each Perspective*

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Reactors</th>
<th>Protectors</th>
<th>Planners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Responding agencies should know the water and should be able to help without making things worse.</td>
<td>-0.26</td>
<td>-1.03</td>
<td>1.48</td>
</tr>
<tr>
<td>2</td>
<td>No agency should handle response to immigrant landings alone.</td>
<td>0.98</td>
<td>-1.53</td>
<td>0.14</td>
</tr>
<tr>
<td>3</td>
<td>Agency personnel without law enforcement training should respond to immigrant landings in national parks.</td>
<td>-0.33</td>
<td>-0.57</td>
<td>-1.04</td>
</tr>
<tr>
<td>4</td>
<td>Officials from each agency should develop a procedure for response to Cuban immigrant landings.</td>
<td>1.07</td>
<td>-0.41</td>
<td>1.69</td>
</tr>
<tr>
<td>5</td>
<td>Decisions about tactics should be made by personnel on site.</td>
<td>1.32</td>
<td>-1.47</td>
<td>0.73</td>
</tr>
<tr>
<td>6</td>
<td>CBP and NPS personnel should periodically co-patrol.</td>
<td>0.52</td>
<td>0.62</td>
<td>0.73</td>
</tr>
<tr>
<td>7</td>
<td>Staff should be allowed to build relationships with other agencies.</td>
<td>0.46</td>
<td>1.12</td>
<td>-0.30</td>
</tr>
<tr>
<td>8</td>
<td>If an agency does not have assets it needs to respond, it should rely on other agencies.</td>
<td>1.37</td>
<td>0.66</td>
<td>0.01</td>
</tr>
<tr>
<td>9</td>
<td>Food and clothes should be provided for immigrants immediately after apprehension.</td>
<td>-0.66</td>
<td>-1.17</td>
<td>-1.25</td>
</tr>
<tr>
<td>10</td>
<td>The safety of the nation should come before preserving the parks.</td>
<td>-0.51</td>
<td>1.62</td>
<td>0.66</td>
</tr>
<tr>
<td>11</td>
<td>CBP should focus on cross border criminal threats.</td>
<td>-1.20</td>
<td>1.15</td>
<td>1.32</td>
</tr>
<tr>
<td>12</td>
<td>There should be a pot of money designated for refunding workforce and equipment utilized during a response.</td>
<td>1.25</td>
<td>0.04</td>
<td>-0.08</td>
</tr>
<tr>
<td>13</td>
<td>When justified, smugglers should be fined for damaging ecological resources.</td>
<td>0.31</td>
<td>0.64</td>
<td>0.70</td>
</tr>
<tr>
<td>14</td>
<td>At least one armed person should watch immigrants at all times.</td>
<td>1.31</td>
<td>1.23</td>
<td>1.04</td>
</tr>
<tr>
<td>15</td>
<td>Responding personnel should be prepared for the worst-case scenario.</td>
<td>0.92</td>
<td>1.78</td>
<td>-0.19</td>
</tr>
<tr>
<td>16</td>
<td>CBP and NPS assets should meet halfway when transporting immigrants out of national parks.</td>
<td>-1.06</td>
<td>0.00</td>
<td>-1.01</td>
</tr>
<tr>
<td>17</td>
<td>NPS law enforcement should pursue human smugglers.</td>
<td>-0.87</td>
<td>0.00</td>
<td>-0.33</td>
</tr>
<tr>
<td>18</td>
<td>CBP should drive to EVER and transport immigrants back to the CBP station.</td>
<td>1.39</td>
<td>0.11</td>
<td>0.35</td>
</tr>
<tr>
<td>19</td>
<td>Immigrant alienage should be determined by CBP or ICE only.</td>
<td>-0.49</td>
<td>0.74</td>
<td>1.34</td>
</tr>
<tr>
<td>20</td>
<td>When CBP gets a report of a landing, it should be a priority for CBP to get there.</td>
<td>1.45</td>
<td>1.72</td>
<td>0.66</td>
</tr>
<tr>
<td>21</td>
<td>Other agency personnel should come to my station and see how short-handed we really are.</td>
<td>-0.28</td>
<td>-0.58</td>
<td>-2.00</td>
</tr>
<tr>
<td>22</td>
<td>When Cuban immigrants “make dry land” it should be managed as a transport issue.</td>
<td>-0.86</td>
<td>-1.11</td>
<td>-0.04</td>
</tr>
<tr>
<td>23</td>
<td>Male immigrants should be separated from female and child immigrants during a response.</td>
<td>-0.99</td>
<td>0.61</td>
<td>0.13</td>
</tr>
<tr>
<td>24</td>
<td>DHS should compensate NPS for all Cuban immigrant transportation costs.</td>
<td>0.80</td>
<td>-1.05</td>
<td>0.67</td>
</tr>
<tr>
<td>25</td>
<td>Park visitors should help during a response to Cuban immigrant landings.</td>
<td>-0.86</td>
<td>-1.66</td>
<td>-1.58</td>
</tr>
<tr>
<td>26</td>
<td>Relatives should be notified immediately when their family/friends “make dry land.”</td>
<td>-1.85</td>
<td>-1.19</td>
<td>-1.82</td>
</tr>
<tr>
<td>27</td>
<td>Technology should augment personnel responsible for border protection.</td>
<td>0.26</td>
<td>-0.41</td>
<td>0.44</td>
</tr>
<tr>
<td>28</td>
<td>Cuban immigrants should be restrained with flexi cuffs.</td>
<td>0.20</td>
<td>0.65</td>
<td>-0.40</td>
</tr>
<tr>
<td>29</td>
<td>NPS should be responsible transporting immigrants to the CBP station.</td>
<td>-1.54</td>
<td>0.00</td>
<td>-0.83</td>
</tr>
<tr>
<td>30</td>
<td>Responding agencies should rely on public transportation move Cuban immigrants.</td>
<td>-1.34</td>
<td>-0.07</td>
<td>-1.57</td>
</tr>
<tr>
<td>31</td>
<td>Each agency should know about the others’ goals, issues, and operational constraints.</td>
<td>-0.53</td>
<td>-0.45</td>
<td>0.35</td>
</tr>
</tbody>
</table>
help personnel prepare for a future landing, such as co-patrolling, building relationships with other agency personnel or learning about other agencies’ goals, issues and operational constraints (statements 6, 7, 31).

One particular transportation issue distinguished Perspective 1 from the others. The transportation of Cuban immigrants from EVER to the CBP station generates some potential confusion between the agencies. Personnel had several different expectations about how that should take place (statements 16, 18 and 29). All four of the NPS personnel who defined Perspective 1 highly emphasized that CBP should drive to EVER and transport immigrants back to the CBP station located approximately three hours away by van (statement 18). Some CBP agents reported that it would be helpful if EVER law enforcement would meet them halfway with the immigrants or drive them all the way to the CBP station themselves. Both agencies cited a lack of adequate resources (e.g., no large buses for NPS; not enough manpower for CBP) as reasoning for their positions on the issue. Here, the implication for managers and supervisors in both agencies is that not all personnel share the same knowledge or expectations regarding transportation tasks.

**Perspective 2: Protect.** The Q sorts of one NPS supervisor, one CBP supervisor and one CBP agent defined Perspective 2: Protect (*Protectors*, hereafter). These personnel emphasized statements about tasks involving the protection and safety of agency personnel and the general public (statements 15, 10, 14 and 11). *Protectors* appear less concerned with tasks involving humanitarian aid (statements 9 and 26) or tasks involving the mitigation of immigration response impacts on budgets (statements 12 and 24).

One protection issue distinguished Perspective 2 from the others: Responding personnel should be prepared for the worst-case scenario (statement 15). This result is similar to findings on the national park law enforcement shift from a historical focus on providing recreation opportunities and resource protection to a current emphasis on visitor safety (Wynveen et al., 2007). Despite *Protectors*’ emphasis on ensuring the safety of responding personnel, those who defined Perspective 2 placed low emphasis on handling response to Cuban landings with other agencies (statement 2).

A second protection issue distinguished Perspective 2 from the others: The safety of the nation should come before preserving the parks (statement 10). This further illustrates the suggestion that *Protectors* emphasize protection of the public and agency personnel first and foremost. This debate has been occurring wherever public lands meet a U.S. border, especially along the southwestern border. CBP agents and NPS personnel have had conflicts regarding differing missions and operations in areas designated as wilderness. Federal law mandates that no mechanized vehicles may be used in designated wilderness. CBP agents have driven through wilderness in the pursuit of illegal immigrants and have damaged ecological resources. For a time, both agencies felt that the other was hindering their mission, but steps have been taken to foster a more cooperative atmosphere among agencies operating along the southwestern border. Border security initiatives on public lands include a collaborative enforcement approach in the southwest called Operation Trident and Integrated Border Enforcement Teams along the northern border (DHS, 2011). Through these programs, CBP agents and NPS law enforcement officers conduct co-patrols and share information on illegal border activity. Additionally, CBP has participated in environmental mitigation projects where damage occurred on public lands due to border security activity (DHS, 2011). While agencies in the southeast do not have the same issues regarding damage to ecological resources, similar agency cultures of *React* and *Protect* are evidently present.

**Perspective 3: Plan.** The Q sorts of one NPS supervisor and two CBP supervisors defined Perspective 3: Plan (*Planners*, hereafter). *Planners* emphasized elements of team interactions such as communication and utilizing available personnel during a response (statements 1 and 4). *Planners* also stressed the need to plan ahead and outline a written procedure for response or establish a Memorandum of Understanding between agencies involved. Each agency has its own policies and procedures for response; some are written, some are not, but there is currently no written *coordinated* procedure for response to Cuban immigrant landings. *Planners* seem to be willing to gain a better understanding of each
agency’s decision-making techniques in order to coordinate those techniques into a more effective incident management system.

**Consensus Statements**

In a Q study, consensus statements are points of potential agreement between each perspective. All perspectives emphasized handling Cuban immigrant landings as a law enforcement situation (statements 3, 13, 14 and 25). There is a reported “all-hands-on-deck” policy among NPS personnel who respond first to a Cuban immigrant landing, which means all personnel on-the-clock at the time of a landing suspend their normal duties in order to assist with response. Despite the reported lack of resources and manpower available in either agency for response, personnel in both the NPS and CBP agreed that those without law enforcement training should not be immediately involved in the approach and apprehension of immigrants. This is further supported by the unanimous high emphasis on statement No. 14: At least one armed law enforcement officer should watch the immigrants at all times. Despite past cases when non-law enforcement personnel have assisted with watching immigrants while in NPS detention, all participants acknowledged once again that it should be treated as a law enforcement situation and personnel should be prepared for the worst-case scenario. All CBP agents have law enforcement training, so anyone involved in a response to a Cuban immigrant landing without law enforcement training would be NPS personnel such as Visitor Services staff or Interpretive Rangers.

In the past, personnel who responded to landings have reportedly assisted with communication efforts between agencies in both EVER and DRTO, but they have been especially utilized at DRTO given its distance from the mainland and law enforcement backup. Non-law enforcement personnel have helped keep watch over groups of immigrants on DRTO while waiting for the USCG or the privately operated ferry service between Key West, Florida and DRTO to arrive and transport the immigrants off DRTO. Non-law enforcement personnel have also helped clean chugs,1 beaches, and the Cuban quarters in Fort Jefferson on DRTO after the immigrants have been transported to the CBP station. Given the unique situation presented by Cuban immigrant landings and the lack of available assets and resources for both the NPS and CBP, it is understandable that participants from both agencies appeared to feel somewhat flexible about who can be involved in an immigrant landing response. While personnel from both agencies emphasized handling Cuban immigrant landings as law enforcement situations, the role non-law enforcement personnel should carry out during each response needs to be defined.

All three perspectives also emphasized team interactions and building relationships between agencies (statements 6 and 31). One team interaction developing tactic was agreed upon by Q sort participants as something that should be emphasized in the future: No. 6: NPS and CBP personnel should periodically co-patrol. The size of EVER, the nature of the terrain within park boundaries and its distance to various park locations have reportedly inhibited CBP’s access to the area. Another major factor hindering CBP’s access to the area is their lack of marine vessels, specifically for the Border Patrol unit within CBP. This situation presents an opportunity for CBP and the NPS to work together.

Finally, all three perspectives emphasized that tasks involving humanitarian aid (statements 9 and 26) are not an immediate concern during response to Cuban immigrant landings. Local citizens and park conservation interest groups have donated clothes and food that NPS personnel provide to Cuban immigrants, particularly on DRTO, but they do so after the time they define as “response.” Humanitarian aid takes place after initial law enforcement tasks have been carried out, after everyone is checked for medical issues, and while the Cuban immigrants are detained until USCG or CBP arrives to assist. It is a task that is least likely to be emphasized in the response, but not disregarded altogether.

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1A chug is a crude boat utilized by some Cuban immigrants. Chugs are usually constructed out of drainage pipe and powered by tractor engines and diesel fuel, giving rise to their name as they “chug” across the Straits of Florida. Fuel drains onto the floor of the chug or into the water and often requires Hazmat clean up.
Discussion and Implications

This study was guided by the concept of SMMs with the purpose to reveal perspectives among federal law enforcement officers on response to Cuban immigrant landings in terms of knowledge and expectations. The use of the Q method allowed the researcher to obtain diverse perspectives as well as common interests about a complex issue facing federal agency personnel and resources. Three perspectives evolved from the results and were labeled: 1) Assess, React and Respond, 2) Protect, and 3) Plan. These perspectives belong to individuals at two federal agencies that respond to immigrant landings and they show that different personnel emphasize different tactics for response to the same event within overlapping jurisdictions.

On the question of how federal agencies work together during response to Cuban immigrant landings, three key areas emerged: communication, workforce support, and budgeting. The themes are supported by interview data and personnel opinions on the current relationship between the agencies in southern Florida and how it might be improved. This is another useful characteristic of Q method in that it allows the researcher to interpret the findings through the ideas suggested and emphasized by the people directly involved in the investigated problem.

Interagency Coordination and Communication

Currently, there is no written coordinated procedure for response to Cuban immigrant landings in south Florida’s national parks, and discussions about tactics for response to landings do not occur frequently between agencies involved. Participating personnel reported that the meetings that take place are “Meet ‘n Greet” in nature, and that it has been difficult to move beyond pleasantries to tactics. NPS personnel also reported that they have to “reinvent the wheel” each time a landing occurs. Cuban immigrant landings occur infrequently enough in EVER that, in one reported NPS case, an entirely new group of personnel was called to respond to a landing. Despite infrequent landings in some years, response is considered a priority due to the unpredictable, costly, and potentially dangerous nature of landings for NPS personnel (personal communication 1/20/10, NPS manager). New response personnel have sought advice on how to handle the situation by calling personnel who responded to immigrant landings in the past but had moved on to other positions or parks. While there is a phone number NPS personnel can call to alert CBP to a landing in the park, the person receiving the call could be different every time. In light of uncertainty about communication or simply knowing the person on the other end of the phone line, several personnel from CBP and NPS reported a desire to co-patrol with members from the other agencies involved in response to immigrant landings. Interagency training could potentially provide direction for agency personnel to develop shared expectations for immigrant landing response, and co-patrols are credited for some of the success of interagency security initiatives along the southwestern border (DHS, 2011). Co-patrols were emphasized as a tactic for future response in all three perspectives, as well. Training has been found to be a key component of the relationship between mental models and team performance, and the focus should be on expectations/explanations training, not just task training (Rouse et al., 1992). In other words, regular tactic meetings and co-patrols should facilitate learning about each agency’s expectations for immigrant landing response as well as day-to-day activities. By focusing on broader expectations derived from agencies’ missions and mental models rather than training solely for immigrant landing response, team performance will improve and become more adaptable to unpredictable future events. Cross training may provide team members with information they need to predict and anticipate each other’s behavior (Cannon-Bowers et al., 1993). These findings are similar to a study on the USFS by Chavez et al. (2004) that found that the agency should consider forging relationships with other agencies before problems arise, and that such efforts go beyond normal law enforcement duties, but they contributed to success. Other scholars note the advantage of utilizing role-play in park law enforcement training through which officers demonstrate their knowledge of procedures,
skills with enforcement techniques and interpersonal ability (Dwyer, Meyers, Brown, & Winborn, 1985).

**Budgets and Allocated Funds for Immigrant Landings**

Though Cuban immigrant landings have decreased in the last six years, NPS managers reported that landings drain park budgets due to the cost of clean up, particularly diesel-soaked chugs, paying personnel overtime, and transportation costs whenever CBP or USCG personnel are not available to assist to transport immigrants to temporary detention centers. There is an agreement between DHS and NPS establishing a transportation reimbursement policy for monies spent by the NPS on transporting the immigrants. NPS personnel who participated in the study agreed that this does help the parks financially, but it does not solve the problem. Participants made the case for an account in the budget allocated specifically and exclusively for Cuban immigrant landings, much like the hurricane account that already exists. According to NPS personnel, although Cuban landings do not happen often, they drain park budgets quickly whenever they do occur.

**Boots on the Ground during Response**

NPS personnel reported that the DHS transportation reimbursement agreement does not solve the immigrant landing response problem because the burden of response still falls on the NPS. NPS reported a need to have “other agency boots on the ground and boats in the water” assisting with response as soon as possible. Cuban immigrant landings draw NPS workforce away from their daily tasks and overall mission, so NPS personnel would like to see other agencies with missions or policies tied to immigration present in the response efforts. Some ideas suggested by study participants include developing an interagency team specifically trained for immigrant landing response or seeking help from off-duty municipal police officers to transport immigrants off DRTO or out of EVER.

The structure of this tactic is an important point of discussion between agencies. Progress toward more efficient interagency coordination would be supported by Kapucu’s (2009) suggestion that crises require coordination of actions among multiple organizations and integration of multiple agencies and jurisdictions into a functioning response system. Similar findings show that response systems should be able to evolve and adapt as incident circumstances evolve and change (Kapucu, 2009).

On the question of what perspectives exist among agency personnel about tactics for response, three were identified: Assess, React, and Transport; Protect; and Plan. Reactors emphasized assessing situations as they arose. There was a difference of opinion among Reactors regarding which agency should bear responsibility for transporting immigrants from the landing site to the processing office, regardless of equipment like large buses that may or may not be available to each agency at this time. Protectors emphasized the safety of the nation over the preservation of natural and cultural resources. This Perspective highlights the differing missions of the agencies operating in overlapping jurisdictions. The consensus statements revealed through Q method are important to consider when reconciling perspectives like those defined by Reactors and Protectors.

On the question of what tactics should be emphasized in future response, all three perspectives represented by personnel from both the NPS and CBP emphasized team interactions and developing relationships between agencies. The desire to discuss tactics and share knowledge and expectations among team members is affirmed by findings in the literature that suggest group learning efforts among all team members leads to accurate expectations of team behavior and effective team coordination (Klimoski & Mohammed, 1994). The perspectives revealed through this research provide an understanding of how different personnel expect future response to be conducted, and this understanding could shape future response strategies.

All three perspectives emphasized that immigrant landings should be treated as law enforcement situations. This is an important common interest and starting point for planning future responses. Planners emphasized a holistic vision of interagency coordination via written agreements, so those personnel belonging to the Plan Perspective could look to the consensus statements revealed through the Q method as areas of common ground.
Areas of common ground are important talking points for discussions between agencies seeking a coordinated, written procedure for response. The need for a coordinated, written procedure for response is supported by past findings that show it is important for team members to share adequate knowledge of the task and team, as well as shared expectations (Mohammed & Dumville, 2001). Klimoski and Mohammed (1994) asserted that teams with well-developed mental models are able to implement their decisions quickly and with fewer problems than teams who do not share contents of their mental models. The federal agencies operating along the border in southern Florida may not have identical mental models due to different agency culture and missions, but their models may be compatible in terms of shared knowledge and expectations. Response to immigrant landings could potentially improve with shared knowledge and expectations through a set of coordinated, written procedures. According to NPS personnel, such procedures do not yet exist due to frequent personnel turnover in all federal agencies involved and infrequent meetings that, when they do occur, do not cover expectations regarding the role of each agency and their personnel during response.

With these results and implications in mind, there were a few limitations to this research. While Q method is an appropriate method to employ in studies with low numbers of participants, the seven Q sorts conducted in this study were on the low end of the researcher’s anticipated range of 6-10 Q sorts. The seven Q sort participants represented a diverse group of personnel in both agencies: NPS supervisors and law enforcement officers, and CBP supervisors and agents. However, USCG personnel participated in the semi-structured interviews, but were unavailable to participate in the Q sorts, so the participants could have been more diverse. The researcher was unable to schedule any semi-structured interviews or Q sorts with ICE agents, so that agency was not represented in this study. As evidenced in this study, the Q method itself can be logistically challenging and time consuming for respondents which can inhibit respondents’ participation throughout the entire process of data collection. However, the time and effort put forth by the researcher and participants yielded a plethora of results that provided in-depth information that was previously unavailable on this issue.

**Future Research**

Lessons learned from this study on sharing knowledge and expectations provide theoretical and practical implications for social scientists, managers, and federal agencies. Theoretical implications include support for the need to specify the type of shared knowledge and expectations that improve team performance, rather than generalizing the contents of shared mental models. Given the fact that three perspectives about response to Cuban immigrant landings have been revealed using the concept of SMMs as a framework, future research should measure shared mental models and strive to distinguish declarative knowledge, procedural knowledge and strategic knowledge. Though this study utilizes shared mental model construct to conceptualize the various types of knowledge and expectations that are potentially held by federal agents and law enforcement officers, it does not pinpoint the type of knowledge or expectations that need to be shared in order for coordination to improve. Past research suggests that shared declarative knowledge and procedural knowledge independently improve team performance to some degree, but not much is known about the role of shared strategic knowledge for improving team performance (Banks & Millward, 2007). This study supports the notion that types of knowledge should be distinguished in future SMM research, given the varying emphases on facts and rules (declarative), sequences and action (procedural) and applications of knowledge (strategic) regarding response to immigrant landings and represented in the three perspectives.

Practical implications of this research suggest that managers of NPS, CBP and USCG, as well as parent agencies DOI and DHS, should consider sharing their respective agency missions to provide the context within which their personnel have knowledge and expectations about response. As Cannon-Bowers et al. (1993) explained, mental models
provide the context for conceptualizing expectations, and mental models must be compatible in terms of the expectations they generate. CBP and NPS operate under different missions, so coordinated response between these agencies is, and will continue to be, complex. The end goal of similar research or of future attempts at interagency coordination should not be to convert everyone to one mental model or even one mission. That scenario would be very unlikely. Study participants who linked their agency missions to their mental models about team performance and response to Cuban immigrant landings spoke about agency missions in the context of agency culture: the paramilitary, national security mission of CBP and DHS versus the friendly park ranger, preservation/conservation mission of the NPS and DOI. These positions will not change. However, once study participants’ responses were grouped into factors, or social perspectives, about response to Cuban immigrant landings, distinguishing and consensus interests were identified. Consensus statements included shared interests such as building relationships between agencies and treating each immigrant landing as a law-enforcement situation. These shared expectations provide the building blocks for constructing a coordinated, written procedure for response to landings. Additional studies are needed to expand this research to other public agencies and national parks in southern Florida. Biscayne National Park in Florida has an entirely different interagency coordination situation due to its proximity to municipal services and departments that can provide assistance during response to a landing. National parks located in the Caribbean such as U.S. Virgin Islands National Park have different circumstances surrounding their response to immigrant landings as well, including the distance of the park from other agency stations and the nationality of the immigrants they encounter, which may require a different procedure for response. Further investigation is needed to understand how Cuban immigrant landings impact the experience of national park visitors and the park’s cultural/natural resources. The perspectives revealed through this study provide baseline data for interagency coordination in the southeastern region, but more data must be gathered about the context of each park and other agencies operating within the region. Additional federal agency personnel should be considered in the future as well as local law enforcement agencies.

References


The Relationship Between Seasonal Employee Retention and Sense of Community: The Case of Summer Camp Employment

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EXECUTIVE SUMMARY: Many factors in today’s society make it difficult for leisure service organizations to attract and retain seasonal employees. For example, higher education costs have forced college students to look for the highest paying summer job they can find, and college internship requirements have caused students who might otherwise have worked in the leisure service industry during the summer to instead find an internship in their desired fields. Consequently, many leisure service managers face an increasing challenge to attract and retain quality seasonal employees. It is therefore not surprising that retention of quality seasonal employees has consistently been identified as a critical issue facing leisure service managers. Improved retention rates would provide cost and time savings related to recruiting, allowing managers to spend more resources developing programs, and would send a positive message to program participants, parents, volunteers, and contributors.

Residential summer camp is a good example of a leisure service industry that is struggling with employee retention. Over 1.2 million adults are employed by summer camps each year (American Camp Association [ACA], 2011), and employee return rates for summer camps vary widely with a mean return rate of 56% (ACA, 2008). These results suggest that there is room for retention improvement and that high turnover, even among organizations that traditionally have long hours and low pay, is not inevitable.

Previous studies on summer camp employees suggest that interpersonal relationships and connectedness with others are among the top benefits and motivations for working at summer camp. This indicates that although previous research has examined the issue of camp employee retention from the perspective of job satisfaction, a better indicator of retention might be sense of community.

The purpose of this study was to examine whether a camp employee’s sense of community toward the organization is related to his or her decision to return to work there. An online survey was completed by 916 camp employees. In addition to demographic data and information about their experience with camps, employees also completed the Sense of Community Index (Perkins, Florin, Rich, Wandersman, & Chavis, 1990).
Results showed a strong link between an individual’s sense of community toward his or her work organization and year-to-year retention and offer guidance to managers of seasonal employees interested in addressing retention issues within their organizations. The sense of community model used in this study provides a framework for retention, recruiting, and development initiatives that may help to improve retention of seasonal employees.

**KEYWORDS:** Employee retention, seasonal employees, sense of community

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Seasonal employees are a critical element of the leisure service industry. Commercial recreation, tourism, and nonprofit recreation organizations and public leisure service agencies all depend on significant numbers of seasonal employees. One of the major challenges facing leisure service managers in all of these areas is retaining experienced seasonal employees from one year to the next (ACA, 2011). Recruitment and training of new seasonal employees is expensive and can consume a significant amount of organizational resources. As reported by Lee-Ross (1995), labor costs can be twice as expensive for employers who must recruit and train large numbers of seasonal employees each year. It is much more efficient to retain experienced seasonal employees from one year to the next. Therefore it is important for leisure service managers to understand the factors that motivate a seasonal employee’s decision to return to a job. One industry that has struggled with the retention of seasonal employees is summer camps.

Finding qualified employees to work at camp has long been a challenge for camp managers. In 1979, 36% of camp directors reported recruiting and retention as their top concern (Ball, 1979). In 1995, an American Camp Association (ACA) survey found that nearly 50% of camp directors identified recruiting and retention as their greatest concern (as cited in DeGraaf, 1996). A more recent survey by the ACA (2011) identified staff recruitment, screening, and hiring as the most important of 19 issue areas for camps.” Moreover, a survey by the ACA (2008) reported that employee return rates for accredited summer camps varied greatly with 13% of camps reporting return rates of less than 25% and 28% of camps reporting return rates of 75% or higher. Not only does this suggest that there is room for retention improvement, but also that the variation in camp return rates suggests that high turnover in this industry is not inevitable. Camp employment traditionally requires long hours and low pay, but if these things were really the reason for high turnover at summer camps, all camps would have high rates of turnover. Instead, the 2004 ACA survey reported a wide range of return rates among camps of similar sizes, budgets, and affiliations.

The reasons why managers of summer camp organizations are so concerned about low retention rates range from time and cost savings to the improved program quality that comes with experienced employees (Magnuson, 1992). Quite obviously, a higher return rate of the previous year’s employees means that managers need to spend less time on recruiting functions such as job fairs, interviews, and background investigations. According to Noe, Hollenbeck, Gerhart, and Wright (1997), a manager must interview anywhere from
three to 20 candidates for every person hired. Such time savings can free managers for other program-related and management functions.

In addition to time savings, organizations can reduce financial costs by increasing their retention rates. Many organizations recruit seasonal employees at job fairs, where costs include booth fees, distribution of expensive brochures, travel, meals, and motels. If improved employee retention can allow an organization to attend even one less job fair, the savings can be significant. Additionally, many organizations desperate for seasonal employees pay high fees to agencies for services that range from completing background investigations to providing international employees.

In addition to the time and cost savings, there is a benefit from the continued relationships that exists between employees and guests. Guests who return to an organization do so because they had a good experience, and in the leisure service industry, that experience is usually affected by an employee. Even for new guests, returning employees are more likely to have the skills and experience to create more enjoyable experiences for guests. Moreover, managers can focus training and development of returning employees on more advanced areas than they can with new employees (Reynolds, Merritt, & Gladstein, 2004). Returning employees can also be great resources for managers. There is evidence that returning seasonal employees are motivated by the feelings of empowerment they experience as a result of being asked to help with tasks such as recruiting at their colleges and mentoring new employees (Crossen & Yerkes, 1998; Grayson, 1998).

Finally, and perhaps most important to an organization’s mission, having a high percentage of returning employees could help the organization establish trust and credibility with guests, parents, volunteers, and donors (Milikić, 2010). Organizations that are unable to retain the people who know the organization the best (i.e., experienced employees) will likely have a difficult time convincing potential customers, volunteers, benefactors, and parents that their programs are worthy of their trust and investment. As Adidam (2006) writes, “High turnover sends a very clear signal that something is wrong somewhere in an organization” (p. 137). These examples clearly show the many benefits of improved employee retention and demonstrate that managers need a clearer understanding of what goes into a seasonal employee’s decision to return to a seasonal position.

Despite the importance of the retention issue to seasonal employers, few studies have measured issues related to the year-to-year retention of seasonal employees in the leisure service and hospitality field (Gillard, Witt, & Watts, 2010; Reynolds et al., 2004). Even fewer studies have examined this issue specifically for summer camps despite that over 1.2 million adults are employed by summer camps each year (ACA, 2011). Of the few studies that have examined summer camp employee retention, most have viewed the issue from the perspective of job satisfaction, and none have been conducted recently (Becker, 1983; DeGraaf, 1992; Hoff, Ellis, & Crossley, 1988; Magnuson, 1992). These studies have generally suggested a link between job satisfaction and the willingness of employees to return to a camp. However, they also suggest that the strongest contributing factors to job satisfaction are elements that have more to do with camp community than the responsibilities of the job itself.

Some camp studies have indicated that relationships with other staff members and campers are important for camp employees (Bialeschki, Henderson, & Dahowski, 1998; Henderson, 1982; Magnuson, 1992). A small set of interviews in Magnuson’s (1992) study suggested that one reason camp employees return the next year is because of the community atmosphere at camp. The Magnuson study—and the lack of other studies—suggests the need for a more in-depth study of camp community as a potential influencing factor on employee return decisions.

The purpose of this study was to examine whether there is a relationship between sense of community toward summer camp organizations and the retention of seasonal employees. Four hypotheses guided the research:
Hypothesis 1: Sense of community levels are higher for summer camp staff “returnees” than “non-returnees”; 

Hypothesis 2: Sense of community levels are higher for those who indicate a desire to return, regardless of whether or not they do; 

Hypothesis 3: The employees of camps with higher seasonal employee return rates have a higher sense of community levels than the employees of camps with low return rates; and 

Hypothesis 4: Sense of community levels will vary based on factors related to the camp demographics (e.g., size, geography, agency affiliation).

Literature Review

In Barney’s (1991) work on the resource-based view of the firm theory, he explains that in order to generate a sustainable competitive advantage, organizations must have resources that are valuable, rare to competitors, inimitable, and non-substitutable. Wright, Dunford, and Snell (2001) later expanded on Barney’s work to show that employees can be a source of such resources and can contribute to an organization’s sustained competitive advantage. This is perhaps especially true for organizations in the service industry. For example, Novatorov (1997) reported a change in management philosophy among service providers from a focus on financial capital to human capital. Indeed, a study of the International Association of Amusement Parks and Attractions revealed that retaining employees was among the top priorities of managers of entertainment complexes (Milman, 2001). Similar priorities have been developing in the ski industry. Almost 20 years ago, Peter Drucker (1992) stated that ski organizations routinely report that people are their greatest assets. The general manager of Aspen Snowmass ski resorts explained the importance of human resources to the ski industry when he reflected:

I learned early on that we’re in the people business. Every ski area has lifts, parking lots, restaurants and machinery. Yet one is more successful than the next because of the way its management treats its employees and in turn, the way employees treat the guest (Campbell, 1993, p. 43).

In 1998, Hudson and Shepherd showed that ski resorts have been prioritizing service quality in order to gain a competitive advantage. More recently, Ismert and Petrick (2004) stated that human resource issues are becoming the most pressing issue for the ski industry.

The summer camp industry has long depended on seasonal employees and relied on them to provide competitive advantage by creating and delivering exceptional programs and customer service that are sought by kids and parents alike. In fact, one of the first studies of seasonal employee retention was done in the summer camp setting. Becker (1983) examined the subject of summer camp employee retention by applying Herzberg’s two-factor theory (Herzberg, 1971; Herzberg, Mausner, & Snyderman, 1959). Herzberg’s two-factor theory identifies elements in the workplace that lead to satisfaction (motivator factors) or dissatisfaction (hygiene factors). According to the theory, employers who attend to hygiene factors (such as job security, salary, and organization policies) may decrease employees’ dissatisfaction but are unlikely to create job satisfaction. Creating satisfaction on the job comes from motivator factors such as recognition, opportunity for advancement, and responsibility. For his study, Becker translated hygiene and motivator factors into the summer camp employee’s job experience and constructed a 30-question survey.

Herzberg’s two-factor theory and Becker’s survey have since been used as the basis for a few other studies related to camp employee retention (DeGraaf, 1992; Hoff et al., 1988; Magnuson, 1992). Although Becker and DeGraaf focused their studies only on camp counselors, Magnuson extended her study to include all seasonal employees, a more
appropriate investigation because other positions in camps can be significantly different from that of camp counselor, and these jobs are at least equally challenging to fill and are often filled by returning employees. Each of the studies seemed to show support for Herzberg’s theory and suggested that motivating items are more influential than hygiene factors in an employee’s decision to return to camp.

Generally speaking, job satisfaction is an adequate approach to the study of turnover and retention. Job satisfaction and organizational commitment are the two most frequently tested attitudinal constructs for studying employee turnover (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001). Moreover, empirical results have consistently suggested that both job satisfaction and organizational commitment have statistically significant negative relationships with intention to voluntarily turnover (e.g., Jaros, 1997; Meyer & Allen, 1997). This information would seem to support the suitability of the summer camp employee retention studies, which all approach the issue from the perspective of job satisfaction. However, in all of those studies, Herzberg’s theory is used as the theoretical foundation, although it is not the only framework available for job satisfaction research. Therefore, the question must be asked whether Herzberg’s theory is an appropriate model for studies that aim to influence management decisions around retention.

Although Herzberg’s contributions are widely applauded by organizational behavior scholars for their focus on job elements, his theory has been widely criticized (Greenberg & Baron, 1993). Wagner and Hollenbeck (1998) pointed to four “criticisms” of Herzberg’s theory: (a) subjects were asked to recall earlier feelings and experiences, (b) interviewees were male professionals in technical fields (such as engineering and accounting), (c) other studies have failed to replicate Herzberg’s results, and (d) work design programs based on Herzberg’s model usually fail to stimulate workforce satisfaction.

Although Wagner and Hollenbeck (1998) suggested that other studies have failed to replicate Herzberg’s studies, it appears that the only studies on summer camp staff retention (Becker, 1983; DeGraaf, 1992; Hoff et al., 1988; Magnuson, 1992) have done just that. A closer look at those studies, however, may provide insights into this contradiction. Becker’s (1983) 30-question survey, which was used as the basis for subsequent studies, contains elements that have more to do with the camp culture (i.e., living conditions, food, and social relationships) than the elements of the job itself. In Magnuson’s (1992) study, for example, the dimension that participants ranked the highest was the “personal” dimension, which includes items related to interpersonal relationships. If interpersonal relationships are one of the main benefits to working at summer camps, as is suggested by Chenery (1994), Bialeschki et al. (1998), and DeGraaf and Glover (2002), perhaps some other phenomenon related to these factors is at play and influenced the Herzberg-based studies.

**Psychological Sense of Community**

Psychological Sense of Community served as the theoretical frame for this study. Although psychologists had been talking about sense of community (SOC) for years, most credit Seymour Sarason (1974) for establishing the concept in his seminal work on the subject. After several years of psychologists studying SOC, McMillan and Chavis (1986) developed a theory by identifying the elements that work together to produce the experience of SOC. They proposed the following definition for SOC: “Sense of community is a feeling that members have a belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (p. 9). Their work stands today as the only recognized theory for the notion of SOC, in both geographic and relational contexts, and has acted as the framework for most studies done in this area. Their proposed model has four elements that together make up SOC. The first element is membership, which describes the sense of belonging that community members feel. Influence addresses members’ sense of mattering and making a difference to the group. The third element is integration and fulfillment of needs. This is the feeling that members’ needs will be met by the resources provided by their membership in the community. The last element is shared emotional connection, which is the commitment and belief that members have and will continue to have shared experiences together.
The element of membership has five attributes including boundaries, personal investment, sense of belonging and identification, emotional safety, and common symbol systems. The research on summer camp employees seems to fit nicely with these five attributes. Employees in the Bialeschki et al. (1998) study referred to a sense of belonging that is unique to the camp environment. Moreover, summer camp traditions, songs, and rituals go along well with the above-mentioned symbol systems.

There seems to be little doubt that retaining summer camp employees is a critical concern for camp leaders. Yet to date, few studies have addressed this topic. Moreover, the studies that have examined this issue in summer camps (e.g., Becker, 1983; DeGraaf, 1992; & Magnuson, 1992) have used the Herzberg model, which has been questioned in the management literature. Although the amount of research that has been conducted with a focus on summer camp employees is minimal, some clear patterns still emerge. Almost without exception, interpersonal relationships, community spirit, and development of social skills emerge as important themes in each study. For these reasons, a study of summer camp employee retention using psychological SOC as a theoretical framework seemed more than justified.

Method

Subjects

This study sampled 1,881 employees from 46 residential summer camps during a three-week period approximately one month before most of the camps began staff training. These camps represented a diverse range of size, geographic region, agency affiliation, and camper gender (Table 1). Previous studies of summer camp employees (Becker, 1983; DeGraaf, 1992; Henderson, 1982; Henderson & Bialeschki, 1993; Lyons, 2000; Magnuson, 1992) have taken place during the summer camp season, presumably to take advantage of participants being gathered in one geographic area. For this study, however, the researchers felt it was important to survey participants during the summer camp “off-season” as the decision to return to camp (or not return) is made during this time. Also, because one of the criticisms of the few previous studies of camp employee retention is that only those employees who returned to work at the same camp (“returnees”) were surveyed, the researchers wanted to include those who were not returning to camp (“non-returnees”) in this study.

Procedure

The attempt to survey employees during the summer camp off-season presented a challenge in reaching participants because they were scattered around the world. In order to obtain a sizeable sample from a wide range of camps during the summer camp off-season, a Web-based survey was used in this study. Dillman (2000) explained that with certain populations the increased reach and reduced expense of electronic surveys can help to increase the percentage of the target population sampled. Since a large portion of the sample population in this study was in their late teens and early 20s (most of them college students), it seemed reasonable to expect that a large percentage would have access to e-mail and familiarity with the Internet. In fact, according to Jones, Johnson-Yale, Millermayer, and Perez (2009), in 2005, 94% of college students used the Internet for at least one hour every day. Moreover, in preparing for this study, the researcher did not encounter a single summer camp that did not use e-mail to correspond with its summer camp employees. These data supported the use of an Internet-based survey with the target population, without unreasonably increasing the chance of sampling bias.

Camps provided the researchers with two e-mail lists of employees from the previous season: one list for employees expected to return for the upcoming summer and one list for the employees who were not expected to return. These lists helped the researchers understand how many “returnees” and “non-returnees” they were attempting to contact and were used to determine response rates for each group. All participants were further asked on the survey to confirm whether they would be returning to camp for the upcoming summer.
Table 1

*Descriptions of the Camps (n = 46)*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Camps by Geographic Region</strong></td>
<td></td>
</tr>
<tr>
<td>Midwest (IN, MI, MN, MO, ND, OH, WI)</td>
<td>18</td>
</tr>
<tr>
<td>Northeast (CT, MA, ME, NH, NJ, NY, PA)</td>
<td>11</td>
</tr>
<tr>
<td>West (AK, CA, CO, OR, WA)</td>
<td>10</td>
</tr>
<tr>
<td>South (AL, FL, MS, NC, OK, TX, WV)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Camps by Affiliation</strong></td>
<td></td>
</tr>
<tr>
<td>YMCA</td>
<td>12</td>
</tr>
<tr>
<td>Independent for-profit</td>
<td>11</td>
</tr>
<tr>
<td>Miscellaneous Christian (non-Catholic)</td>
<td>8</td>
</tr>
<tr>
<td>Catholic Youth Organization (CYO)</td>
<td>6</td>
</tr>
<tr>
<td>Girl Scouts</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td><strong>Camps by Size</strong></td>
<td></td>
</tr>
<tr>
<td>Large (over 70 staff members)</td>
<td>5</td>
</tr>
<tr>
<td>Medium (30–69 staff members)</td>
<td>22</td>
</tr>
<tr>
<td>Small (under 30 staff members)</td>
<td>19</td>
</tr>
<tr>
<td><strong>Camps by Camper Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Boys only</td>
<td>5</td>
</tr>
<tr>
<td>Girls only</td>
<td>11</td>
</tr>
<tr>
<td>Coed</td>
<td>27</td>
</tr>
<tr>
<td>Mixed session</td>
<td>3</td>
</tr>
<tr>
<td><strong>Camps by Return Rate</strong></td>
<td></td>
</tr>
<tr>
<td>Above 70%</td>
<td>2</td>
</tr>
<tr>
<td>60% – 69%</td>
<td>7</td>
</tr>
<tr>
<td>40% – 50%</td>
<td>22</td>
</tr>
<tr>
<td>30% – 39%</td>
<td>7</td>
</tr>
<tr>
<td>Below 30%</td>
<td>8</td>
</tr>
</tbody>
</table>

This study involved 46 residential summer camps accredited by the American Camp Association (ACA) and represented a wide range of sizes, affiliation, and geography (Table 1). These camps were contacted using information obtained from the ACA website, with that organization’s permission, and asked to participate in the study. In total, 1,881 employees appear to have been successfully contacted, though it is impossible to know how many of these e-mail addresses were actively used by employees during the 3-week survey period. Of these 1,881 employees, 1,053 were non-returnees and 828 were returnees.

**Sense of Community Index**

The Sense of Community Index (Perkins et al., 1990) is based on the theory developed by McMillan and Chavis (1986) and as such is one of the few measures of community that is grounded in psychological theory (Chipuer & Pretty, 1999). Using a Brunswik’s lens methodology (as cited in Chavis, Hogge, McMillan & Wandersman, 1986), Chavis et al. (1986) used 21 judges to identify 23 open- and close-ended items that identified SOC. The items were then placed into four subscales corresponding to the four theoretical dimensions of the SOC theory as described in the literature review. Because of the open-ended questions, the instrument proved to have limited use, so Chavis et al. (1986) developed a 12-element true–false scale known as the Sense of Community Index (SCI).
The SCI produces a score for each participant ranging from 0 to 12 with the higher scores indicating a higher SOC.

Per the recommendations of the instrument’s authors, a change in instructions for this study replaced the words *neighbors* and *block* with *fellow staff members* and *camp*. Changes of this type are quite common for this instrument as it has been used successfully to measure SOC in many different settings including, adults in the workplace (Burroughs & Eby, 1998; Klein & D’Aunno, 1986; Pretty & McCarthy, 1991; Pretty, McCarthy, & Catano, 1992), religious communities (Miers & Fisher, 2002), immigrant groups (Sonn & Fisher, 1996), college students (McCarthy, Pretty, & Catano, 1990; Pretty, 1990), Internet communities (Obst, Zinkiewicz, & Smith, 2002), residential neighborhoods (Chipuer & Pretty, 1999; Kingston, Mitchell, Florin, & Stevenson, 1999; Pretty, Andrews, & Collett, 1994), and union participation (Catano, Pretty, Southwell, & Cole, 1993). Moreover, a pilot test for this survey was conducted with 25 former camp employees. All pilot test participants were interviewed after completing the survey to ensure that the word changes to the SCI (i.e., *camp* instead of *neighborhood*) were correctly understood.

Evidence of the SCI’s construct validity has been reported in many studies including Pretty (1990), McCarthy et al. (1990), and Perkins et al. (1990). In past studies, the reliability coefficient of the SCI has been reported as .71 and .80 (Pretty & McCarthy, 1991). Despite the many studies that have shown the SCI to be a valid measurement instrument, it has been the subject of some criticism (Chipuer & Pretty, 1999; Long & Perkins, 2003; Obst & White, 2004; Peterson, Speer, & Hughey, 2006). The reliability of the SCI as a measurement of overall SOC measurement has been adequate; however, its use as a measurement of the four dimensions of SOC has shown inconsistent and low reliability. With the exception of Long and Perkins (2003), these criticisms have still supported the overall use of the SCI, but have challenged the use of the instrument as a measurement of the four dimensions. Long and Perkins questioned the overall use of the SCI and offered an alternative instrument, but that instrument was subsequently criticized for providing “little theoretical justification for this shift to a new dimensional structure” (Obst & White, 2004, p. 694). Moreover, Long and Perkins’ assessment of the SCI, which used confirmatory factor analysis (CFA), was later criticized on the grounds that CFA is inappropriate for a theory-based instrument (Chavis, Lee, & Acosta, 2008). After the Long and Perkins criticism, the general consensus among community psychology scholars seemed to be summarized by Obst and White (2004) who write, “Whereas a growing body of evidence points to the inadequacy of the current SCI to measure these four dimensions, the present findings indicate that the SCI does have good internal consistency as a measure of overall Sense of Community” (p. 703).

**Data Analysis**

The SCI produced scores from which means for the returnees and non-returnees were calculated, and independent *t*-tests were used to compare SCI mean scores. For comparisons among variables with more than two means, within subjects Analysis of Variance (ANOVA) was conducted to detect statistically significant differences in mean scores. If an ANOVA indicated statistically significant differences among means, the Ryan–Einot–Gabriel–Welsch Q post hoc test was used to identify specific groups within the variable whose mean SCI scores differed in a statistically significant way. Howell (2002) recommended the Ryan procedure for analysis such as is required by this study because it maintains the family-wise error rate at α, much like the Tukey test, but also allows the critical difference between means to shrink as the number of means in a set increases, something the Newman–Keuls test does, but Tukey does not. Although the Fisher Least Significant Difference test (LSD) identified many more statistically significant comparisons within the tested variables, it is not recommended for variables with more than three means (Howell, 2002). For this study, only one variable, camp size, involved the comparison of three means. In this case, all post hoc tests produced the same results. Other tests, such as Bonferroni and linear contrasts are best suited for a priori comparisons. A significance level of $p \leq .05$ was used for all tests.

Effect size was calculated for all significant mean differences using Cohen’s *d*. According to Cohen, an effect size of .20 represents a small effect, but is probably meaningful (Howell, 2002). An effect size of .50, according to Cohen, represents a medium
effect that “most people would be able to notice” (Howell, 2002, p. 206), while an effect size of .80 represents a large effect. Cronbach’s alpha was used to compute internal reliability of the dichotomous variables. Cronbach’s alpha is analogous to the Kuder Richardson formula 20 (KR20) and produces the same results.

Results

The survey took place approximately one month before the start of the summer camp season, well after returning employees from the previous season would have signed contracts to return. The 953 employees who responded represented a 51% response rate of the 1,881 employees whose e-mails were not returned because of bad addresses. Of these, 37 were not used in the analysis due to either incomplete data or because the surveys were completed by minors. Although it is likely that this response rate is actually higher because some of the e-mail addresses provided by the camps may have been incorrect or abandoned but did not elicit a “dead” e-mail address response, the 51% response rate achieved by this study appears to be very strong.

Although the camps provided separate e-mail lists for the returning and non-returning employees, participants were asked on the survey whether they intended to return to the same camp for the upcoming season. A total of 428 returnees and 488 non-returnees completed the survey. Although more non-returnees completed the survey, these numbers represent a lower return rate for non-returnees (46%) compared to returnees (52%) as more non-returnees were invited to participate. Because there was concern that many of the non-returnees would have wanted to return to camp but couldn’t for a number of reasons (i.e., required college classes, new full-time jobs, and internship requirements) those who indicated that they would not be returning to the same camp were asked if they “wanted to return.” The results of this survey item were used to address the second research question involving desire to return to camp. Of the 488 non-returnees, 324 (67%) indicated that they wanted to return, even though they did not.

The mean SCI score for all 916 analyzed respondents was 10.48 on a scale of 0 to 12, with 12 indicating the highest level of SOC. The Cronbach’s alpha for the SCI was .77. A comparison of the mean SCI scores for those who actually returned and those who did not return not only showed a statistically significant difference, but also showed a strong effect size (Table 2). These results add support to the first hypothesis that returnees have higher SOC levels than non-returnees. Moreover, the SOC scores for the non-returnees who “wanted to return” (M = 10.60) were significantly higher (p < .001) than those who did not “want to return” (M = 8.12) with an exceptionally high effect size of 1.10 (Table 3). This adds support to the second hypothesis that those with a desire to return to camp, even if they don’t, have higher SOC levels than those who do not have a desire to return to work at camp. A final comparison between the mean SCI scores of returnees (M = 11.28) and the non-returnees who “wanted to return” (M = 10.60) showed that returnees had significantly higher SCI scores (p < .001) with an effect size of 0.46 (Table 4). This difference in SOC between those who reported they wanted to return and those who actually did return lends some support to those camp managers who believe that if someone feels a strong enough SOC to a camp that person will find a way to return.

Table 2

Differences Between Employee Return Status

<table>
<thead>
<tr>
<th>Sense of Community</th>
<th>Return status</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t(914)</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returnees</td>
<td>428</td>
<td>11.28</td>
<td>1.18</td>
<td>11.77</td>
<td>&lt; .001</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>Non-returnees</td>
<td>488</td>
<td>9.78</td>
<td>2.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Of the 48 camps that participated in this study, 10 had employee return rates of 70% or higher, while eight camps had return rates below 30%. An analysis of SCI scores showed that employees from the camps with return rates of 70% or higher had significantly higher SCI scores ($p = .019$) than the employees from camps with return rates below 30%, with an effect size of .78 (Table 5). This result supports the third hypothesis that camps with higher return rates have employees with higher SOC scores. Also relevant to this, but less directly, is the variable of camp size. In this study, the camps with the most seasonal employees (more than 65) had significantly lower SCI scores than the medium (26–65 employees) and small camps (25 or fewer employees). It should be noted that although these differences were statistically significant ($p = .011$; Table 6), the effect sizes for these comparisons were low (0.22 and 0.24, respectively). However, combined with the fact that the larger camps also had lower return rates (26.3%) than smaller (48.8%) and medium sized camps (45.5%), these results seem to add some level of additional support for the notion that SOC and retention of these seasonal employees were related.

Table 3

<table>
<thead>
<tr>
<th>Sense of Community</th>
<th>Return status</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t(486)</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Wanted to return” non-&lt;returnees</td>
<td>324</td>
<td>10.60</td>
<td>1.705</td>
<td>12.3361</td>
<td>&lt; .001</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>Did not “want to return” non-returnees</td>
<td>164</td>
<td>8.12</td>
<td>2.713</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4

<table>
<thead>
<tr>
<th>Sense of Community</th>
<th>Return status</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t(750)</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returnees</td>
<td>428</td>
<td>11.28</td>
<td>1.180</td>
<td>6.4577</td>
<td>&lt; .001</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>“Wanted to return” non-returnees</td>
<td>324</td>
<td>10.60</td>
<td>1.705</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Sense of Community</th>
<th>Return rate</th>
<th>Number of camps</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t(255)</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥70%</td>
<td>10</td>
<td>58</td>
<td>11.31</td>
<td>1.079</td>
<td>4.46</td>
<td>&lt; .001</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>&lt;30%</td>
<td>8</td>
<td>199</td>
<td>9.89</td>
<td>2.352</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6

<table>
<thead>
<tr>
<th>Camp Size</th>
<th>Number of camps</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F(826)</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (&lt;30 staff members)</td>
<td>19</td>
<td>199</td>
<td>10.67</td>
<td>1.96</td>
<td>4.51</td>
<td>.011</td>
<td>.24</td>
</tr>
<tr>
<td>Medium (30–70 staff members)</td>
<td>22</td>
<td>439</td>
<td>10.62</td>
<td>1.83</td>
<td></td>
<td>.22</td>
<td></td>
</tr>
<tr>
<td>Large (over 70 staff members)</td>
<td>4</td>
<td>191</td>
<td>10.14</td>
<td>2.44</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. A post hoc test using the Ryan REGWQ identified significant differences for the following comparisons: Small vs. Large (.24 effect size) and Medium vs. Large (.22 effect size).

Discussion

Few studies have examined issues related to summer camp employees. Although some studies have addressed the issue of employee retention (Becker, 1983; DeGraaf, 1992; Hoff, et al., 1988; Magnuson, 1992), none have involved non-returning employees in large numbers. Moreover, although SOC is often talked about in summer camp circles, the authors have not identified any study that has examined summer camps from the perspective of SOC.

This study, however, is not completely unlike the few other studies involving camp employees. The camp studies that focused on the motivations to work at summer camp (Becker, 1983; DeGraaf, 1992; Hoff et al., 1988; Magnuson, 1992) all identified factors related to SOC (such as interpersonal relationships) as among the most important motivators to working at camp. The study done by Bialeschki et al. (1998) involved interviews with summer camp employees about the benefits of working at camp. One of the quotes used to summarize that study’s findings even mentions SOC specifically: “Camp staff talked of the bonds established and the feeling that they were developing their own sense of community and family” (p. 28).

Although SOC has not been examined as a contributing factor in camp employee retention until now, all of the above studies made mention of the issue of camp employee retention to varying extents, and all mentioned the importance of relationships with others at camp. In this sense, the findings of the present study seem to support and complement past studies involving camp employees.

Implications for Management

The implications of this study for summer camp managers focus on three important human resources issues at camps: retention, recruitment, and development (both organizational and individual). These issues and the findings of this study related to these issues also have relevance to seasonal employees in broader areas of the leisure service industry.

Retention. As stated in the introduction, the retention of camp employees has been identified as an important issue for camp leaders and employers of seasonal employees in other contexts, and improving retention can have some important positive consequences for any organization. The results of this study support the premise that higher SOC is related to the retention of summer camp employees. For camps actively trying to improve seasonal employee retention rates, this study can provide focus and help in guiding them as they implement changes to their policies and practices. Knowing that developing SOC can lead to improved employee retention is helpful, but understanding the SOC model could help identify specific actions for camps to take to improve retention. For example, the SOC element of membership involves a sense of belonging as well as the identification and the understanding of common symbols. One specific action that a camp could take would be to
pair a new employee with an experienced employee before camp begins. Whether the two go to the same university, are from the same town, or correspond electronically through e-mail or social media (such as Facebook), such a pairing could go a long way in helping a new employee feel as though he or she is a member of the camp community. Perhaps the returning employee could explain some of the traditions, sayings, songs, and props (common symbols) that exist at camp, so when these things inevitably come up in the first days of staff training, the new person might feel less like an outsider. At the very least, knowing someone at the camp, especially someone who can introduce a new person to others, can help a new employee to feel as though he or she is on the inside of community boundaries. At the same time, the returning employee is given a role of responsibility in which they are able to use their knowledge and experience to contribute to the camp community. This can also help them experience a higher level of influence, one of the other SOC elements.

**Recruitment.** It seems likely that no camp expects to have a 100% return rate of employees every year. Most camp managers likely realize that many seasonal employees eventually graduate from college and take on full-time jobs that prohibit them from returning to camp over time. However, if camps could initially hire the right employees at age 17 or 18 and work to retain them, they might reasonably expect to retain them for three to five years.

The analysis of the effect of personal factors on SCI scores might provide insights into helping camps develop sound recruiting strategies. For instance, although it was not directly related to the main research question of this study or the tested hypotheses, the present study showed that experience as a camper at the referent camp was linked to higher SCI scores. Knowing this, a camp might put additional resources into developing a pipeline of future employees from the ranks of campers. Many camps have Counselor in Training (CIT) programs to help campers make the transition from camper to employee. However, those programs range widely in quality and commitment (ACA, 2002). If a camp makes a decision to create a development program for future employees from within the camp, it might either dedicate more resources to its CIT program or lower (or eliminate) tuition for its leadership development programs.

**Development.** The previous example of an experienced employee mentoring a new employee is a small but clear example of how this study could inform how camp managers develop employees. Individual development is most effective through experiences and new opportunities rather than through verbal direction and training workshops (Dragoni, Tesluk, Russell, & Oh, 2009). Camp leaders who empower their employees by giving them additional roles and responsibilities to make an impact on the camp could improve levels of influence for those employees and thereby increase their SOC.

Moreover, understanding the four elements and factors that impact SOC could have implications for organizational development decisions, such as those involving training design, facilities, and policies that affect employee interaction. Staff training, both initial and ongoing, could also have a large impact on all of the elements of SOC. Training activities can be designed to orient and socialize new employees and break down barriers among existing groups within the camp, increasing a feeling of membership. Staff training can, and should, satisfy many needs for employees, such as social needs, specific skill needs, and general competency needs. At the same time, training satisfies a camp’s need for effective employees. Allowing employees to be involved in the training could increase their feeling of influence, and the experience of going through a staff training program could create a shared emotional connection as employees reflect on their past shared experience.

Facilities at camps can also affect the development of the camp community. For example, the size, location, and amenities of staff lounges can affect how employees interact with one another during their time away from campers. This interaction can also have a large impact on the support systems that form among employees. Similar to facilities, policies, especially those that deal with time off, can also greatly impact the frequency and quality of the interaction between employees and can help produce the shared experiences that build an emotional connection and commitment to stay together.
Limitations and Future Research

Limitations

This study has several limitations. First, although results showed strong support for the relationship between SOC and employee retention, this was not an experimental study, and therefore cause and effect cannot be attributed to the relationship. Other limitations concern generalizability. This study was conducted with residential summer camps, which are unique with regard to living arrangements, work hours, and policies for things such as time off. All of these things would seem to have a distinct effect on SOC as the organization and the living arrangements (meals, lodging, etc.) at residential summer camps are one in the same. For this reason, although other types of organizations might find these results useful, generalization would require further study. Similarly, although the 46 participating camps were diverse with regard to location, agency affiliation, size, and the gender of campers served, they still represented a very small percentage of all summer camps, which restricts generalizability to other residential summer camps. Moreover, the selection of camps was not randomly sampled, but rather responded to a request to participate, a sampling design that also restricts generalizability. The response rate is another limitation. Although the rate of 51% is strong when compared to other comparable studies that used unsolicited Web-based surveys, this rate also limits generalizability.

Although the researchers intentionally chose to conduct this study during the camp off-season because that is when staff members make their decisions to return, data was collected about six to eight weeks before the summer season began, and therefore most staff members had already made their decision about whether they would be returning to camp. This timing allowed the researchers to identify returnees and non-returnees for comparison purposes, but it meant that SOC was measured after the return decision had been made.

Future Studies

Future studies could examine whether the link between SOC and employee retention exists in non-camp work environments. Such studies would provide valuable information for the industries involved, and the results could help camps to better understand the results of the present study through comparison. Studies could be conducted involving other organizations that rely on seasonal employees in recreation and leisure services, such as lifeguards, summer recreation program staff, ski resort employees, and service workers in seasonal tourist areas. Future studies could also examine structures with similar characteristics to camps with regard to combined living and working quarters, such as employees at large amusement parks that provide dorm-style housing to employees or employees at national parks. Another suggestion for further research would be to examine the success of initiatives to build SOC. Such a study could help to determine (a) which SOC initiatives actually raise SOC levels among employees and (b) whether retention rates change in direct relationship to SOC scores.

Finally, a study could examine the relationship between SCI levels and job performance levels. Many camp managers familiar with this study have asked something to the effect of “What if we don’t want them to come back? Not all retention is good.” The researchers’ standard answer to this concern is that retention initiatives, regardless of the approach, need to be combined with effective performance management. The goal is not to have every seasonal employee return, but rather to increase the odds that the employees that managers want to return, will. In their effort to suggest that turnover can serve a functional purpose, Dalton and Todor (1993) reinforced this notion when they suggested that the focus should not be on how many people leave, but rather on who leaves. Past studies on SOC have identified several benefits to retaining employees who have high SOC (Burroughs & Eby, 1998; McCarthy et al., 1990; McMillan & Chavis, 1986; Pretty & McCarthy, 1991; Pretty et al., 1992). The implication is that employees with high SOC will be superior performers. It would be a worthwhile endeavor to examine that assumption.
Conclusion

Many factors in today’s society are making it more difficult for organizations to attract and retain seasonal employees. With the increasing need for potential seasonal employees to pay for higher education costs, complete internships required as part of degree programs, and develop career-specific skills, many managers are finding it more difficult to sell today’s young adults on seasonal employment in the leisure service industry. It is therefore not surprising that employee retention has consistently been identified as one of the most critical issues facing leisure service managers. Improved retention rates would provide cost and time savings, allowing managers to spend more resources developing programs, and would send a positive message to program participants, parents, volunteers, and contributors.

The literature on summer camp employees suggests that interpersonal relationships and connectedness with others are among the top benefits and motivations for working at summer camp. This indicates that although previous studies have looked at the issue of camp employee retention from the perspective of job satisfaction, a better indicator of intention to return to camp might be SOC.

The results of this study offer guidance to summer camp managers and other employers of seasonal employees interested in addressing retention issues within their organizations. An experienced camp employee perhaps sums up the results of the study best when she wrote on her survey:

Our camp community is more than a group of people working together, it has become a source of inspiration, support, and fond memories. Working at [camp] is unique because no one fits into a mold or is expected to fill a specific role, each of us brings something very different to camp, we are a diverse group and for me this diversity makes us more than a community, and rather an extended family. This is what keeps me coming back.

The results of this study suggest that focusing on SOC would be a worthwhile effort.

References


Assessing the Cost Effectiveness of a Community Rail-Trail in Achieving Physical Activity Gains

Christiaan G. Abildso
Sam J. Zizzi
Steve Selin
Paul M. Gordon

EXECUTIVE SUMMARY: Increasing physical activity has become an important goal for many parks and recreation agencies. Recreation programming and infrastructure changes to increase physical activity are recommended as effective; however, cost-effectiveness evidence is lacking. The purpose of this research was to conduct secondary analysis of existing data to assess the cost-effectiveness of constructing a community trail in affecting community physical activity. Cost-effectiveness ratios were calculated by comparing annualized trail costs, ascertained in 2006, with three physical activity promotion effectiveness outcomes calculated by combining objective trail sensor counts and self-reported physical activity from intercept surveys collected in 2001: (a) community users becoming more physically active due to trail use, (b) community users newly active because of the trails, and (c) community users reporting they met physical activity recommendations because of trail use. The resulting ratios (per user; in 2011 USD) were $122.64, $329.22, and $157.27, respectively, for the outcomes mentioned above, suggesting that building a community trail is a cost-effective approach to increasing community physical activity. Furthermore, parks and recreation professionals should note that increasing annual maintenance and marketing costs to increase the number of trail users may be the most cost-effective method of increasing trail use. Extrapolating our findings to the entire United States population could result in reducing the number of sedentary adults by approximately 300,000 at a cost of just under $100 million annually, or 0.22% of the $44.82 billion spent by the federal government on highways in 2008.

KEYWORDS: Built environment, rail-trail, cost-effectiveness, physical activity, public health

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Chronic diseases attributable to physical inactivity have emerged as a major public health concern for the 21st century. Inactivity and sedentary lifestyle have been linked to increased prevalence of 25 chronic diseases (Lees & Booth, 2005) and approximately 365,000 deaths annually in the United States (Mokdad, Marks, Stroup, & Gerberding, 2005). The Task Force on Community Preventive Services recommends increasing physical activity in community recreation programs through the introduction, expansion, or improvement of places for physical activity (Centers for Disease Control and Prevention, 2001; Kahn et al., 2002). A growing body of research is demonstrating that parks and recreation providers can motivate greater physical activity through appropriate community recreation infrastructure such as walking and biking trails and other recreation resources (Rosenberger, Sneh, Phipps, & Gurvitch, 2005). Among physical activity settings, community trails have been especially important in recent years, specifically those built through the conversion of abandoned rail beds. These rail-trails provide level-grade surfaces for many physical activities, including walking, jogging, bicycling, and in-line skating. As of September 2010, 1,683 rail-trails were open, spanning 19,872 miles; 721 more trails consisting of 9,232 miles were in development (Rails-to-Trails Conservancy, 2011). Studies indicate trail use positively impacts physical activity in a surrounding community (Brownson et al., 2000; Evenson, Herring, & Huston, 2005; Troped et al., 2001), especially in new exercisers (Gordon, Zizzi, & Pauline, 2004).

Recreation programs designed to promote physical activity should be chosen based on likely potency and cost-effectiveness (King, Stokols, Talen, Brassington, & Killingsworth, 2002). With regard to rail-trails, evidence supporting the latter is lacking. To date, economic analyses have only been conducted on one set of trails, in Lincoln, Nebraska (Wang et al., 2004a; Wang et al., 2004b; Wang et al., 2005). Those seminal studies showed the annual cost of five trails was $235 (2002 USD) per user (Wang et al., 2004b). Furthermore, the ratio of direct medical cost saved per dollar spent on construction and maintenance was estimated to be $2.94 (Wang et al., 2005), and the cost per user becoming more physically active was $98 (2002 USD; Wang et al., 2004a). Calculations used in these studies may have overstated the number of community members impacted by the trails by surveying trail users and counting trail use on only one day. Furthermore, no mention was made whether the trail count used was adjusted to eliminate double counting of individual trail users. The counts assume the outcome percentages of people that used the trails on that one day would be the same over the course of a year. The counts may more appropriately be thought of as trail uses rather than the number of trail users in the surrounding community truly impacted by the trail.

The purpose of this study was to assess the cost-effectiveness of the Caperton and Deckers Creek rail-trails in Morgantown, West Virginia, a community of 29,660 residents in Central Appalachia (U.S. Census Bureau, 2012). Though it may have significant economic and tourism benefits, the primary public health effect of a trail may best be measured by the impact it has on the physical activity behaviors of the residents of the surrounding community.
community. Additionally, the assessment of costs incurred should include a full accounting of land acquisition and preparation, site engineering, and marketing expenditures. Therefore, the cost effectiveness of the trails in the current study was analyzed by comparing the land acquisition, site preparation, construction, and annual maintenance and marketing costs with the following effects: (a) community users becoming more physically active due to trail use, (b) community users newly active because of the trails, and (c) community users meeting physical activity recommendations because of trail use.

Method

Secondary analyses of infrared trail count and on-trail intercept survey data were used for this study of the Deckers Creek and Caperton trails in North Central West Virginia. Both projects were approved by the West Virginia University Institutional Review Board for the Protection of Human Subjects. These trails are part of a larger system of 51 miles of rail-trails in three counties in North Central West Virginia (see Figure 1). The Deckers Creek Trail runs parallel to the creek after which it is named for 19 miles through Monongalia and Preston Counties. The 3 miles of this trail within Morgantown city limits are asphalt. This trail intersects the Caperton Trail at the Monongahela River near downtown Morgantown. The Caperton Trail is a 6-mile asphalt trail paralleling the river within Morgantown city limits.

**Figure 1.** Map of Rail-Trails of North Central West Virginia
Trail Use and Physical Activity

Trail use information was gathered via infrared counts of daily trail use and on-trail user intercept surveys. Infrared trail user counts were taken over the span of eight weeks from mid-September to mid-November 2001. Two infrared counters (Engineering Performance Services Inc., St. Louis, MO) were mounted at various locations along each trail during the period of data collection. Each sensor and its power source (i.e., 12-volt battery) were placed in a secured metal utility box and mounted on 4-by-4 wooden posts at a sufficient height to record adult trail users and not small animals or children less than 4 feet in height. The infrared light was projected across the trail onto a receiver in a comparable metal box. A smart card was used to record and store time of day and data counts. Smart cards were replaced every other day, and the retrieved cards were downloaded onto a laptop computer. Time of day, weather, and sensor hits were imported into an Excel data file. Daily sensor hits were averaged for each trail, summed, and multiplied by 66.7% to reduce potential double counting of people tripping the sensors twice on a round-trip and estimate the number of unique trail users per day. This factor (66.7%) conservatively estimated the unique trail users, striking a balance between the most conservative estimate (assuming all users completed a round-trip, 50% factor) and the least conservative estimate (assuming no round-trips were completed, no reduction factor). This estimate was comparable to that obtained from piloting work performed to validate electronic sensors and during the trail intercept survey (Gordon et al., 2004). In short, during piloting, investigators positioned themselves near sensors and obtained observational counts and noted type of activity (i.e., walking, jogging, cycling) being performed and repeat trail use in order to validate the sensor counts. The location of trail access points and parking, which were utilized during intercept surveying, further confirmed this estimate.

Patterns of physical activity and trail use were gathered through on-trail user intercept surveys conducted at various locations and times of day on the trails over a four-week span in the summer of 2001. Detailed methods are available elsewhere (Gordon et al., 2004). To ensure against repetition, each respondent was first asked if they had already been surveyed. Data gathered included demographic information, exercise history, and trail use and general physical activity patterns. Survey respondents (n = 414; 98% response rate) were asked to indicate the number of days they spent per week doing their primary and secondary on-trail activities. The sum was used as the average number of trail uses per week per user. Users averaging one or more trail uses per week were assumed to be repeat trail users (RTUs) from the surrounding community, and as a result of expected weekly trail use, these data provide a snapshot of the profile of RTUs for the entire year.

The method for calculating this novel outcome is described below along with an example. The total number of RTUs was calculated by first multiplying the number of trail users per day (66.7% of the average daily sensor hits) by the percentage of survey respondents in each of the seven average trail use days per week categories. Rather than estimating weekly RTUs by merely multiplying by 7, which may overinflated the estimate by counting the same person each time on the trail, each of these seven products was then multiplied by a factor calculated by dividing 7 (days per week) by the average number of uses per week per user. Users averaging one or more trail uses per week were assumed to be repeat trail users (RTUs) from the surrounding community, and as a result of expected weekly trail use, these data provide a snapshot of the profile of RTUs for the entire year.

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Trail Costs

Land acquisition, site preparation, trail construction, and annual marketing and maintenance costs for the trails were gathered through personal communication with the
City of Morgantown’s Board of Park and Recreation Commissioners (BOPARC) and the Mon River Trail Conservancy’s (MRTC) Board of Directors in July 2006. Costs were limited to the same 8.2-mile length of trail within city limits assessed for trail use. This was done because this was the first section of the trails to open, cost data were available as BOPARC is responsible for maintenance of this section of the trails, and trail use and survey data were gathered only on this section of the trails. Costs incurred for the entire 51 miles of the trails (i.e., land acquisition, engineering, routine maintenance, marketing) were divided evenly per mile and allocated to the 8.2-mile length of trail within city limits (16.1% of the trails).

Physical Activity Outcomes

Objective data from trail use sensor counts and self-report data from on-trail user surveys were used to estimate three physical activity effects of these trails on the surrounding community’s residents: (a) RTUs that increased physical activity since using the trails, (b) RTUs that were newly active since using the trails, and (c) RTUs meeting physical activity recommendations exclusively through trail use. The number of RTUs that increased physical activity since using the trails was the first outcome of interest. This was calculated by multiplying the number of RTUs by the percentage of intercept survey respondents that indicated they had increased their amount of physical activity since using the trail. The second physical activity outcome was the number of RTUs that were newly active since using the trails. Users were asked during the intercept survey if they exercised regularly prior to using the trails. The percentage that responded no was multiplied by the number of RTUs to arrive at the outcome of interest. The final outcome of interest was the number of RTUs that were meeting physical activity recommendations exclusively through trail use. In the intercept survey trail users were asked the type of activity they primarily performed on the trail and the number of days per week and minutes per day of that activity. Because the survey was conducted prior to the 2008 physical activity guideline revision by the U.S. Department of Health and Human Services, walking 30 or more minutes five or more times per week or performing 20 or more minutes of vigorous activity (e.g., biking, in-line skating, or running) three or more times per week was classified as meeting physical activity recommendations.

Results

Trail Use

Complete daily sensor hit data was gathered for 21 and 27 days on the Caperton and Deckers Creek Trails, respectively. Complete daily data was defined as sensors registering no problems and maintaining power and counts for at least 18 hours of the day, including peak afternoon hours on weekends and peak evening hours on weekdays. The average daily temperatures for the days on which data were collected were 64.5 ± 12.2° F and 45.3 ±10.5° F for the high and low temperatures, respectively. Precipitation was recorded on seven days.

On average, the sensors were tripped 449 times per day: 360.9 ± 149.4 on the Caperton trail and 88.2 ± 58.2 on the Deckers Creek trail. This yields a conservative estimate of 299.3 trail users per day (449 x 0.667). An estimated number of 744 RTUs used the trail per week for a total of 2,095.5 estimated weekly trail uses (see Table 1; 108,966 per year). Of the 414 on-trail surveys completed, 22.5% (n = 93) indicated they did not exercise regularly before using the trails, and 60.4% (n = 250) reported increasing their amount of exercise since using the trails. Users primarily walked (45.9%; n = 190) or bicycled (29.2%; n = 121) on the trails, with 47.1% (n = 195) reporting that they met physical activity recommendations strictly through trail use.
Table 1
Trail Use Sensor and Survey Data and Repeat Trail User Calculation

<table>
<thead>
<tr>
<th>Sensor data</th>
<th>Deckers Creek</th>
<th>Caperton</th>
<th>Adjustment</th>
<th>Daily trail users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hits, M ± SD</td>
<td>360.9 ± 149.4</td>
<td>88.2 ± 58.2</td>
<td>* 0.667</td>
<td>299.3</td>
</tr>
<tr>
<td>Survey data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days on trail per week</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)=(1)*(2)*3</td>
</tr>
<tr>
<td>One</td>
<td>7.6%</td>
<td>299.3</td>
<td>7/1</td>
<td>159.2</td>
</tr>
<tr>
<td>Two</td>
<td>20.8%</td>
<td>299.3</td>
<td>7/2</td>
<td>217.9</td>
</tr>
<tr>
<td>Three</td>
<td>22.5%</td>
<td>299.3</td>
<td>7/3</td>
<td>157.2</td>
</tr>
<tr>
<td>Four</td>
<td>16.5%</td>
<td>299.3</td>
<td>7/4</td>
<td>86.4</td>
</tr>
<tr>
<td>Five</td>
<td>18.2%</td>
<td>299.3</td>
<td>7/5</td>
<td>76.3</td>
</tr>
<tr>
<td>Six</td>
<td>7.8%</td>
<td>299.3</td>
<td>7/6</td>
<td>27.2</td>
</tr>
<tr>
<td>Seven</td>
<td>6.6%</td>
<td>299.3</td>
<td>7/7</td>
<td>19.8</td>
</tr>
<tr>
<td><strong>Weekly RTU</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>744.0</strong></td>
</tr>
<tr>
<td>Trail effect on PA</td>
<td>(1)</td>
<td>(2)</td>
<td>(3) = 1*2</td>
<td></td>
</tr>
<tr>
<td>More active trail user</td>
<td>% respondents</td>
<td>Weekly RTU</td>
<td>RTU Effect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60.4%</td>
<td>744</td>
<td><strong>449.4</strong></td>
<td></td>
</tr>
<tr>
<td>Newly active trail user</td>
<td>22.5%</td>
<td>744</td>
<td><strong>167.4</strong></td>
<td></td>
</tr>
<tr>
<td>Meeting PAR on trail</td>
<td>47.1%</td>
<td>744</td>
<td><strong>350.4</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Note: M = mean; SD = standard deviation; DTU = daily trail users; RTU = repeat trail users; PA = physical activity; PAR = physical activity recommendations; DPW = days on trail per week*
Costs

All costs associated with the trail are presented in Table 2. Costs for land acquisition and site preparation and engineering in 2001, as reported by the MRTC (E. Belling, personal communication, 2006), were $1,600,000 for the entire 51-mile length of the rail-trails, or $257,254.91 (2001 USD) for the 8.2-mile stretch of trail within Morgantown city limits. Total estimated startup costs were $657,254.91 (2001 USD), or $21,908.50 per year when allocated over a 30-year useful life. Inflating startup costs to 2011 USD using the consumer price index (CPI) inflator (U.S. Department of Labor Bureau of Labor Statistics) resulted in $27,166.54 annual cost.

Table 2

Annualized Costs of Caperton and Deckers Creek Trails

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Per mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land acquisition for 51 miles, 2001 USD</td>
<td>$1,000,000.00</td>
<td>$19,607.84</td>
</tr>
<tr>
<td>Engineering for 51 miles, 2001 USD</td>
<td>$600,000.00</td>
<td>$11,764.71</td>
</tr>
<tr>
<td>Percentage of 51 miles within city limits (8.2 miles)</td>
<td>16.1%</td>
<td></td>
</tr>
<tr>
<td>Allocation of costs to area within city limits</td>
<td>$257,254.90</td>
<td>$31,372.55</td>
</tr>
<tr>
<td>Construction for 8.2 miles, 2001 USD</td>
<td>$400,000.00</td>
<td>$48,780.49</td>
</tr>
<tr>
<td>Total startup costs, 2001 USD</td>
<td>$657,254.90</td>
<td>$80,153.04</td>
</tr>
<tr>
<td>Useful life (years)</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Annualized startup costs, 2001 USD</td>
<td>$21,908.50</td>
<td>$2,671.77</td>
</tr>
<tr>
<td>CPI inflation factor 2001 to 2011</td>
<td>1.24</td>
<td>1.24</td>
</tr>
<tr>
<td>Annualized cost 2011 USD</td>
<td>$27,166.54</td>
<td>$3,312.99</td>
</tr>
<tr>
<td>Annual marketing &amp; maintenance cost, 2011 USD</td>
<td>$27,946.27</td>
<td>$3,408.08</td>
</tr>
<tr>
<td><strong>Total annualized cost, 2011 USD</strong></td>
<td><strong>$55,112.81</strong></td>
<td><strong>$6,721.07</strong></td>
</tr>
</tbody>
</table>

At the time of data collection, annual marketing and maintenance costs were available for 2005 only and confirmed by MRTC (E. Belling, personal communication, 2006) and BOPARC (R. Larue, personal communication, 2006) officials as indicative of prior years costs. Routine maintenance and marketing costs for the entire 51-mile length of the rail-trails were $63,000 and $12,000 (2005 USD), respectively, resulting in $12,058.82 allocated to the 8.2-mile section of trails analyzed. Capital maintenance and cost of a seasonal staff member specific to the 8.2-mile trail section totaled $12,700 (2005 USD). Total marketing and maintenance costs, inflated to 2011 USD using the CPI inflator, were $27,946.27 per year. Therefore, total annual cost of the 8.2-mile stretch of trails analyzed was $55,112.81 (2011 USD), which equates to $1.82 per Morgantown resident, $74.08 per RTU, or $0.51 per trail use.

Cost-Effectiveness Ratios

Cost-effectiveness ratios were calculated by dividing the average annual costs of the trails ($55,112.81, 2011 USD) by each of the three physical activity outcomes of interest: (a) RTUs increasing physical activity because of the trails, (b) newly active RTUs, and (c) RTUs meeting physical activity recommendations strictly through trail use. The resulting ratios were $122.64, $329.22, and $157.27, respectively (see Table 3).

Sensitivity Analyses

Sensitivity analyses were conducted to assess the best- and worst-case scenarios of cost-effectiveness ratios by varying critical inputs in the ratios: (a) number of trail users, (b) useful life of the trails, and (c) annual marketing and maintenance cost (see Table 3). The number of trail users was varied by 50%, and useful life of the trails was varied from 10 to 50 years according to procedures used by Wang et al. (2004a). Annual marketing and maintenance costs may vary substantially; subsequently, sensitivity analyses were run varying annual costs by 50%. Sensitivity analyses revealed that increasing the number of RTUs by 50% decreased the cost per RTU, increasing physical activity to $80.27; decreasing the number of RTUs by 50% increased the same cost to $240.82. The cost per newly active RTU ranged from $215.49 to $646.48, and cost per RTU meeting physical activity recommendations on the trails ranged from $102.94 to $308.83 from best- to worst-case scenario.

Discussion

Findings of this study suggest that, in spite of seemingly daunting initial cost outlays, at $74.08 per repeat user, building a rail-trail is a cost-effective method of promoting communitywide physical activity. Population in Morgantown in 2000, just prior to the time of the trail counts, was 26,809 (U.S. Census Bureau, 2012). Thus, extrapolating the finding that 0.6% of community residents that were newly active repeat trail users (167 / 26,809) to the entire U.S. population could result in reducing the number of sedentary adults by approximately 300,000 at a cost of just under $100 million annually. These findings suggest an important growth opportunity for recreation and park providers as well as an important source of political capital for the profession. This seemingly large sum of money amounts to only 0.22% of the $44.82 billion spent by the federal government on highways in 2008 (U.S. Department of Transportation - Federal Highway Administration, 2010).

The current study is one of only two evaluating the cost-effectiveness of community trail construction to promote physical activity, addressing a gap in the current literature (Kahn et al., 2002). Costs included were more comprehensive than the prior study of trail cost-effectiveness (Wang et al., 2004a). Further strengths included the use of multiple days of objective trail use counts and surveys and a conservative calculation of the number of unique individuals on the trail over the course of a year. To facilitate comparison with Wang et al. (2004a), we used their calculation methods, resulting in a cost of $170.69 (2011 USD) per user who is more physically active versus their finding of $117.29 ($98 in 2003 USD inflated to 2011 USD).
### Table 3

*Cost-Effectiveness Ratios and Sensitivity Analyses (2011 USD)*

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>CE</th>
<th>Low CE</th>
<th>High CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per RTU</td>
<td>$ 74.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per more active RTU</td>
<td>$ 122.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTUs ± 50%</td>
<td>$ 81.76</td>
<td>$ 245.28</td>
<td></td>
</tr>
<tr>
<td>Useful life ± 20 years</td>
<td>$ 98.46</td>
<td>$ 243.55</td>
<td></td>
</tr>
<tr>
<td>Annual MM costs ± 50%</td>
<td>$ 91.55</td>
<td>$ 153.74</td>
<td></td>
</tr>
<tr>
<td>Per newly active RTU</td>
<td>$ 329.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTUs ± 50%</td>
<td>$ 219.48</td>
<td>$ 658.45</td>
<td></td>
</tr>
<tr>
<td>Useful life ± 20 years</td>
<td>$ 264.31</td>
<td>$ 653.79</td>
<td></td>
</tr>
<tr>
<td>Annual MM costs ± 50%</td>
<td>$ 245.75</td>
<td>$ 412.70</td>
<td></td>
</tr>
<tr>
<td>Per RTU meeting PAR on trail</td>
<td>$ 157.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTUs ± 50%</td>
<td>$ 104.85</td>
<td>$ 314.55</td>
<td></td>
</tr>
<tr>
<td>Useful life ± 20 years</td>
<td>$ 126.26</td>
<td>$ 312.32</td>
<td></td>
</tr>
<tr>
<td>Annual MM costs ± 50%</td>
<td>$ 117.40</td>
<td>$ 197.15</td>
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</tbody>
</table>

*Note:* PA = physical activity; CE = cost-effectiveness; RTUs = repeat trail users; MM = marketing and maintenance; PAR = physical activity recommendations. The “Low CE” ratio was calculated by increasing RTUs by 50%, increasing useful life by 20 years, and decreasing costs by 50%; the “High CE” was calculated by decreasing RTUs by 50%, decreasing useful life by 20 years, and increasing costs by 50%.

Results from the study have a number of implications for advancing management practice within the parks and recreation profession. First, on a political front, empirically linking community-based recreation opportunities with citizen health gains may lead to enhanced financial support for community recreation programs. Communicating these study results may begin to shift public opinion from thinking of recreation investments as a luxury to that of a critical investment in the future vitality of the community. Second, sensitivity analyses from this study suggest that increasing annual trail maintenance and marketing expenses may be the most cost-effective way to positively impact trail use and physical activity, in support of the Task Force on Community Preventive Services recommendation to create places for physical activity in combination with informational outreach activities (i.e., marketing; Kahn et al., 2002). Thus, professionals are encouraged to partner with local public health, physical activity promotion, nonprofit, and other entities to host events (e.g., 5k races, trail cleanups) and with local government to ensure
proper trail maintenance. For example, the Mon River Trails Conservancy in Morgantown hosts a half marathon annually on National Trails Day to promote the trail and raise money for its maintenance—a popular event that has grown from 140 participants in 2001 to over 500 in 2011. In addition, the City of Morgantown provides maintenance for the portion of the trails within city limits. Finally, the findings of this study suggest that recreation managers apply these cost-effectiveness and public health outcome measures to other public recreation programs and facilities. This will continue to build a public rationale for making critical investments in our public recreation programs and infrastructure.

From a physical activity promotion perspective, providing access to safe places to be active, in this case via community rail-trail development, compares very favorably with individualized programs. The $329.22 annual cost for each RTU newly active (previously sedentary) compares with annual per participant cost of randomized controlled trials of lifestyle or structured programs that often impact far fewer people (range $205.80–$591.72; Sevick et al., 2000). For example, the national “Green Prescription” program implemented by general practitioners and telephone counselors in New Zealand cost NZ$1,756 per person moving from sedentary (< 2.5 hours of moderate physical activity per week) to active (≥ 2.5 hours of moderate physical activity per week) in 2001 (2011 USD $905.16; Elley et al., 2004). In comparison, findings of the current study suggest that the cost-effectiveness of moving community members to meet physical activity recommendations exclusively through trail use (regardless of pre-trail construction physical activity level) was $157.27 for each RTU.

From a trail development perspective, worst-case cost-effectiveness ratio scenarios were most sensitive to decreasing the number of RTUs and decreasing the useful life of the trails. Thus, building an unattractive, poorly designed trail with a limited useful life may limit its effectiveness in promoting trail use and be the “perfect storm” for ineffective public health spending. This can be exacerbated by locating a trail in an area with limited proximity and connectivity to community residents, which may limit walking and trail use (Abildso, Zizzi, Abildso, Steele, & Gordon, 2007; Saelens, Sallis, & Frank, 2003; Troped et al., 2001).

Limitations of the Study

Though novel, the study is not without limitations. First, cross-sectional self-report data were used to assess physical activity and trail use patterns. Though a common practice in community physical activity research, the survey data are limited by respondent recall error and social desirability, and trail use data lack assessment of seasonal variation in trail use. However, on-site interviews were conducted to allow for greater probing of individual health behavior, and previously validated physical activity questions from the Centers for Disease Control’s Behavioral Risk Factor Surveillance System were used. A recent literature review found no discernible pattern in the relationship of self-reported and objectively measured physical activity, with low to moderate correlation between the types of assessment methods (Prince et al., 2008). Second, construction was ongoing during the period of analysis. A section of the Deckers Creek trail was completely closed during the study period for repair of an overpass near its intersection with the Caperton Trail. This may have reduced the number of trail users, decreased the amount of time users spent on the trails, and increased the number of round-trips taken on the trail, thus decreasing the effectiveness measures in the cost-effectiveness ratios. Third, the RTU calculation was a conservative method of estimating the number of trail users from the surrounding community but should be further tested for accuracy. Fourth, the trail use and survey data were collected in 2001. While it does show the short-term impact of a trail, a considerable amount of time has passed since data collection, suggesting a follow-up study is warranted to assess the long-term impact and any changes in usage patterns. Finally, generalizability of the findings is limited to areas similar in sociodemographic profile to the area studied, which is nearly 90% white and has poverty rates in excess of the United States average (U.S. Census Bureau, 2011).
Conclusions and Future Directions

Despite the above limitations, the findings of this study show the immediate impact of the trails studied and short-term cost-effectiveness. Counts and survey data were collected within six months of the official opening of the trails and annual costs were assessed within five years of construction. Investing in trail marketing, events, and maintenance is critical to being most effective in promoting communitywide physical activity. Parks and recreation professionals are encouraged to partner with researchers to better understand the many positive economic and health benefits of trails and work with nonprofits to best market and maintain trails. Longer term studies are recommended, including pre- and post-construction studies to assess the true impact trail construction has on the physical activity behaviors of its surrounding community.

References


The American Academy for Park and Recreation Administration, in keeping with one of its purposes – “to advance knowledge related to the administration of recreation and parks” – initiated a project to develop a library of interviews with top professionals in the field. The interviews, in addition to being of great historic value, contain many ideas on agency administration, working with board members, staff relations, organizational development, and creative management. The interviews record personal background, professional insights, advice and philosophical beliefs. Each tape is approximately 45 minutes in length and is available in VHS or DVD format. Interviews are available for purchase for $15 each with a $5 shipping/handling fee. For more information, please contact Andee Chestnut at (217) 586-3360 or info@aapra.org.

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January, 2011

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