ABSTRACT

JAMES, WILLIAM RICHARD. Built Adventure Recreation Environments: Users, Uses, and the Adventure Recreation Model. (Under the direction of Dr. Jason Bocarro.)

Built adventure recreation environments are becoming more prevalent and diverse, yet few studies have been undertaken to examine the users or uses of these settings. The primary purpose of this study was to develop a better understanding of the characteristics of those adventure recreationists utilizing built environments, why they are using these venues, and how users perceive these environments. This study looked at the characteristics or attributes of built environments that add to or detract from the participant's experience and considered whether or not the Adventure Recreation Model was useful as a means of describing users of built adventure recreation environments. Finally, this study sought to understand the role of built environments in adventure recreation. Subjects consisted of 279 whitewater rafters and kayakers at the U.S. National Whitewater Center (USNWC) in Charlotte, NC.

Analysis of participants' motivations revealed that those ranked most important overall focused on escaping routine and included challenge, and exhilaration. Findings indicated that females sought a novel experience, while males sought excitement. Overall, facility attributes were viewed as adding to the user's experience, although these attributes became less important as level of engagement increased. This study also found that whitewater rafting and kayaking at the USNWC are social experiences, as indicated by whom the respondent visited with and their

motivations. While the Adventure Recreation Model was not found to be useful in predicting user behavior, it was useful as a means of describing users.

Natural settings require the user to adapt to match their environment, whereas built environments can be adapted to match the user. Managers of built adventure recreation environments must understand the users and uses in order to maximize the participants' satisfaction and the quality of the experience.

Built Adventure Recreation Environments: Users, Uses, and the Adventure Recreation Model.

by
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BIOGRAPHY

William R. James is the son of Edward James and Wendy Ellis. He was raised in central New York and returned to school as a non-traditional student and a second career. He received his Bachelor of Science degree in Recreation from the State University of New York at Cortland in May 2003. After three years employment with Cortland's Outdoor Education Center, he pursued a Master of Science degree from North Carolina State University, Raleigh, NC. He is currently serving as the Assistant Director for North Carolina State University's Campus Recreation Outdoor Adventures program, while pursuing his Doctorate, and lives in Raleigh with his wife Penny and two dogs.

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CHAPTER 1

Introduction

The outdoor recreation movement in the United States dates back to the mid-nineteenth century. Numerous activities currently considered to be outdoor recreation can be traced back not as recreational activities but as modes of travel (e.g., snowshoeing, cross country skiing, canoeing, and kayaking), or subsistence activities (e.g., hunting, fishing or camping; Blanchard, Ford, & Strong, 2007). However, over the past 40 years the U.S. has experienced a significant growth in adventure recreation activities and experiences occurring in built environments.

Adventure recreation, traditionally associated with the natural environment, has over time expanded to include many activities that also occur in urban and built environments (Blanchard et al., 2007). Built environments are the result of human alterations. In the context of adventure recreation these include indoor climbing walls, whitewater parks, and challenge courses. Wilderness and built environments represent the polar extremes of the environmental spectrum. This study used wilderness as a foundation for understanding both built environments and the adventure recreation activities and experiences that occur within them.

The Wilderness Act of 1964 provides a legal definition of Wilderness based upon the extent and features of the natural environment (Wellman & Propst, 2004). However wilderness can be conceptualized as a state of mind as well as a physical entity (Nash, 2001). Biblical references depict wilderness as the antithesis of

paradise. This distinction grew as agrarian communities developed; such that "civilization created wilderness" (Nash, p. xi). American settlers brought these beliefs with them, and viewed wilderness as an adversary to be conquered and controlled. In the mid to late 19th century as civilization began to overtake wilderness in the United States, this attitude began to shift. The Transcendentalist movement and the writings of Henry David Thoreau and John Muir among others helped to popularize wilderness. Wilderness became something to be experienced as well as preserved. Transcendentalists became powerful voices during the early stages of the movement to protect and preserve wilderness (Nash).

As a result of the growing popularity of wilderness, organizations and clubs devoted to providing outdoor recreation opportunities began to form. For example, the Boy Scouts of America and the Girl Scouts of America were founded, at least in part, to teach the outdoor living skills to youth (Raiola & O'Keefe, 1999). During the latter half of the 20th century, schools focused on adventure education, associations and governing bodies that oversaw the guidance and provision of outdoor and adventure recreation services emerged. These developments necessitated legislation to further preserve and protect the natural environment from the negative effects brought about by rapid growth in outdoor recreation participation (Raiola & O'Keefe). Nash (2001) identified four revolutions, the *intellectual revolution*, the *equipment revolution,* the *transportation revolution,* and the *information revolution* that helped further the popularity of wilderness and outdoor recreation.

While World War II brought about many technological advances, post war prosperity of the 1950's resulted in increased leisure time and disposable income that brought about even greater growth in outdoor recreation (Martin, Cashel, Wagstaff, & Breunig, 2006). By 1958, outdoor recreation had gained enough popularity to warrant the creation of a congressional commission, the Outdoor Recreation Resource Review Commission (ORRRC), to determine the status of outdoor recreation in America (Manning, 1999). The resulting reports led to the creation of the congressional acts that appropriated federal monies for the development and maintenance of outdoor recreation areas nationwide and fostered the belief that outdoor recreation was a social need to be provided by government for the public good (Martin et al., 2006).

The ORRRC reports and much of the initial research that ensued focused on the activities and characteristics of the participants (Manning, 1999). In the early 1970's, Driver and associates (Driver & Bassett, 1977; Driver & Rosenthal, 1982; Haas, Driver, & Brown, 1980; Schreyer & Driver, 1989) began to study motivations for participation, and rather than characterizing recreation as an activity, as had been done previously, redefined it as the experience resulting from recreational engagements (Manning, 1999). The myriad of factors and combinations of factors that result in recreation participants developing a preference for a particular setting were referred to by Moore and Driver (2005) as the recreation benefit/experience gestalt. While each of these individual experiences may be achieved from other

recreational and non-recreational behaviors; the collective experience or gestalt is setting dependent. Thus even if the activities occurring in built environments are the same activities as those occurring in natural settings, the recreation experience/benefit gestalt differs. An activity occurring in a natural setting might result in a sense of solitude and experiencing nature whereas the same activity conducted in a built environment may result in a sense of safety and spending time with family or friends.

The adventure recreation model (ARM) was developed by Ewert and Hollenhorst (1989) to describe the characteristics and use patterns of adventure recreation participants. The model integrates the individual and setting attributes of adventure recreation and creates three levels of engagement, each with distinct characteristics. Individual attributes are the characteristics, abilities, motivations and preferences of the participant, while setting attributes are the social and environmental factors associated with the setting of the adventure recreation experience (Ewert & Hollenhorst). Thus far, the ARM has only been applied to adventure activities occurring in natural environments.

Throughout its history outdoor and adventure recreation including backpacking, rock climbing, whitewater rafting and kayaking, flat water canoeing, sea kayaking, cross country skiing and snowshoeing have been viewed as experiences and activities that occur exclusively in the natural environment (Ewert, 1989; Moore & Driver, 2005). However, technological advances in recreation

equipment have also resulted in the development of new recreation environments. Many traditional outdoor recreation activities now take place in built environments including indoor climbing gyms and whitewater parks.

The growth of adventure recreation in built environments has been significant. For example, in 2004, 7.6 million people participated in some form of rock climbing; of these 5.1 million reported having climbed on artificial walls (Leisure Trends Group, 2005). Indoor climbing walls have been built in high schools, colleges, health clubs and climbing gyms, while outdoor climbing structures have become common features in summer camps. Whitewater paddling venues have been constructed in both completely human made and highly modified natural settings. Despite this prolific growth, little research has been conducted on adventure recreation in these built environments.

Understanding the characteristics of adventure recreationists using built environments, why they are using these venues, and how they perceive these settings is an important first step in understanding the role these environments play in adventure recreation. It is currently unknown whether these built environments provide gateway experiences, introducing individuals to activities they might not otherwise pursue, or if these venues divert individuals from engaging in these activities in natural environments. It is also unclear how individuals progress within activities in built environments and whether they move to more natural settings, remain in built environments, or some combination of the two.

If built environments introduce individuals to an activity that they will then pursue in a natural environment, programmers and managers of built environments may have a responsibility to educate users about issues and subject matter that will better prepare them to transfer their participation to a natural environment. Educating and preparing participants in a built environment allows managers to do so without infringing on the personal freedom often associated with outdoor recreation. In contrast, if built adventure recreation environments draw participation away from natural settings, managers of natural environments should consider whether it is necessary or appropriate to act to prevent this decreased participation. While decreased participation might initially be viewed as problematic, it may be that decreased participation would reduce the stress on natural environments without negatively impacting those users whose experience is not dependent upon the natural environment. Understanding which attributes of built environments enhance or detract from the adventure experience could potentially inform managers of both natural and built recreation sites of participant preferences that could potentially improve the quality of their patron's experience resulting in greater visitor satisfaction as well as higher visitation. This information could also assist designers and planners of future facilities, to match participant's preferences.

This study will provide baseline data on adventure recreation participation in built environments. It is anticipated that the results of this study will provide information about the users of these facilities and why they are utilizing them, so as

to better inform decisions associated with managing built environments or providing adventure experiences.

Study Objective and Research Questions

The purpose of this study was to develop an understanding of the uses and users of built adventure recreation environments through the application of the ARM (Ewert & Hollenhorst, 1989).

Research questions.

1. What are the characteristics of the users of built adventure recreation environments?
2. Which characteristics or attributes of these built environments enhance or detract from the user's outdoor adventure experience?
3. How do users perceive these built environments?
4. Is the Adventure Recreation Model useful as a means of describing users of built adventure recreation environments?

Summary

The recent growth of adventure recreation in built environments has resulted in the need to better understand the recreationists using these environments and the reasons they are using them. Adventure recreation environments represent a broad spectrum, from remote natural wilderness to human-made urban and built facilities. As the popularity and proliferation of these environments continues to grow, our

knowledge and understanding of this phenomenon must keep pace so as to better inform managerial and programmatic decisions.

Definitions

The following operational definitions were used in this study:

Adventure Recreation - generally viewed as a subset of outdoor recreation including mountaineering, whitewater kayaking and rafting, challenge courses, and rock climbing. Some activities including whitewater kayaking and rafting, challenge courses, and rock climbing do not need to occur in and are not dependent upon outdoor or natural environments (Moore & Driver, 2005).

Artificial Environments - characterized by Attarian in the context of rock climbing as “any human-made structure that can be used for teaching or participating in a climbing-related activity” (1999, p. 341).

Built Environment - “refers to the results of people’s alterations of environments – for example, homes, cities, communities, and farms. In some cases the built environment includes alterations of natural environmental conditions, such as artificial rainfall or pollution of air, water, and food” (Altman & Chemers, 1980, p. 4).

Natural Environment - “refers to places and geographical features such as mountains, valleys, and oceans; environmental conditions such as temperature and rainfall; and flora and fauna” (Altman & Chemers, 1980, p. 4).

Outdoor Adventure Pursuits - “A variety of self-initiated activities utilizing an interaction with the natural environment, that contain elements of real or apparent danger, in which the outcome, while uncertain, can be influenced by the participant and circumstance” (Ewert, 1989, p. 6).

Outdoor Recreation - recreation experiences that result from recreation activities that occur in and depend on the natural environment (Moore & Driver, 2005).

Recreation Opportunity Spectrum (ROS) - system of classifying recreation settings ranging from urban to remote undeveloped natural settings across which *all* types of setting dependent outdoor recreation activities and experiences can be realized. Six broad classes: Urban, Rural, Roaded Natural, Semi-primitive Motorized, Semi-primitive Nonmotorized, and Primitive (Clark & Stankey, 1979; Driver, Brown, Stankey, & Gregoire, 1987; Moore & Driver, 2005).

Water Recreation Opportunity Spectrum (WROS) - Similar to the ROS but applied to water based recreation (Aukerman, Haas, Lovejoy, & Welch, 2004).

CHAPTER 2

Literature Review

In order to understand the use and users of built adventure recreation environments it is essential to understand the meaning of the terms adventure recreation and built environments. This chapter provides a review of the relevant literature on wilderness, outdoor recreation in the U.S., adventure recreation, natural and built environments used for outdoor and adventure recreation purposes and an overview of the relevant research on outdoor recreation. This section includes an introduction and overview followed by a review of the pertinent literature necessary to further an understanding of the historical perspectives and current trends related to outdoor and adventure recreation. A review of the relevant literature on motivations, the Adventure Recreation Model (ARM) and those constructs essential to understanding the ARM is included in the section on outdoor recreation research.

Wilderness

While the current study examined adventure recreation in built environments, these recreational activities originated in natural environments. Wilderness not only represents the built environment's antipode in the environmental spectrum but is also the context in which current beliefs and attitudes toward the natural environment are formed. It is through this wilderness context that built environments, the range of adventure recreation environments and the individuals who use them can be best understood.

The Wilderness Act of 1964 (as cited in, Wellman & Propst, 2004, p. 198) defines *Wilderness* in the following manner:

> A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value.

This designation is based on the absence of human influence as well as the geographical extent and physical features that can be found there. Yet wilderness is not merely a physical entity or geographic location.

Nash describes wilderness as a perception or state of mind as well (2001). This perception is relative, with civilization as its point of reference. Physical

wilderness exists with or without civilization, but its meaning is contextual being defined as the antithesis of civilization (Nash).

Biblical references depict paradise in sharp contrast to the wilderness that lay beyond it. Paradise was the ideal with nothing to fear, every need provided for, and where animals and humans coexisted in harmony (Altman & Chemers, 1980; Nash, 2001). Paradise was viewed as everything that wilderness was not. At best, wilderness was indifferent, often dangerous and beyond human control. Through the discovery of fire and the learned ability to raise crops and domesticate animals, humans began to control their environment (Nash). As hunter-gatherer societies developed into agrarian communities, the distinction between civilized and wilderness continued to widen; such that “civilization created wilderness” (Nash, p. xi).

Wilderness was feared throughout much of history, and as a result seen as needing to be conquered and controlled. The Greeks and Romans celebrated cultivated or pastoral nature, as it was beneficial to humans, while still fearing and detesting wilderness (Altman & Chemers, 1980; Nash, 2001). Classic mythology also reflected this fear and hatred of wilderness with reference to numerous demons and lesser gods that were said to inhabit wild places and torment those that dared enter (Nash). Folklore from the middle ages also contained characters that inhabited wilderness and were thought to be demons, ogres, or the devil (Altman & Chemers; Nash).

Early settlers brought these beliefs and values of wilderness with them to America. The exploration of the New World reignited the traditional belief that paradise would be found in the west (Nash, 2001). Many of those promoting exploration and colonization viewed America as a new supply of resources, however previous beliefs and attitudes toward wilderness re-emerged as the desire to exploit these new resources turned into a need to survive (Nash).

In America, this attitude of conquering and controlling began to shift to one of reserving and preserving, beginning with those least affected by wilderness including writers, artists, scientists and vacationers (Nash, 2001). By the early 19th century, life in cities, or on established farms meant life without the fears and hardships of wilderness for the first time in America (Nash).

During the 18th and 19th centuries attitudes toward wilderness began to shift. First, writers and artists from European cities began referring to the rough, irregular and intricate qualities of wilderness as picturesque (Nash, 2001). Several smaller movements helped move this process along. Deists saw wilderness as pure nature, the clearest medium in which to find spiritual truths. Romanticism, while not specific to wilderness, preferred the wildness in nature, seeking out the remote, solitary, and mysterious. Sublimity countered the notion that only well ordered, comfortable and bountiful nature could be beautiful, promoting the idea that vast chaotic scenery could also be aesthetically pleasing. Primitivism, the belief that human happiness and well being decreased as society became more civilized, was born out of the

romantic Movement that valued the simpler existence seen in earlier times and less developed contemporary cultures (Nash).

In the mid 19th century, the Transcendentalist movement, that included many prominent writers of the time, promoted the belief that spiritual truths could be found in nature, and that through nature humans could transcend their physical reality to discover these truths (Nash, 2001). Society had advanced to the point where it was now possible to live and work in civilization without experiencing nature (i.e. wilderness). Henry David Thoreau, a Transcendentalist wrote and spoke of the need for balance between these two worlds. He believed that by remaining connected with the extremes of the civilized-natural continuum he could enjoy the best that both offered (Nash). Another follower of the Transcendentalist philosophy, John Muir, also wrote about wilderness and the spiritual value it held. However unlike Thoreau, who advocated for the balance, Muir preferred wilderness over civilization and became a staunch supporter during the early stages of the movement to protect and preserve wilderness (Nash). The writings of Ralph Waldo Emerson, Thoreau, Muir, the paintings of George Caitlin, and the works of many others helped popularize wilderness, such that in time it became something not only to be reserved and preserved, but also to be experienced (Nash).

Frederick Jackson Turner, in an article for *Atlantic Monthly* in 1896, argued that the frontier had made America better than Europe. More than the physical frontier; Turner believed that primitive conditions found in wilderness promoted

individualism, independence, and encouraged self-government. Seven years later, Turner acknowledged that the 1890's marked the first time in American history without a frontier, and hoped that the ideals he believed to be connected with the frontier could survive in its absence (Nash, 2001). Many others shared Turner's vision of wilderness and frontier life as a source of American pride. Nationalism, viewed as a major factor leading to the preservation of Yosemite, was also tied to the early environmental movement, which had grown out of problems arising from increasing civilization (Wellman & Propst, 2004).

Altman and Chemers (1980) framed this transformation as three orientations toward nature and the environment that have predominated in different cultures during various periods in history. The first was *people as subjugated to nature*, living under the control of and at the mercy of the natural environment. The second was *people as above nature*, in which humans are separate from and in control of the natural environment, including the need to conquer wilderness. The final orientation is that of *people as part of nature*, in which people like plants and other animals are an inherent and inseparable part of the natural world (Altman & Chemers).

From Wilderness to Outdoor Recreation

Nash (2001) identified four revolutions that aided in promoting wilderness and outdoor recreation. The *intellectual revolution* occurred as the belief in the intrinsic value of wilderness, which had fully developed by 1970, coupled with new found reasons to appreciate wilderness, spread throughout American society. Prior to this

time, these beliefs were held almost exclusively by scholars and literati (Nash, 2001). By the 1970's, coffee table books from the Sierra Club and David Brower, the *Time Life* series "The American Wilderness," and the writings of Leopold, Thoreau, Emerson, and Muir brought wilderness into the homes of most Americans. At the same time, magazines including *Outside, Backpacker* and *Wilderness Camping* helped drive the ever increasing popularity of outdoor recreation (Nash).

The second revolution identified by Nash (2001), the *equipment revolution,* helped facilitate the growth of wilderness appreciation and outdoor recreation as new technologies and materials were used in the manufacturing of outdoor clothing and equipment. Previously equipment and clothing had been made of wood, canvas, wool and animal hides. New materials and technology developed during World War II including plastic, nylon, aluminum, and foam rubber resulted in lighter, stronger equipment. New, lightweight nylon tents replaced the 50 pound canvas tents used previously. The process for freeze drying food brought an end to carrying heavy canned food (Nash). The development of neoprene rubber and the inflatable raft in the 1930's directly impacted whitewater rafting, while fiberglass revolutionized whitewater kayaking (Nash, 1977). New and improved equipment made it possible for average Americans to embark on extended backpacking trips. In 1972 *Backpacker* magazine reviewed all 19 backpacks available on the market. Five years later there were 129 to review, with similar increases in hiking boots, tents,

and sleeping bags. Nash (2001) suggested that this sudden increase was simultaneously a response to and a cause of the increased popularity of wilderness.

The proliferation of the automobile, along with the growth of the interstate highway system and air travel ushered in the *transportation revolution* and provided individuals the means to access outdoor recreation sites in remote wilderness and other pristine areas. Prior to these advances in travel many such areas were inaccessible to most Americans (Martin et al., 2006; Nash, 2001). Nash viewed the family automobile as “the piece of technology with the most devastating effect on American wilderness” (p. 318), yet it is difficult to imagine the growth seen in outdoor and adventure recreation were it not for the family automobile.

While the transportation revolution was responsible for bringing Americans to the outdoors, the *information revolution* was responsible for bringing wilderness as well as outdoor and adventure recreation to the average American (Nash, 2001). Paperback field guides and United States Geological Survey (USGS) topographic maps began to be published and sold commercially. Trail guides not only provide detailed trail information but also served as how to guides for beginners. Commercial guides, outfitters, and outdoor recreation non profits including the Sierra Club, the Appalachian Mountain Club (AMC) and the Adirondack Mountain Club (ADK) served those desiring more assistance than field guides could provide (Nash). This influx of information, once only available through personal experience, made it possible for anyone, who so desired, to participate in outdoor recreation and enjoy the

wilderness and the natural environment. More recently, the computer and the internet have made it possible for individuals to research activities, destinations, and equipment; book their reservations and air travel; and purchase equipment from their home or office computer.

Outdoor Recreation in the U.S.

Formal outdoor recreation organizations.

While the four revolutions identified by Nash (2001) contributed to the growth in popularity of wilderness and outdoor recreation, the industrial revolution in the U.S. changed the way people lived. By the beginning of the 20th century, most Americans were living in cities or on established farms with significantly less direct contact with nature than in earlier times. Outdoor survival skills were no longer a requirement of daily life. As outdoor recreation began to grow in popularity there was a resurgence in the need for these skills (Blanchard et al., 2007). During the first half of the 20th century, organizations including the Boy Scouts of America, the Girl Scouts of America, YMCA, YWCA, and Campfire were founded and had developed summer camp programs, in part to teach the outdoor living skills necessary to experience the natural world (Blanchard et al.; Raiola & O'Keefe, 1999). Many of these activities also taught youth valuable life skills that were not being taught in traditional educational settings (Blanchard et al.).

By the time World War II ended, the amount of land in the U.S. that had not been developed into cities, towns, and farms had been reduced to one quarter of

what it was during Colonial times. Additionally, while environmental concerns did not guide the behavior of early pioneers, little permanent damage was done largely because of their small numbers but also due to their use of all natural materials. As outdoor recreation participation grew and the advances in technology resulted in more human made materials finding their way into backcountry environments, the quality of the natural environment and that of the outdoor recreation experience dependent on the natural environment began to degrade (Blanchard et al., 2007). Many outdoor organizations including the Boone and Crockett Club and the Sierra Club used their influence to help influence legislation. The Boone and Crockett Club's membership included Teddy Roosevelt, whose political clout helped forward its conservation agenda through the establishment of game laws and enforcement officers as well as increasing ethical standards among hunters (Nash, 2001; Reiger, 1993).

During the 1960's and into the 1970's, schools including the Colorado Outward Bound School in 1962, National Outdoor Leadership School (NOLS) in 1965, Project Adventure (PA) in 1971, and Wilderness Education Association (WEA) in 1977, focused on learning through experience and the use of adventure activities, were founded (Raiola & O'Keefe, 1999). To help shape and guide the provision of outdoor recreation and education a number of professional organizations were established. These included the Camp Directors Association in 1924 which was later renamed the American Camping Association (ACA) in 1932, the National Recreation

and Parks Association in 1965, the Association for Experiential Education (AEE) in 1974, and the Association for Challenge Course Technology (ACCT) in 1993 (Raiola & O'Keefe). Other professional organizations included the American Canoe Association, Leave No Trace (LNT), the American Mountain Guides Association (AMGA), the Professional Ropes Course Association (PRCA) and the Association for Outdoor Recreation and Education (AORE; see Appendix A for a timeline of major events in outdoor recreation). Many of these associations teach skill based and outdoor leadership courses in addition to serving as a resource for outdoor leaders, program and resource managers and outdoor recreation participants (Martin et al., 2006).

Legislation

Legislation to preserve the natural environment and provide for outdoor recreation began in 1864 when congress granted the Yosemite Valley to California as a state park (Raiola & O'Keefe, 1999). Through the Yosemite Act, this state park became a National Park in 1890 (Nash, 2001). Yellowstone, which in 1872 became the first National Park, was also the first act of large-scale wilderness preservation in American history. In 1885 the state of New York established the Adirondack Forest Preserve with the intent of preserving its wild quality (Nash). In order to manage these national public preserves, the U.S. government established the Forest Service in 1905 and the National Park Service in 1916 (Raiola & O'Keefe).

Additional legislation was passed to further preserve and protect the natural environment from the rapid growth in outdoor recreation participation (Raiola & O'Keefe, 1999). The Forest Service, caught between a growing number of outdoor recreationists and an economy that needed natural resources to sustain itself, sought legislative action to better balance these two conflicting needs. The Multiple-Use Sustained-Yield Act was passed in 1960; however it did little to guide management (Wellman & Propst, 2004). In 1964 the Wilderness Act was passed, the main thrust of which was to prevent development and to limit mass recreation by prohibiting road construction and permanent structures as well as prohibiting the use of motorized vehicles and equipment within wilderness areas (Wellman & Propst). The Endangered Species Act was passed in 1966, and 1968 saw both the National Trails System Act and the Wild and Scenic Rivers Act passed. The Wild and Scenic Rivers Act identified rivers that were deemed valuable due to scenic, recreational, historical, fish and wildlife or similar qualities and sought to preserve them as free flowing and to protect the local environments (Wellman & Propst).

Current outdoor recreation trends.

In 2005, 59.5 million Americans, 25% of those 16 and older took a vacation for the purpose of participating in an outdoor activity (Leisure Trends Group, 2006). Data from the Leisure Trends Group which has been tracking participation in a variety of outdoor recreation activities since 1998 showed that for 2005, participation in outdoor activities had remained relatively steady but noted a decline in the

number of total outings. There was growth in individual activities and in particular those activities that can be “Done in a Day”, noting a decline in commitment-heavy activities (2006, p. 13). Activities thought to have a broader appeal were those that met the following criteria: (a) easy to access, (b) easy to learn, (c) done in a day, and (d) required less specialized technical gear.

This is consistent with Moorman, Schlatter, and Hurd (2007) who note that unless an individual lives in an area suited to their adventure recreation activity, considerable travel may be involved, requiring a greater commitment of time and money and reducing their ease of access. Additionally, since not all activities occur in same area, this further complicates the issue for those that engage in multiple activities. However, the introduction and growth of built environments including climbing walls, high ropes and challenge courses, whitewater parks, mountain bike trails, and the use of large rocks for bouldering has negated some of this. Recent fuel prices have increased the cost of traveling long distances to participate in outdoor recreation activities, resulting in what have come to be termed the *staycation* or *daycation*, which are shorter vacations closer to home. Natural events such as the recent drought in the Southeast have also affected people’s ability to participate in outdoor recreation activities such as whitewater kayaking and rafting in natural settings, since many natural venues are often unusable due to insufficient water flow.

In a study investigating the decline in per capita National Park visitation, Pergams and Zaradic (2006) noted that after increasing steadily for 49 years from 1939 to 1987, per capita visitation declined from 1988 through 2004. Electronic media including watching movies at home, playing video games, and internet use, in addition to increased oil prices, were found to be significantly negatively correlated with this decline. While acknowledging that this did not prove causation the authors suggest that since these factors explained 97.5% of the variance, it was reasonable to assume some causal connection may exist (Pergams & Zaradic). They did not suggest that electronic media is a substitute for National Park visitation and outdoor recreation, but rather that it is an additional force competing for the individual's fixed amount of available time. People are choosing to spend their time engaged in alternative activities. Pergams and Zaradic also suggested that this phenomenon might represent an apparent decrease in biophilia. and an increase in videophilia, which they define as "the new human tendency to focus on sedentary activities involving electronic media" (p. 7). Biophilia is "the innate tendency to focus on life and lifelike processes to the degree that we come to understand other organisms, we will place greater value on them, and on ourselves" (Kellert & Wilson, 1993, pp. 4-5).

The connection between rising gasoline prices and decreased visitation is consistent with both the Leisure Trends Group (2006) and those of Moorman et al. (2007), that people are seeking activities with easy access and that can be done in a

day. Pergams and Zaradic (2006) also pointed out that rising fuel costs tended to affect lower income families, while finding that travel abroad rose for those with higher incomes.

Adventure Recreation

A subset of outdoor recreation, outdoor pursuits are those activities including hiking, climbing, cross country skiing, canoeing or caving, which involve of moving across natural land or water resources by non-mechanized means (Blanchard et al., 2007; Priest & Gass, 1997). Adventure recreation or adventure activities, while similar to outdoor pursuits in that they are based on the interrelationship between humans and the natural environment, also include the purposeful application of stress or challenge to the participants (Blanchard et al.). Ewert (1989, p. 6) defined outdoor adventure pursuits as “a variety of self-initiated activities utilizing an interaction with the natural environment, that contain elements of real or apparent danger, in which the outcome, while uncertain, can be influenced by the participant and circumstance”. While several other definitions exist, it is important to note that Ewert’s definition was the basis of the conceptual framework used in the development of the Adventure Recreation Model (Ewert & Hollenhorst, 1989).

Natural and Built Environments

The distinction between natural and built environments is essential when discussing the differences between the activities and experiences that occur within each these environments. The dichotomous view is that natural environments are

comprised of geographical features, conditions and flora and fauna, whereas built settings are the result of human alterations (Altman & Chemers, 1980). Driver and Greene (1977) considered *natural* to be the relative degree of human influence, implying a continuum rather than a dichotomous relationship. The idea that recreational environments could be seen as a continuum is echoed in the Recreation Opportunity Spectrum (Clark & Stankey, 1979; Driver et al., 1987; Moore & Driver, 2005) and the Water Recreation Opportunity Spectrum (Aukerman et al., 2004). The appearance of natural is still somewhat ambiguous as in the case of a man made lake. If it is known to be human made then it is considered built, however if the same lake appears natural and its origin is unknown, it is likely to be considered to be natural (Hoyt, 1991).

Artificial environments were described by Attarian in the context of rock climbing as “any human-made structure that can be used for teaching or participating in a climbing-related activity” (1999, p. 341). While this view of an artificial environment was developed in the context of rock climbing it can be reasonably extended to include any human-made or built structure or environment used for teaching or participating in an adventure recreation activity. Attarian also identified four uses of indoor climbing walls including: instructional, recreational, training and fitness, and competition. These uses are also reasonably extended to other built recreational venues.

Outdoor Recreation Research

The growth in popularity of outdoor recreation during the post World War II era which has been attributed to increases in economic prosperity and leisure time in addition to the four revolutions identified by Nash (2001), had resulted in issues with environmental impacts and crowding. Research into these and other issues as well as outdoor recreation in general, grew out of the need to find solutions and understand the phenomenon. The Outdoor Recreation Resource Review Commission (ORRRC) reports would become the foundation of much of the research that would follow (Manning, 1999).

By 1958, outdoor recreation had gained sufficient popularity to warrant the creation of a congressional commission. The Outdoor Recreation Resource Review Commission was charged with determining the status of Outdoor Recreation in America (Manning, 1999). One important finding to emerge from the 1962 report was the dearth of literature on outdoor recreation (Manning; Martin et al., 2006). The ORRRC reports are now viewed as the beginning of social science research on outdoor recreation (Manning). These reports resulted in the creation of the Outdoor Recreation Act of 1963, the Wilderness Act of 1964, the Land and Water Conservation Act of 1965 and the Bureau of Outdoor Recreation (BOR; Moore & Driver, 2005; Wellman & Propst, 2004). These were acts of Congress that appropriated federal monies for the development and maintenance of outdoor

recreation areas nationwide based on the belief that outdoor recreation was a social need to be provided for the public good (Martin et al.).

Early research, including the ORRRC reports, was focused on surveying participants about their personal characteristics and the activities they engaged in. These studies were criticized for lacking a theoretical foundation (Manning, 1999). In the early 1970's, Driver and associates (Driver & Bassett, 1977; Driver & Rosenthal, 1982; Haas et al., 1980; Schreyer & Driver, 1989) began to study people's motivations for participation. Prior to this research, outdoor recreation was traditionally viewed as an activity. However, Driver and associates redefined it as the *experience* resulting from recreational engagements. This paradigm shift was based on the expectancy theory of social psychology in which "people engage in activities in specific settings to realize a group of psychological outcomes that are known, expected and valued" (Manning, p. 159).

Recreational Specialization

Specialization has been used as a paradigm for understanding differences among recreationists within a common activity (Bryan, 1977, 1979; Scott & Shafer, 2001). Manning (1999) points out that a beginner is likely to possess very little knowledge about the activity they are participating in and the setting in which it occurs while the expert is likely to possess a great deal of knowledge about both the activity and the setting. This discrepancy in knowledge is likely to account for differences in attitudes, preferences, and behaviors. Scott and Shafer

conceptualized specialization as a developmental process and identified three stages of involvement: (a) a novice or beginning stage, (b) an establishment stage, and (c) the specialization stage. Specialization begins with the focusing of behavior in which one particular activity becomes central to the individual, to the exception of other activities. From here the individual continues to acquire and develop skills and knowledge of the activity. There is also a progression in commitment, both personal and behavioral. Personal commitment is described as beginning to define oneself in terms of the activity, while behavioral commitment is viewed as the cost to the individual of ceasing participation in the activity; loss of personal identity, friends, skills and knowledge (Scott & Shafer).

Scott and Shafer (2001) also note the existence of career contingencies, factors that influence an individual's career progression but that are not entirely under their control, and may either constrain or facilitate progress along the specialization continuum. Different people may follow different career paths and different activities are likely to have different career paths. While many participants progress over time, others may not seek expert status within their activity. In their review of results from various studies, Scott and Shafer concluded that "progression is not a typical career path pursued by leisure participants" (p. 337).

Motivations

Motivations and satisfaction are fundamental concepts for understanding recreational behavior (Manning, 1999). Motivations are the underlying reasons for

participating in recreational activities and can be characterized as the outcomes sought from the experience. Adventure recreation is a goal-oriented behavior in which stimulation is sought for heightened arousal and satisfaction of other desired outcomes, and is characterized by the presence of life-threatening risk, danger and uncertainty (Ewert, 1994).

Researchers have investigated why people participate in recreational activities and theorized that participants have multiple motives based upon their individual goals (Manning, 1999). Research on whitewater kayakers and rafter's motivations, environmental preferences and specialization, it is limited to their occurrence in natural environments (Bricker & Kerstetter, 2000; Schuett, 1994; Williams, Schreyer, & Knopf, 1990). A plethora of research exists on motivations, environmental preferences, and specialization as they pertain to rock climbers. More recent data from the 2005 Outdoor Recreation Participation Study (Leisure Trends Group, 2006) includes natural rock climbing, artificial wall climbing, and people who that climb both. Many of these research findings may prove relevant to the current study (Clark et al., 2008; Ewert, 1985, 1994; Rapelje, 2004).

The primary focus of research on the motivations of rock climbers is on climbers participating in natural environments. In a study comparing anti-social, adventurous, and pro-social risk takers, Levenson (1990) found motivations associated with general sensation, thrill, and adventure linked to rock climbers. McIntyre (1992) found multiple rock climber motivations including recognition,

creativity, physical setting, challenge, escape, and control. A study conducted by Ewert at Mount Rainier, found that climbers were motivated to climb for challenge, catharsis, recognition, creative opportunities, locus of control, and the physical setting (1985). Climbers in a study at Mount McKinley described five motivation factors: exhilaration/excitement**,** social aspects, image, aspects of climbing, and catharsis/escape (Ewert, 1994).

Despite the Outdoor Recreation Participation Study finding that 52% of natural rock climbers also climbed artificial walls, very little research has looked at the motivations of indoor climbers (Leisure Trends Group, 2006). In a study of climbers using an indoor artificial climbing wall Clark et al. found the motivations of developing abilities, testing physical skill, exhilaration, and excitement to be the strongest (2008). A study which included both natural rock climbers and climbers using an artificial wall identified four groups of climbers: infrequent climbers, frequent outdoor climbers, frequent indoor climbers, and avid climbers. Analysis of climbers' motivations revealed the categories of catharsis, control, personal accomplishment, recognition, and personal expression. Among all four groups, personal accomplishment was the strongest motivation for participation and was not significantly different across climbing groups. Personal expression and recognition were significantly stronger in avid climbers (both indoor and outdoor) than among frequent indoor climbers (Rapelje, 2004).

These results were consistent with Ewert's (1994) findings from research with mountain climbers. This supports the idea of specialization, predicting that specialized adventure recreationists (i.e. avid climbers) would possess a larger number of complex motivations than less experienced recreationists (i.e. infrequent climbers). Previously Ewert (1985) had found that as climbers become more specialized, their motives shifted from extrinsic reasons to intrinsic ones. This shift in motivations as participants become more specialized has also been found in paddlers and birders. Lee, Graefe, and Li (2007) found that motivations of challenge and competition increased with specialization among canoeists. Similarly, committed or advanced birdwatchers, those higher on the specialization continuum, reported significantly different mean scores for all motivation items measured when compared with those of casual birdwatchers, thought to be lower in their specialization (Scott, Ditton, Stoll, & Eubanks Jr, 2005).

Gender.

Gender has been found to influence both specialization (Moore, Scott, & Moore, 2008; Scott & Shafer, 2001) and motivations (Lee et al., 2007). Scott and Shafer (2001) identified gender as one of three career contingencies thought to influence an individual's career progression. In their study of birdwatchers, Moore et al. found that men were more skilled, had participated longer, and had invested more in equipment than women. Their findings also suggested that female birdwatchers were subject to constraints that prevented them from participating as

intensely as males. In a study of canoeists, Lee et al. found that females were motivated by experiencing nature, relaxation and social contact, yet contrary to previous research (Jackson & Henderson, 1995), did not find gender differences in challenge or competition motivations. In reviewing numerous studies examining similarities and differences between genders, Manning (1999) concluded that gender differences were more pronounced for some outdoor recreation activities than others and that similarities between genders were more striking than differences.

Recreation Opportunity Spectrum.

Adventure recreation environments can be viewed as a continuum. The ROS merges physical, social, and management characteristics (Clark & Stankey, 1979; Driver et al., 1987; Moore & Driver, 2005) and classifies outdoor recreation environments based on six management factors including: access, non-recreational resource issues, onsite management/modification, social interaction, acceptability of visitor impacts and regimentation. The ROS and goes on to further subdivides these factors (Manning, 1999). A setting is rated on each of these six factors that are then combined to create six opportunity classes: (a) primitive, (b)semi-primitive non-motorized, (c) semi-primitive motorized, (d) roaded natural, (e) rural, and (f) urban (Moore & Driver). These classes represent the range of outdoor recreation environments from the most pristine and natural primitive setting to those artificial or constructed urban environments that are the subject of this study.

Recreation benefit/experience gestalt.

The setting in which an activity occurs influences not only that specific experience but also affects the development of preferences that shape future experiences. Some researchers have suggested that adventure recreation activities that occur in built environments are distinct from those same activities occurring in natural environments and should be viewed as a *reinvention* of the activity (Marinho & Bruhns, 2005). Perhaps of greater importance is whether or not the experiences resulting from activities taking place in built environments are the same as those that result from the same activities occurring in natural environments. There are many factors and combinations of factors that result in recreation participants developing a preference for a particular setting (Moore & Driver, 2005).

Moore and Driver (2005) refer to this combination of factors as the recreation benefit/experience gestalt and describe it as “a group of generally four to seven very specific psychological experiences” that “comprise those experiences most highly valued by participants in a particular recreation activity within a particular setting” (p. 34). Each of the individual experiences can be achieved from other recreational and non-recreational behaviors. However the collective experience or gestalt is setting dependent. Even if adventure recreation activities occurring in built environments are the same activities as those occurring in natural settings, the recreation experience/benefit gestalt is almost certain to be different. The individual experiences that lead to a participant developing a preference for a built

environment differ from those individual experiences that lead to the participant developing a preference for a natural environment. For example, participating in a natural setting may result in a sense of solitude and directly experiencing nature whereas participating in the same activity in a built environment may result in a sense of safety and spending time with family or friends.

Environmental preferences

In a study of whitewater kayakers, Schuett (1994) found that the participant's skill level was tied to their environmental preferences. The finding that highly skilled kayakers sought more remote and natural stretches of river, while novice kayakers were more likely to choose less remote rivers due to lesser knowledge and skill was consistent with Ewert and Hollenhorst's (1989) predictions regarding levels of engagement. Schuett's study also found that in general whitewater kayakers preferred natural surroundings and were less affected by human-made elements.

Artificial concrete whitewater facilities are being built in addition to those that are simply modifying natural waterways to create whitewater venues. Similarly, artificial climbing environments continue to be popular (Leisure Trends Group, 2006). Outdoor recreation stands to gain from developing a better understanding of the role of these environments and how they are perceived by those using them. The need for this level of understanding may be more pronounced for an activity such as rock climbing, where participants are known to crossover between built and natural environments (Leisure Trends Group). However, built environments are

showing up as venues for more and more recreational activities. Several studies have demonstrated the role of participant perceptions of their environment. Haluza-Delay (2001) investigated the role of a wilderness adventure program in encouraging participants to think about and care for the environment at home. While most participants expressed concern for the natural environment, this did not translate into action at home, since they did not view their home environment as being natural. Additionally, adventure recreation activities occurring in built environments have been shown to promote interest in that same activity in a natural environment (Ewert & Hollenhorst, 1997).

Adventure Recreation Model

The ARM (Ewert & Hollenhorst, 1989) was developed to describe the characteristics and use patterns of adventure recreation participants in natural settings. This model integrates individual attributes and setting attributes of adventure recreation into three levels of engagement, each with distinct characteristics. Individual attributes are the characteristics, abilities, and preferences of the participant. They are operationalized in the model as: frequency of participation, skill or experience level, locus of control (i.e. decision making) and motivation factors, although these were later removed from the model. Setting attributes are the social and environmental factors associated with the setting of the adventure recreation experience and are operationalized in the model as type and level of risk, social orientation, and environmental preference (Ewert & Hollenhorst).

A key issue in the application of the ARM to built environments is that it was created based on Ewert's (1989) definition of adventure recreation which specified "an interaction with the natural environment." Understanding how this model functions in built environments may lead to one of several outcomes. If it functions well, managers and programmers could use it as a means of describing user characteristics and use patterns in these environments. If the model functions differently in built environments than in the natural settings, it may need to be modified in order to better fit these new environments. Lastly the model may prove to not be applicable to built environments, possibly implying that these are reinvented activities that are distinct from the original activities and may require a completely different model in order to accurately describe and explain user characteristics and use patterns.

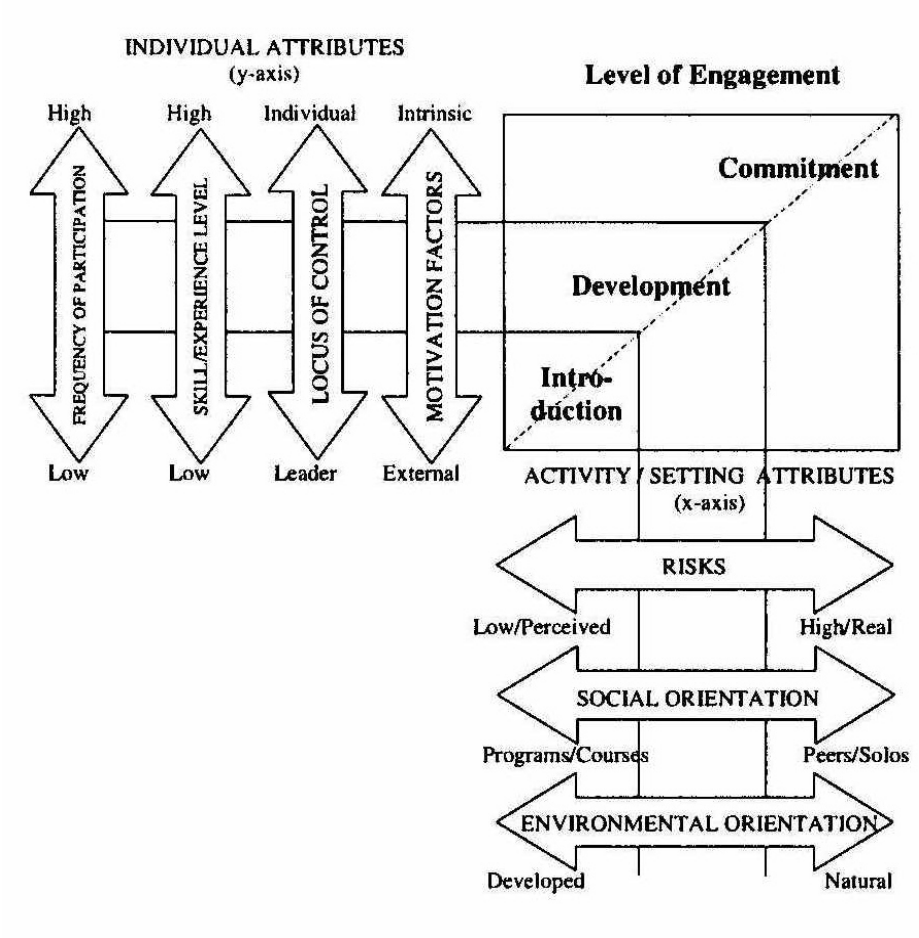

Figure 1. The Adventure Recreation Model (Ewert & Hollenhorst, 1989)

Level of engagement.

Ewert and Hollenhorst (1994) proposed that adventure recreation participants move along a continuum of engagement, from introduction, through development to commitment, similar to the three stages of specialization (Scott & Shafer, 2001). The introduction level of engagement includes those individuals with little or no previous experience. Since these participants possess minimal skills, a designated leader is in control and the risk is low and more perceived than real. At this level of

engagement, the activity is generally occurring in a highly developed or controlled environment.

The development level of engagement includes those participants with some previous experience and emergent skills. Adventure recreationists in the development level have begun to develop perceptions of what they want from the activity and are seeking to exercise more control in determining the direction of the activity. The risks are increasingly real with actual consequences and participants prefer an environment that is more natural and less predictable (Ewert & Hollenhorst, 1994).

The commitment level of engagement consists of those individuals with a high level of commitment to the activity, highly developed skills and substantial experience. Control rests solely on the individual, the risks are real, and their consequences are significant. The preferred environment is undeveloped and natural (Ewert & Hollenhorst, 1994).

Model predictions.

Based on their model, Ewert and Hollenhorst (1989) predicted that as the user's level of engagement increased:

1) Skill level would increase.
2) Participation would become more frequent.
3) Locus of Control (Locus of Decision Making) would become more internal.
4) Individuals would prefer a greater level of risk.

5) Individuals would prefer a more natural, less human developed environment due to the perception of natural environments posing greater challenge and risk.
6) Participants would move away from social groups comprised of friends, family and organized groups in favor of solo activity or small groups of other experts, again seeking greater challenge and risk.
7) Motivation would shift with increasing preference for challenge, achievement, control, and risk taking.

It is in these hypotheses that possible issues in applying the ARM to artificial environments lie. The first prediction that expertise or skill level would increase is at least as likely in an artificial environment as in a natural setting. A recent study of indoor rock climbers found that 40% of climbers surveyed viewed indoor climbing as practice or training (Clark et al., 2008). The second prediction, that frequency of participation would increase, is also equally as likely, as these artificial setting are often located more conveniently to population centers than their natural counterparts.

Locus of control however, is unlikely to become more internal in an artificial environment as the facility's management and staff generally maintains control over participants. It is hypothesized that the participant's preferred level of risk will increase however in an artificial environment much of the real risk is removed and it

has been predicted that more experienced participants would perceive an activity as being less risky than less experienced participants (Ewert & Hollenhorst, 1994).

If, as predicted, individuals were to develop a preference for a more natural, less human developed environment as their level of engagement increased, then it would be likely that these individuals would participate less in adventure recreation occurring in artificial environments except for practice or training. Even the social structure of the activity is likely to be altered in artificial recreation environments. While the committed participant may prefer to participate alone or with their small group of experts, the social structure of the artificial environment may include a child's birthday party at the climbing wall or a corporate picnic outing at a whitewater venue. Finally, motivations may shift toward challenge and achievement, but again, control and risk taking motivations are likely to be limited by the facility in the case of built environments.

Summary

The ARM is grounded in research related to outdoor and adventure recreation, including motivations, environmental preferences and the Recreation Opportunity Spectrum, recreation benefit/experience gestalt, specialization and experience use history (Ewert & Hollenhorst, 1989, 1994; Moore & Driver, 2005; Schuett, 1994; Scott & Shafer, 2001). Yet there is also the need to understand the historical context of wilderness that helped form current attitudes and beliefs towards natural environments as well as built environments (Altman & Chemers, 1980; Nash,

2001). Taken together, these ideas provide a basis for understanding adventure recreation in built environments.

CHAPTER 3

Methodology

This chapter provides a description of the present study's site, population, sample, data collection processes, instrument development, and statistical procedures.

Study Site

This study was conducted at the U.S. National Whitewater Center (USNWC) in Charlotte, North Carolina, located a few miles from downtown Charlotte. The whitewater center is a 307-acre human made facility (see Figure 2) that provides opportunities for whitewater rafting and kayaking, flat water kayaking, mountain biking and hiking. It also includes a climbing center, a challenge course, a 2,400 square-foot conference center, and the River's Edge Bar & Grill. Visitors are provided with, or can rent, all of the equipment necessary to try a new activity or engage in their favorite outdoor activity. The USNWC is a locally owned non-profit 501(c) that opened in August of 2006 at a cost of $38 million. The center is the world's only multi-channel, re-circulating whitewater river, is home to the U.S. National Slalom Canoe/Kayak Team and is an official U.S. Olympic Training Site (see Appendix B for photographs; U.S. National Whitewater Center, 2008).

Study Population

The study population was selected from individuals participating in whitewater rafting and whitewater kayaking at the U.S. National Whitewater Center in Charlotte,

North Carolina. Whitewater kayaking and whitewater rafting in a human-made whitewater venue were selected since the USNWC is the only completely artificial whitewater paddling venue in the country, providing an exclusive opportunity to study whitewater kayakers and whitewater rafters in a built environment. While little is known about the users of human made whitewater venues and other built adventure recreation environments, several studies have examined indoor rock climbers (Clark et al., 2008; Rapelje, 2004). To date, no research has focused on whitewater kayakers and whitewater rafters in a built environment.

Study Sample

During 8 days of data collection, 424 whitewater kayakers and rafters approached on site at the USNWC agreed to provide first names and email addresses. This yielded 400 viable email addresses, with 24 lost due to difficulty deciphering respondents' handwriting, or non-working email addresses. Six *opted out*, after receiving the initial email containing the survey link. This is an option within Survey Monkey (http://www.surveymonkey.com/), the online survey host. Two hundred and ninety two people completed the survey (see Appendix C). Two respondents were removed for not answering any questions after the informed consent, and two more for not answering any questions beyond the primary activity question. Seven cases were removed based on their response to the primary activity question: one claimed to be a *non-participant*, four listed their primary activity as challenge course and two listed their primary activity as mountain biking. Two more

were removed, one whitewater kayaker and one whitewater rafter, since they did not answer any of the motivation or demographic questions. The result was a sample of 279 people, 62 who listed their primary activity as whitewater kayaking and 217 as whitewater rafting, yielding an overall response rate of 69.8%.

Data Collection

Data were collected during May and June of 2008 on four weekdays during three different weeks and two Saturdays and two Sundays that occurred during four different weekends. Data were collected using an online survey instrument. Respondents were also given the option of completing a paper survey on site though none chose to do so. The sample was selected using purposive sampling (Trochim, 2005), as all possible subjects were included. Individuals were approached on site at the U.S. National Whitewater Center, after they had completed their activity. This occurred in the area surrounding the U*pper Pond*; kayakers at the Kayak Check-in and Boat House and Rafters between the Rafting Orientation Buildings and the Upper Pond, (see Figure 2). Rafters were put on the water in groups (approximately 15 to 30 rafters per group). Based on their scheduled time blocks, they also completed the activity in groups. Whereas kayakers were approached individually or in pairs, rafters were often approached in groups of 6 to 12.

As these individuals were approached, they were given an explanation of the study, its purpose, and what participation would entail. Those individuals who verbally consented to take part in the study were asked to provide their first name

and a valid email address in order to be sent the link to the online survey. During this interaction the participant's gender and the primary activity were recorded along with the time and date to facilitate an analysis of non-response bias.

Figure 2. Facility Map of the U.S. National Whitewater Center (http://www.usnwc.org/images/stories/WW_Main_Map.pdf).

Within one to two days of this initial contact, subjects were sent an individual email (see Appendix D) thanking them for agreeing to participate in the study, briefly re-emphasizing the importance of the study and their continued participation, and

informing them that they would receive an additional email within two or three days containing their unique link to the online survey. Within two to three days of receiving the initial individual email, subjects were sent a second email (see Appendix E) through Survey Monkey, again thanking them for participating and re-emphasizing the importance of their continued participation in the study and containing their unique link to the survey. Approximately one week after this second email, subjects who had not yet responded were sent a follow up email (see Appendix F), reinforcing the importance of their continued participation and once again providing their unique link to the survey. Approximately one week after the first reminder email, subjects who had not yet responded were sent a final follow up email similar to the previous one (see Appendix G). Finally, those respondents, who completed the survey, were sent an individual email (see Appendix H) thanking them for their time and commitment to the study and acknowledging their entry in a drawing for two USNWC rafting vouchers. These survey protocols follow the Dillman Tailored Design Method for internet surveys (Dillman, 2007).

At the conclusion of the survey (see Appendix C), participants were given the opportunity to register for a drawing for two USNWC rafting vouchers, valued at $65 each. The drawing was held on July 15th, 2008 and the winner was notified by email and asked to provide additional contact information so the vouchers could be mailed to them.

Instrument

The survey consisted of 56 questions, presented in seven sections: (1) introduction and informed consent, (2) activity participation, (3) whitewater kayaking history, preferences and motivations, (4) whitewater rafting history, preferences and motivations, (5) demographics and visit information, (6) facility attribute and perceptions and (7) drawing registration and a final thank you. Respondents were automatically directed to the appropriate sections for their primary activity based upon their responses and Survey Monkey's question logic.

Section 1 thanked the respondent for participating and briefly explained the importance of the research study. It also explained the details of informed consent and required them to either agree to continue or exit the survey. Section 2 asked the respondent about all activities in which they participated on the day they were contacted at the USNWC. Respondents were also asked to identify their primary activity on the day they were initially contacted. Whitewater kayakers and rafters were then each directed to their portions of the survey while all other respondents were sent to section 5.

Sections 3 and 4 explored the whitewater kayaker's and rafter's history, preferences, and motivations respectively. Experience Use History was addressed though four open ended questions that asked about years of experience, average annual participation, number of venues visited pursuing the activity, the number of times they had participated at the USNWC, and about the importance of kayaking or

rafting compared to other recreation activities. Respondents were asked about their social and environmental as well as risk-taking and decision-making preferences. A description of the International Scale of River Difficulty was included as a means of standardizing responses to questions related to the respondent's current proficiency, desired career proficiency, and self assessment of their skill's related to the activity. Twenty four Recreation Experience Preference Scale items ranked on a 5 point Likert-type scale from 1 *not important* to 5 *very important* followed this. These sections were adapted from a revised version of the Adventure Recreation Model instrument (Ewert, 2006; see appendix I).

Section 5 contained the demographic questions, including age, gender, race, income, and education. Respondents were asked about the distance they traveled to USNWC and who they visited the USNWC with on that date. The first question in section 6 was adapted from Rapelje's (2004) study with climbers, and asked respondents to rate on a five point Likert-type scale how eight facility attributes such as the availability of restrooms, food, or rental equipment *added to* or *detracted from* their experience. The second asked respondents "how would you best describe the physical setting of the U.S. National Whitewater Center" and provided choices ranging from *completely human made* to *completely natural* on a five point Likert-type scale. The final question in section 6 addressed whether or not the social characteristics (number of visitors, noise and the behavior of other visitors) at the USNWC *failed to meet, met* or *exceeded* their expectations. Finally section 7 asked

respondents to double check their responses, thanked them for participating and asked them to once again provide their first name and email address in order to be entered into a drawing for two rafting vouchers courtesy of the USNWC.

Adventure Recreation Model Constructs Operationalized

Level of engagement.

In the current study, Level of Engagement was operationalized as the user's self reported level of experience. Respondents were asked "Regarding your whitewater kayaking experience, how would you rate yourself" and given the following response categories: (a) "I have little or no whitewater rafting/kayaking experience", (b) "I have a moderate level of experience whitewater rafting/kayaking", (c) "I have participated in a variety of whitewater rafting/kayaking trips and at different locations", (d) "I have participated in a wide variety of trips, requiring a relatively high level of commitment and exposure to risk", (e) "I am a whitewater kayaking guide/instructor." The question and responses were adapted from a revised version of the Adventure Recreation Model instrument (Ewert, 2006). For analysis, the categories were collapsed such that "I have little or no whitewater rafting/kayaking experience" was the Introduction Level, "I have a moderate level of experience whitewater rafting/kayaking" and "I have participated in a variety of whitewater rafting/kayaking trips and at different locations" were the Development Level and "I have participated in a wide variety of trips, requiring a relatively high

level of commitment and exposure to risk” and “I am a whitewater kayaking guide/instructor” represented the Commitment Level.

Individual attributes.

The individual attributes used in the ARM included: motivation factors, locus of control (locus of decision making), skill level, experience use history, and frequency of participation. The motivation factors used in the ARM were adapted from a previous study by Ewert (1993) and were intended to help understand why respondents participated in these activities. Respondents were given a list of 24 motivations and asked to rate each of them on a 5-point Likert-type scale (i.e. not important to very important).

In the model, the critical decision making process throughout the participant’s adventure experience was used as a surrogate for locus of control. This aspect of the study examined whether the decision making process was influenced by the individual him/herself, another person within the group, or a guide or instructor. To better understand experience use history, respondents were asked to identify: (a) the number of years they have been involved in their primary activity (i.e. whitewater kayaking or rafting), (b) the number of times per year they participate this activity, (c) the number of different venues they have visited within the past five years for the purpose of pursuing this activity, and (d) the number of times they engaged in this activity at the USNWC.

The respondent's skill level was assessed by asking them to self-rate their level of proficiency using the International Scale of River Difficulty for whitewater kayaking and whitewater rafting as well as their experience level, where responses ranging from "I have little or no whitewater kayaking experience" to "I am a whitewater kayaking guide/instructor." Participants were also asked how important the activity is compared with other recreation activities.

Setting attributes.

The setting attributes used in the ARM include: risks, social orientation, and environmental orientation. Respondents were asked whether they were seeking real or perceived risk, and how much risk they preferred. It should also be noted that while risk is considered to be a setting attribute, it is also linked to the specific activity being undertaken. To understand the respondents' social orientation, individuals were asked whether they preferred to participate alone, as part of an organized group, or with a small group of peers. Additionally, respondents were asked about their setting preference and given options that ranged from completely natural to developed, with the option of no preference as long as they are able to participate in the activity. Due to the specific environment in which this study took place, the option of *highly developed human-made facilities* was added.

Study Variables

The independent variable for this study was *Level of Engagement,* which has three levels: (a) Introduction, (b) Development, and (c) Commitment. Level of

Engagement was operationalized as the participants' self reported level of experience. Dependent variables in the current study include demographic factors, motivation factors, environmental perceptions, facility attributes, risk, social and environmental preferences, locus of decision making, and frequency of participation.

Statistical Analysis

The research questions as well as the statistical analyses performed using SPSS 16.0 software are listed below:

1) What are the characteristics of the users of built recreation environments?

Descriptive statistics were used to describe the sample. Responses were compared by primary activity, gender, and Level of Engagement. Where possible, these results were compared to those from the Outdoor Recreation Participation Study (Leisure Trends Group, 2006). Additionally comparisons were made between independent variables (i.e. primary activity, gender and Level of Engagement) and the dependent variables using t-tests and one-way ANOVAs. Post hoc analyses were performed using Bonferroni for those comparisons with equal variance and Tamhane's T2 for those with unequal variance, both of which are conservative pairwise comparisons tests based on a t-test.

2) Which characteristics of these facilities enhance or detract from the user's outdoor adventure experience?

Responses to the eight facility attribute questions were analyzed using descriptive statistics, and comparisons between groups (i.e. primary activity, gender and Level of Engagement) were made using t-tests and one-way ANOVAs.

3) How do users perceive these built environments?

Responses to the two environmental perception questions were analyzed using descriptive statistics, and comparisons between groups (i.e. primary activity, gender and Level of Engagement) were made using t-tests and one-way ANOVAs.

4) Is the Adventure Recreation Model useful as a means of describing users of built adventure recreation environments?

Correlation tests of significance were performed on individual and setting attributes by Level of Engagement and where possible, these results were compared to the predicted patterns of the model (Ewert & Hollenhorst, 1989).

Summary

This chapter provided a description of methodology used in this study. It included descriptions of the study site, the sample population, the sample, data collection process, the instrument and statistical procedures. Chapter four will review the results from the statistical analyses conducted on the data.

CHAPTER 4

Results

The preceding chapter described the population, sample, instrument, and methods used in the present study. These were conceptualized in order to develop an understanding of the uses and users of built adventure recreation environments through the application of the Adventure Recreation Model (ARM; Ewert & Hollenhorst, 1989). This chapter presents results from the statistical tests used to analyze the data and answer the four research questions posed in Chapter three:

1. What are the characteristics of the users of built recreation environments?
2. Which characteristics or attributes of these facilities enhance or detract from the user's outdoor adventure experience?
3. How do users perceive these built environments?
4. Is the Adventure Recreation Model useful as a means of describing users of built adventure recreation environments?

Characteristics of the Users of a Built Recreation Environment

Of the 279 study participants, 217 (77.8%) were whitewater rafters while the remaining 62 (22.2%) were whitewater kayakers. Females accounted for 41.4% (n=115) of the respondents with males accounting for the other 58.6% (n=163). Two hundred and sixty-four respondents (94.6%) reported their race as White non-Hispanic while the remaining 5.4% indicated their race to be Hispanic, African-

American, African or Asian (see Table 1). More than half (55.3%) of the study participants were under 35 years of age (see Table 2). One hundred and thirty-five respondents (48.4%) reported having completed their bachelors' degree and another 87 (31.2%) reported having received a postgraduate degree.

Table 1
Respondent's Race

Race	*N*	%
White non-Hispanic	264	94.4
Hispanic	3	1.1
African-American	10	3.6
African	1	0.4
Asian	1	0.4
Total	279	100

Table 2
Respondent's Age

Age	*N*	%
Under 25	37	13.4
25-34	116	41.9
35-44	64	23.1
45-54	47	17
55-64	12	4.3
65 or older	1	0.4
Total	277	100

Over 40% (n=109) reported an annual household income of $100,001 or more. Over 50% (n=143) of respondents traveled 25 miles or less (one way) when they visited the U.S. National Whitewater Center (USNWC). Similarly 65% of kayakers and 64.5% of rafters traveled 50 miles or less. The average frequency of participation for 92.1% of whitewater rafters was 1 time or less per year (see Table

3), while 59.1% of whitewater kayakers, averaged 20 times or less per year and 12.9% participated more than 50 times per year (see Table 4)

Table 3
Rafters' Frequency of Participation

Average times per year	*N*	%
One or fewer	198	92.5
2 Times	11	5.1
3 - 6 Times	5	2.4
Total	214	100

Table 4
Kayakers' Frequency of Participation

Average times per year	*N*	%
One or fewer	8	13.1
2-10 Times	11	18.0
11-25 Times	11	18.0
26-50 Times	16	26.2
51-100 Times	7	11.5
More than 100 Times	8	13.1
Total	61	100

Respondents were also asked who they visited the USNWC with and were given the option to select all categories that applied (see Table 5). Most of the open-ended responses for the "other" category mentioned work, business groups, and co-workers (n= 41). A related finding was that of the 41 responses that mentioned work, business groups, and co-workers, 7 indicated that their visit was part of a corporate teambuilding event.

Table 5
Respondent Visited the USNWC:

	N	%
Alone	12	4.3
With spouse or partner	49	17.6
With family	66	23.7
With friends	161	57.7
Other	59	21.1
Total	347	124.4

Note: totals are greater than overall *N* due to respondents' ability to choose all that applied

Motivation Factors

Motivation factors were analyzed by primary activity, gender and Level of Engagement. The top four motivations for all respondents dealt with escaping routine, challenge, and exhilaration (see Tables 6-8). When compared by primary activity, significant differences between whitewater rafters and kayakers ($p<.01$) were found for 16 of the 24 motivations (see Table 6). When analyzed by gender significant differences existed between males and females for only 11 of the 24 factors and while ranked differently, the top three motivations were the same for both (see Table 7). Finally when motivation factors were analyzed by Level of Engagement, there were significant differences between Introduction and Development, Development and Commitment, or Introduction and Commitment for 18 of the 24 motivation factors were found (see Table 8). To determine which levels differed significantly post-hoc analyses were performed, using Bonferroni for those

comparisons with equal variance and Tamhanes T2 (a conservative pairwise comparisons test based on a t-test) for those with unequal variance (see Table 8).

Table 6

Motivations for Participation for Rafters and Kayakers

Motivation	Overall *M*(*N*=279)	*SD*	Rafter *M*(*n*=217)	*SD*	Kayaker *M*(*n*=62)	*SD*	*t*	*p*
To be able to do something outside my normal routine[1]	4.15	0.94	4.18	0.88	4.02	1.08	1.251	.21
For the exhilaration	4.14	0.99	4.10	1.05	4.31	0.74	-1.780	.08
To be physically and mentally challenged	3.87	0.98	3.74	1.01	4.35	0.68	-5.593	<.01**
To experience a change from my normal life/routine	3.86	1.00	3.89	0.98	3.74	1.09	1.053	.29
For the sense of accomplishment	3.70	1.06	3.53	1.09	4.29	0.68	-6.702	<.01**
For the close interaction with a natural environment	3.63	1.10	3.45	1.08	4.23	0.93	-5.600	<.01**
For the friendship(s)	3.55	1.11	3.51	1.11	3.68	1.11	-1.034	.30
To test myself/my abilities	3.51	1.08	3.33	1.07	4.16	0.85	-6.401	<.01**
To be part of a group or team	3.50	1.09	3.64	1.03	3.03	1.16	3.962	<.01**
I enjoy pushing myself to the edge	3.36	1.24	3.27	1.28	3.68	1.07	-2.521	.01**
To have a close interaction with other people	3.29	1.04	3.33	1.03	3.15	1.08	1.246	.21
To develop my whitewater rafting/kayaking skills	3.09	1.24	2.75	1.12	4.29	0.80	-12.143	<.01**
To satisfy personal needs	3.04	1.20	2.82	1.17	3.81	0.97	-6.693	<.01**
It makes me feel good about myself	3.02	1.24	2.83	1.21	3.66	1.12	-4.829	<.01**
To face risk and danger	2.97	1.16	2.94	1.16	3.08	1.14	-0.817	.42
It allows me to reach a variety of goals I have for myself	2.77	1.27	2.50	1.18	3.69	1.11	-7.087	<.01**
I enjoy associating with other whitewater rafters/kayakers	2.75	1.24	2.53	1.14	3.55	1.28	-6.086	<.01**
To be in control and make decisions	2.19	1.15	1.98	1.06	2.90	1.14	-5.924	<.01**
For self expression	2.11	1.20	1.94	1.12	2.69	1.30	-4.145	<.01**
For spiritual development	2.05	1.23	1.85	1.08	2.74	1.45	-4.516	<.01**
Because I am good at it	1.88	1.05	1.69	0.92	2.53	1.20	-5.117	<.01**
To show others that I can whitewater raft/kayak	1.74	1.02	1.79	1.05	1.55	0.92	1.791	.08
To be known as a whitewater rafter/kayaker	1.65	0.87	1.59	0.79	1.85	1.08	-1.825	.07
To use my equipment	1.53	0.92	1.37	0.78	2.08	1.15	-4.553	<.01**

Note. [1]Means based on 5-point response categories with 1 being "Not Important" and 5 " Very Important", * p=.05, ** p=.01

Table 7

Motivations for Participation for Males and Females

Motivation	Overall		Males		Females		*t*	*p*
	M(N=279)	*SD*	*M(n=163)*	*SD*	*M(n=115)*	*SD*		
To be able to do something outside my normal routine[1]	4.15	0.94	4.00	1.03	4.36	0.74	-3.177	<.01**
For the exhilaration	4.14	1.00	4.25	0.90	4.00	1.11	1.964	.05*
To be physically and mentally challenged	3.87	0.99	3.96	0.93	3.76	1.06	1.640	0.1
To experience a change from my normal life/routine	3.86	1.01	3.77	1.01	3.98	0.98	-1.729	.09
For the sense of accomplishment	3.70	1.06	3.75	1.04	3.62	1.09	1.016	.31
For the close interaction with a natural environment	3.63	1.10	3.72	1.01	3.48	1.20	1.746	.08
For the friendship(s)	3.55	1.12	3.52	1.05	3.59	1.21	-0.513	.61
To test myself/my abilities	3.51	1.08	3.63	1.09	3.34	1.04	2.241	.03*
To be part of a group or team	3.50	1.09	3.31	1.09	3.77	1.04	-3.484	<.01**
I enjoy pushing myself to the edge	3.36	1.24	3.58	1.17	3.04	1.28	3.641	<.01**
To have a close interaction with other people	3.29	1.04	3.18	1.01	3.44	1.07	-2.054	.04*
To develop my whitewater rafting/kayaking skills	3.09	1.24	3.28	1.27	2.83	1.15	3.080	<.01**
To satisfy personal needs	3.04	1.20	3.12	1.15	2.93	1.26	1.279	.20
It makes me feel good about myself	3.02	1.24	2.92	1.24	3.15	1.23	-1.514	.13
To face risk and danger	2.97	1.16	3.25	1.10	2.57	1.12	5.022	<.01**
It allows me to reach a variety of goals I have for myself	2.77	1.27	2.82	1.29	2.69	1.24	0.836	.40
I enjoy associating with other whitewater rafters/kayakers	2.75	1.24	2.82	1.23	2.65	1.26	1.123	.26
To be in control and make decisions	2.19	1.15	2.41	1.20	1.87	1.00	4.106	<.01**
For self expression	2.11	1.20	2.14	1.21	2.05	1.20	0.607	.54
For spiritual development	2.05	1.23	2.15	1.25	1.90	1.19	1.628	.11
Because I am good at it	1.88	1.05	2.03	1.05	1.66	1.02	2.939	<.01**
To show others that I can whitewater raft/kayak	1.74	1.01	1.64	0.94	1.85	1.10	-1.645	.10
To be known as a whitewater rafter/kayaker	1.65	0.87	1.65	0.86	1.63	0.87	0.229	.82
To use my equipment	1.53	0.93	1.68	1.04	1.31	0.69	3.550	<.01**

Note. [1]Means based on 5-point response categories with 1 being "Not Important" and 5 " Very Important", * p=.05, ** p=.01

Table 8

Analysis of Variance of Motivations for Participation by Level of Engagement

Motivation	Overall M(*N*=279)	SD	Introduction *M(n=119)*	*SD*	Development *M(n=131)*	*SD*	Commitment *M(n=29)*	*SD*	*F*	*p*
To be able to do something outside my normal routine[1]	4.15	0.94	4.24	0.78	4.16	0.92	3.69	1.39	4.215	.02* [2]
For the exhilaration	4.14	0.99	4.11	1.06	4.08	0.97	4.55	0.69	2.791	.06
To be physically and emotionally challenged	3.87	0.98	3.76_{a}	1.08	3.85_{a}	0.90	4.45_{b}	0.74	6.038	<.01** [2]
To experience a change from my normal life/routine	3.86	1.00	4.00_{a}	1.00	$3.85_{a,b}$	0.90	3.31_{b}	1.29	5.705	<.01** [3]
For the sense of accomplishment	3.70	1.06	3.60_{a}	1.12	3.66_{a}	0.99	4.24_{b}	0.99	4.552	.01** [2]
For the close interaction with a natural environment	3.63	1.10	3.34_{a}	1.15	3.66_{a}	1.00	4.62_{b}	0.56	18.157	<.01** [3]
For the friendship(s)	3.55	1.11	3.45_{a}	1.16	3.50_{a}	1.08	4.14_{b}	0.92	4.716	.01** [2]
To test myself/my abilities	3.51	1.08	$3.50_{a,b}$	1.09	3.42_{a}	1.05	3.97_{b}	1.12	3.088	.05* [2]
To be part of a group or team	3.50	1.09	3.58	1.09	3.43	1.05	3.52	1.27	0.615	.54
I enjoy pushing myself to the edge	3.36	1.24	3.24_{a}	1.33	3.33_{a}	1.17	4.00_{b}	1.00	4.531	.01 [3]
To have a close interaction with other people	3.29	1.04	3.22	1.08	3.30	1.01	3.55	1.02	1.202	.30
To develop my whitewater rafting/kayaking skills	3.09	1.24	2.71_{a}	1.22	3.19_{b}	1.13	4.21_{c}	1.05	20.184	<.01** [2]

Note. Means in the same row that do not share the same subscripts differ at p<.05 in post hoc comparison

[1]Means based on 5-point response categories with 1 being "Not Important" and 5 " Very Important"

[2] Bonferroni post hoc comparison used due to equal variance assumed

[3] Tamhane's T2 post hoc comparison used due to equal variance not assumed

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

Table 8 continued

Analysis of Variance of Motivations for Participation by Level of Engagement

Motivation	Overall		Introduction		Development		Commitment		*F*	*p*
	M(N=279)	*SD*	M(*n*=119)	SD	*M(n=131)*	*SD*	*M(n=29)*	*SD*		
To satisfy personal needs[1]	3.04	1.20	2.20_a	1.22	2.93_a	1.12	4.03_b	0.98	12.008	<.01** [2]
It makes me feel good about myself	3.02	1.24	2.83_a	1.33	3.02_a	1.13	3.76_b	1.02	6.827	<.01** [3]
To face risk and danger	2.97	1.16	2.92	1.15	2.97	1.14	3.24	1.27	0.928	.40
It allows me to reach a variety of goals I have for myself	2.77	1.27	2.61_a	1.25	2.70_a	1.21	3.69_b	1.26	9.262	<.01** [2]
I enjoy associating with other whitewater rafters	2.75	1.24	2.31_a	1.14	2.87_b	1.17	4.03_c	0.94	28.233	<.01** [3]
To be in control and make decisions	2.19	1.15	2.01_a	1.10	2.13_a	1.07	3.17_b	1.20	13.464	<.01** [2]
For self expression	2.11	1.20	2.03_a	1.21	2.04_a	1.16	2.72_b	1.22	4.372	.01** [2]
For spiritual development	2.05	1.23	1.82_a	1.10	2.02_a	1.17	3.14_b	1.43	15.010	<.01** [3]
Because I am good at it	1.88	1.05	1.49_a	0.81	1.96_b	0.99	3.10_c	1.15	35.827	<.01** [2]
To show others that I can whitewater raft/kayak	1.74	1.02	1.77	1.08	1.76	0.99	1.52	0.95	0.766	.47
To be known as a whitewater rafter/kayaker	1.65	0.87	1.50	0.77	1.76	0.90	1.69	1.04	2.854	.06
To use my equipment	1.53	0.92	1.41_a	0.83	1.48_a	0.83	2.24_b	1.35	10.408	<.01** [3]

Note. Means in the same row that do not share the same subscripts differ at p<.05 in post hoc comparison

[1] Means based on 5-point response categories with 1 being "Not Important" and 5 " Very Important"

[2] Bonferroni post hoc comparison used due to equal variance assumed

[3] Tamhane's T2 post hoc comparison used due to equal variance not assumed

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

Facility Characteristics or Attributes that Enhance or Detract from the Experience

The second research question asked which characteristics or attributes of these facilities enhanced or detracted from the user's outdoor adventure experience? Eight statements involving how various aspects of the whitewater center's characteristics and attributes affected the participant's experience were utilized. Each employed a five-point scale ranging from (2) "strongly adds" to (0) "does not affect" to (-2) "strongly detracts", including "adds" and "detracts", (1) and (-1) respectively. Overall, none of the eight characteristics were seen as detracting from the experience.

Analyzed by primary activity, seven of the eight facility attributes were viewed more favorably by whitewater rafters than whitewater kayakers. These differences were statistically significant. The eighth, "close to home", while seen more favorably by kayakers, was not significant (see Table 9). When viewed by gender, seven of the eight were viewed more favorably by females than males. However only five of these differences were found to significant; "close to home", while seen more favorably by males, was not significant (see Table 10). Finally, when analyzed by level of engagement, the same seven characteristics showed significant differences, with the means decreasing as level of engagement increased. Again, the exception was "close to home" and while not significant, the most favorable rating came from those in the "commitment" group (see Table 11).

Table 9
Facility Attributes for Rafters and Kayakers

	Overall		Rafters		Kayakers			
Facility Attribute	*M(N)*	*SD*	*M(n)*	*SD*	*M(n)*	*SD*	*t*	*p*
Instructors available at site[1]	1.58*(278)*	0.85	1.82*(216)*	0.60	0.71*(62)*	1.01	8.246	<.01**
Restrooms available on site	1.51*(278)*	0.90	1.62*(216)*	0.83	1.11*(62)*	1.03	3.576	<.01**
Rental equipment available at site	1.51*(274)*	0.94	1.76*(214)*	0.69	0.63 *(60)*	1.16	7.166	<.01**
Food available at site	1.47*(277)*	0.97	1.59*(215)*	0.88	1.08*(62)*	1.14	3.236	<.01**
Other activities available at site	1.45*(277)*	0.96	1.57 *(215)*	0.89	1.03*(62)*	1.06	3.667	<.01**
Information available at site	1.44*(277)*	0.92	1.60*(215)*	0.83	0.89*(62)*	1.03	5.023	<.01**
Close to home	1.41*(276)*	1.01	1.37*(214)*	1.05	1.55*(62)*	0.84	-1.391	0.17
The site is developed	0.93*(277)*	1.21	1.14*(214)*	1.13	0.21*(62)*	1.20	5.433	<.01**

[1] Means based on 5-point response categories with -2 being "Strongly Detracts" and 2 " Strongly Adds"
** *p*<.01

Table 10
Facility Attributes for Males and Females

	Overall		Males		Females			
Facility Attribute	*M(N)*	*SD*	*M(n)*	*SD*	*M(n)*	*SD*	*t*	*p*
Instructors available at site [1]	1.57*(277)*	0.85	1.38*(162)*	0.95	1.84*(115)*	0.60	-4.948	<.01**
Restrooms available on site	1.51*(277)*	0.90	1.36*(162)*	0.96	1.70*(115)*	0.76	-3.279	<.01**
Rental equipment available at site	1.51*(273)*	0.94	1.36*(159)*	1.02	1.72*(114)*	0.78	-3.258	<.01**
Food available at site	1.47*(276)*	0.97	1.34*(161)*	1.04	1.66*(115)*	0.82	-2.908	<.01**
Other activities available at site	1.45*(276)*	0.96	1.39*(161)*	0.98	1.54*(115)*	0.92	-1.333	0.18
Information available at site	1.44*(276)*	0.92	1.36*(161)*	0.95	1.55*(115)*	0.88	-1.691	0.92
Close to home	1.42*(275)*	0.99	1.45*(161)*	0.97	1.38*(114)*	1.02	0.630	0.53
The site is developed	0.93*(276)*	1.21	0.80*(161)*	1.22	1.11*(115)*	1.18	-2.167	0.03*

[1] Means based on 5-point response categories with -2 being "Strongly Detracts" and 2 " Strongly Adds"
* $p<.05$, ** $p<.01$

Table 11

Analysis of Variance of Facility Attributes for Level of Engagement

	Overall		Introduction		Development		Commitment			
Facility Attribute	*M(N)*	*SD*	*M(n)*	*SD*	*M(n)*	*SD*	*M(n)*	*SD*	*F*	*p*
Instructors available at site[1]	1.58*(278)*	0.85	1.83_a *(119)*	0.56	1.53_b *(131)*	0.89	0.71_c *(28)*	1.08	20.462	<.01**
Restrooms available on site	1.51*(278)*	0.90	1.75_a *(119)*	0.70	1.42_b *(131)*	0.94	0.89_c *(28)*	1.07	12.080	<.01**
Rental equipment available at site	1.51*(274)*	0.94	1.79_a *(117)*	0.64	1.49_b *(130)*	0.93	0.44_c *(27)*	1.25	25.803	<.01**
Food available at site	1.47*(277)*	0.97	1.71_a *(119)*	0.78	1.35_b *(130)*	1.01	1.04_b *(28)*	1.20	7.732	<.01**
Other activities available at site	1.45 *(277)*	0.96	1.63_a *(119)*	0.85	$1.39_{a,b}$ *(130)*	0.98	0.96_b *(28)*	1.07	4.926	<.01**
Information available at site	1.44*(277)*	0.92	1.60_a *(119)*	0.81	1.45_a *(130)*	0.93	0.75_b *(28)*	1.04	10.060	<.01**
Close to home	1.41*(276)*	1.01	1.44*(117)*	1.02	1.34*(131)*	1.03	1.57*(28)*	0.84	1.016	.36
The site is developed	0.93*(277)*	1.21	1.42_a *(119)*	0.98	0.68_b *(130)*	1.22	0.04_b *(27)*	1.20	20.714	<.01**

Note. Means in the same row that do not share the same subscripts differ at p<.05 in Tamhane's T2 post hoc comparison used due to equal variance not assumed

[1] Means based on 5-point response categories with -2 being "Strongly Detracts" and 2 "Strongly Adds"

** *p*<.01

User's Perceptions of Built Environments

Respondents were asked two questions about their perceptions of the physical and social environment of the USNWC. The first question, "How would you best describe the physical setting of the U.S. National Whitewater Center?" Respondents could select from: Completely Human Made (1), More Human Made Than Natural (2), Unsure (3), More Natural Than Human Made (4) and Completely Natural (5). Significant differences were noted between whitewater rafters (M=2.13, SD=0.95) and whitewater kayakers (M=1.85, SD=0.92), t=2.208, p=.04, while no significant difference was found between males (M=2.01, SD=0.95) and females (M=2.13, SD=0.93), t=-1.030, p=.30. When participants' perceptions of the physical setting were analyzed by level of engagement, there was a significant difference between the introduction phase (M=2.27, SD=1.01) and the commitment phase (M= 1.57, SD=0.88), p<.01, but not between the introduction phase and the development phase (M=1.99, SD=0.86) p=.06 or the development phase and the commitment phase, p=.08. This analysis used the Tamhane's T2 pairwise comparison analysis due to unequal variance.

Similarly, the second question asked respondents whether "the social characteristics (number of other visitors, behavior of other visitors, noise, etc.) of the U.S. National Whitewater Center…" and allowed respondents to select from: Failed to meet my expectations (1), (2), Met my expectations (3), (4), or Exceeded my expectations (5). The difference between whitewater rafters (M=3.88, SD=0.83) and

whitewater kayakers (*M*=3.61, *SD*=0.93) was significant, *t*=2.208 and *p*=.03, while no significant differences existed between males (*M*=3.77, *SD*=0.87) and females (*M*=3.90, *SD*=0.84), *t*=-1.247 and *p*=.21. Comparisons between the levels of engagement revealed a significant difference between the introduction phase (*M*=4.01, *SD*=0.85) and the development phase (*M*=3.71, *SD*=0.80) at *p*=.02. The difference between the introduction and the commitment phase (*M*=3.57, *SD*=1.03), was significant at *p*=.05. This analysis used the Sheffe's pairwise comparison analysis due to equal variance.

The Adventure Recreation Model as a Means of Describing Users of Built Adventure Recreation Environments

Correlation tests were performed between Level of Engagement and the independent variables including the individual and setting attributes and motivation factors for both whitewater rafters (see Table 12) and kayakers (see Table 13). The ARM prediction indicates the predicted relationship hypothesized by Ewert and Hollenhorst (1989).

Table 12

Pearson Correlation Tests of Significance: Rafters' Level of Engagement

Individual Attributes:	ARM Prediction	*r*	*P*
Skill	positive	.60	<.01**
frequency of participation	positive	.01	.94
locus of decision making	positive	.00	.99
Setting Attributes:			
Type of environment	positive	.22	<.01**
preferred level of risk	positive	.26	<.01**
social orientation			
by yourself		.00	.99
part of an organized or guided group		.03	.62
with a group of friends		-.17	.01*
leading a group/instructing others		b	B
Motivations for Participation:			
For the exhilaration		.05	.47
For the sense of accomplishment		.01	.85
To face risk and danger		.08	.23
To be physically and mentally challenged		.06	.35
To be part of a group or team		.02	.80
For the friendship(s)		.03	.64
To have a close interaction with other people		.07	.30
To be able to do something outside my normal routine		-.13	.05
To be known as a whitewater rafter		.04	.40
To show others that I can whitewater raft		-.05	.51
To develop my whitewater rafting skills		.15	.03*
It allows me to reach a variety of goals I have for myself		-.01	.85
To test myself/my abilities		-.10	.16
For the close interaction with a natural environment		.13	.06
To satisfy personal needs		-.05	.51
To experience a change from my normal life/routine		-.16	.02*
To use my equipment		.05	.44
For self expression		-.70	.30
To be in control and make decisions		.06	.41
For spiritual development		.10	.13
Because I am good at it		.21	<.01**
It makes me feel good about myself		.00	.98
I enjoy associating with other whitewater rafters		.22	<.01**
I enjoy pushing myself to the “edge”		.05	.48

Notes: (a) see survey in Appendix C for full questions and response categories

(b) cannot be calculated because at least one of the variables is a constant

* $p<.05$, ** $p<.01$

Table 13

Pearson Correlation Tests of Significance: Kayakers' Level of Engagement

Individual Attributes:	ARM Prediction	*r*	*P*
Skill	positive	.73	<.01**
frequency of participation	positive	.51	<.01**
locus of decision making	positive	-.28	.03*
Setting Attributes:			
Type of environment	positive	.06	.65
preferred level of risk	positive	.12	.38
social orientation			
by yourself		.18	.17
part of an organized or guided group		.04	.75
with a group of friends		-.11	.41
leading a group/instructing others		-.14	.28
Motivations for Participation:			
For the exhilaration		.09	.51
For the sense of accomplishment		.00	.99
To face risk and danger		-.02	.86
To be physically and mentally challenged		.07	.60
To be part of a group or team		.19	.14
For the friendship(s)		.38	<.01**
To have a close interaction with other people		.30	.02*
To be able to do something outside my normal routine		-.11	.40
To be known as a whitewater kayaker		.11	.41
To show others that I can whitewater kayak		.08	.52
To develop my whitewater kayaking skills		.17	.18
It allows me to reach a variety of goals I have for myself		.13	.31
To test myself/my abilities		-.06	.64
For the close interaction with a natural environment		.49	<.01**
To satisfy personal needs		.37	<.01**
To experience a change from my normal life/routine		-.20	.12
To use my equipment		.12	.36
For self expression		.18	.16
To be in control and make decisions		.23	.07
For spiritual development		.25	.05
Because I am good at it		.59	<.01**
It makes me feel good about myself		.33	.01*
I enjoy associating with other whitewater kayakers		.46	<.01**
I enjoy pushing myself to the “edge”		.25	.05

Note: see survey in Appendix C for full questions and response categories

* $p<.05$, ** $p<.01$

Summary

This chapter provided a description of the statistical analyses pertinent to the study's research questions:

1. What are the characteristics of the users of built recreation environments?

Whitewater rafters comprised nearly 78% of respondents, and almost 60% were males. Over 55% were under 35 years of age and approximately 95% indicated their race as White non-Hispanic. Close to half had earned their bachelors' degree, while nearly a third held a post graduate degree. Over 40% of respondents reported an annual household income of at least $100,000. More than a 26% of kayakers reported participating 26 to 50 times per year, while over 92% of rafters participated once a year or less. The top four motivations for participation involved novelty, challenge and motivation. Differences existed in motivations for participation between primary activities, genders and among levels of engagement.

2. Which characteristics or attributes of these facilities enhance or detract from the user's outdoor adventure experience?

None of the facility attributes or characteristics were found to detract from the participants' experiences. Overall, rafters viewed them more favorably than kayakers, and females viewed them more favorably than males. Ratings for seven of the facility attributes decreased as Level of Engagement increased.

3. How do users perceive these built environments?

Rafters viewed the whitewater center's physical environment as being more natural, and indicated that the social environment better met their expectations, than did kayakers. No significant differences were found between males and females with respect to their perceptions of either the physical or social environments. When analyzed by level of engagement, those in the commitment phase viewed the physical environment as more human made than those in the introduction phase, and as level of engagement increased, participants' indicated decreasing satisfaction with the social environment of the USNWC.

4. Is the Adventure Recreation Model useful as a means of describing users of built adventure recreation environments?

Correlation tests of significance for rafters showed a significant and positive relationship between level of engagement and skill, type of environment, level of risk and three of the twenty four motivation factors. Similarly, correlation tests of significance for kayakers revealed a significant and positive relationship between level of engagement and skill, frequency of participation, and seven of the twenty four motivation factors.

CHAPTER 5

Conclusions and Recommendations

The primary purpose of this study was to develop a better understanding of the characteristics of adventure recreationists utilizing built environments, why these venues are being used, and how these environments are perceived. Understanding the characteristics or attributes of built environments that add to or detract from the participant's experience has the potential to inform managers of both natural and built recreation sites about participants' environmental preferences, the quality of the recreational experience, visitor satisfaction, and return rates. Additionally, this study sought to understand the role of built environments in adventure recreation and exploring whether the Adventure Recreation Model was useful as a means of describing users of built adventure recreation environments (Ewert & Hollenhorst, 1989).

Characteristics of the Users of a Built Recreation Environment

The 2005 Outdoor Recreation Participation Study (ORP Study) characterized the average American rafter as an unmarried male, 34 years old, who rafted twice a year. That same year, 10.6 million individuals took part in 21 million rafting outings. Similarly 2.2 million people participated in whitewater kayaking (Leisure Trends Group, 2006). However, the researchers determined that their sample size was too small to provide any reliable detailed results and only included information on

whitewater rafters. Conversely, the results presented for this current study represent both whitewater rafters and whitewater kayakers.

In the ORP Study, males comprised 63% of the sample and females 37%, which is similar to the 59% males and 41% females found in the present study. The ORP Study also reported that 82% of respondents identified their race as Caucasian, 4% African-American, 10% Hispanic, and 1% Asian. In the present study 94% indicated their race as Caucasian, 4% African-American, 1% Hispanic, 1% African, and 1% Asian.

In the present study, 13% of respondents indicated that they were under 25 years old, 42% were 25-34 years old, 23% were 35-44 years old, and 21.5% were 45 or older. In the ORP Study, 39% of were 16-24, 16% as 25-34, 23% as 35-44, and 22% as 45 or older. While little difference exists between the two samples for participants 35 years old and older, the two younger categories are nearly inverted. The difference between the youngest categories is likely due in part to the current study excluding participants less than 18 years of age; this does not explain the increased number of 25-34 year olds in the current study. While not expecting the current sample to mirror the national profile, this is a sizeable discrepancy, and might be due to factors specific to this location, whether cost, marketing aimed at this demographic, or some other factor related to the USNWC.

One unanticipated demographic finding was related to who respondents visited the USNWC with. Most respondents indicated that they visited with family or

friends. However of the 59 open ended responses from the other category, 41 indicated that they visited the USNWC as part of a business group, with co-workers, or simply work, with 7 noting that it was part of a corporate teambuilding event. This is likely due to the fact that the USNWC has a conference center and a challenge course on site in addition to the whitewater venue. The facility directs marketing towards corporate groups as well as families and individuals. These findings could also be explained by the close proximity of the USNWC to the city of Charlotte. As organizations look to provide professional development for their employees, while minimizing expenses, being able to participate in single day programs in a built environment nearby is likely preferable to similar activities in a natural environment involving greater travel and time commitments. This finding is consistent with earlier findings from the Leisure Trends Group (2006) that suggested individuals seek experiences that can be done in a day and Moorman et al. (2007), who noted that not all desired activities occur naturally in many locations, resulting in increased travel, a greater time commitment, and reduced ease of access. Since these human-made environments can be built in or near population centers, they are very accessible, allowing more people to learn about and participate in activities they might not otherwise (Russell, 2005).

Analysis of participants' motivations revealed several trends. First, the five highest ranked motivations overall centered on escaping routine and included challenge, exhilaration, and accomplishment. Being able to do something outside

their normal routine was ranked significantly higher by females than males, while males rated motivations that had to do with exhilaration, facing risk and danger, pushing themselves to the edge, being in control, and testing their abilities significantly higher. These findings suggest that while females sought novel experiences, males sought excitement.

As might be expected, motivation factors related to escaping routine decreased in importance as level of engagement increased. Scott and Shafer (2001) described the increased focusing of behavior as an activity becomes central to the participant's life, such that the activity becomes part of the routine rather than a means of escaping it. Similarly, using personal equipment becomes significantly more important as the level of engagement increases (Scott & Shafer). Yet overall, "to use my equipment" was the lowest ranked motivation.

Another unanticipated finding was that the motivation factor, "for the close interaction with the natural environment" ranked number six overall. This was surprising given the built environment. This motivation was significantly more important for kayakers than rafters, and was significant and positively correlated with level of engagement for kayakers. This seems contrary to Schuett's (1994) findings that kayakers, and more highly skilled participants, sought out more natural environments.

Findings indicated that whitewater rafting and kayaking at the USNWC is a social experience. Only 4.3% of respondents indicated that they visited "alone",

compared with “spouse or partner” 17.6%, “family” 23.7%, and “friends” 57.7%. Analyses of the motivation factors also indicated the existence of a social aspect to these activities. When analyzed by primary activity, gender, and level of engagement, the means for “to be part of a group or team”, “for the friendships”, “to have a close interaction with other people” and “I enjoy associating with other rafters/kayakers” ranged from 3.03 to 3.77, 3.45 to 4.14, 3.15 to 3.55 and 2.31 to 4.03 respectively. This is important since by the facility’s design and programmatic character, motivations such as privacy, solitude, and escaping crowds are not likely to be achieved. For those seeking a social recreation experience, these environments are critical to their satisfaction, whereas for others it may lead to dissatisfaction. User satisfaction, based on the recreation experience/benefit gestalt, is setting dependent (Moore & Driver, 2005). It is therefore essential that managers understand the manner in which different setting characteristics and attributes impact users.

Facility Characteristics or Attributes that Enhance or Detract from the Experience

None of the eight facility characteristics or attributes were viewed as detracting from a user’s experience by any grouping (i.e. primary activity, gender or level of commitment). Analyzed by primary activity, whitewater rafters viewed all except “Close to home” more favorably than whitewater kayakers. These differences were all statistically significant. This finding may indicate a preference on the part of rafters for a more developed environment as opposed to kayaker seeking a more

natural setting. When analyzed by gender, the findings suggested that females preferred a more developed setting. While males viewed the characteristic, “Close to home,” more favorably, the difference was not significant.

Finally, when analyzed by level of engagement, the same seven characteristics showed statistically significant differences, with the means decreasing as level of engagement increased. Though not significant, “Close to home” was the most favorable rating for those in the “commitment” phase, again demonstrating a higher frequency of participation and preference for reduced travel. These findings support the Adventure Recreation Model, indicating that as level of engagement increases the preference for a more natural setting exists, even though it is not being realized in the built environment (Ewert & Hollenhorst, 1989, 1994).

Data from three of the facility attribute questions supported the stages of specialization (Scott & Shafer, 2001) and the levels of engagement associated with the ARM (Ewert & Hollenhorst, 1994). Manning (1999) stated that beginners (i.e. introduction level) possess very little knowledge about the activity or the setting while experts (i.e. commitment level) are likely to possess a great deal of knowledge about both the activity and the setting. When asked whether “Information available at site,” added to or detracted from one’s experience, respondents in the introduction level indicated that it added to their experience more strongly than those in the development or commitment level. Responses for “Instructors available at site” were

similar with introduction level respondents scoring it more favorably than those at the development or commitment level.

Scott and Shafer (2001) also stated that the expert is more likely to possess and use advanced equipment. Responses for “Rental equipment available on site were similar to those for the previous two attributes, with means decreasing as level of engagement increased from introduction to development to the commitment level. While not specifically asking if these individuals possess the knowledge or equipment, it would seem reasonable that if having information, instructors, and rental equipment available on site is enhancing the experience for beginners then it is likely they do not possess the knowledge and equipment themselves. Furthermore, these attributes were not as important for experts implying they more than likely already possessed the requisite knowledge and equipment.

While some findings supported the idea of specialization, it is important to remember that people may follow different career paths based upon a variety of factors (Scott & Shafer, 2001). Furthermore, not all recreationists seek expert status, as evidenced by the disparity in responses for frequency of participation. For many kayakers, the focusing of the behavior as well as skill acquisition and development can be seen in frequency of participation and motivation factors. Rafters, by comparison, showed a much lower frequency of participation and rated skill development much lower. As Scott and Shafer noted, progression may not be a typical career path.

Regardless of activity, gender, or level of engagement, in the aggregate none of these facility attributes were viewed as detracting from the experience. Given that a rating of 0 represented “no affect” and 2 “strongly adds,” across activity, gender, and level of engagement over 75% of the group ratings were over 1. This strongly suggested that at least for those users who choose to participate in a built environment, that the highly developed setting enhanced their experience.

However the respondents in this study were a self selected sample. Therefore, those individuals for whom the highly developed setting would detract from their experience were less likely to choose to recreate in this built environment. Others (e.g., Forrester, Russell, & Ross, 2005) found that some aspects of built environments do in fact negatively affect the user’s experience by providing less challenge, leading to apathy and reduced mental engagement (Russell, 2005).

Users’ Perceptions of Built Environments

Respondents were asked two questions concerning their perceptions of the physical and social environments of the U.S. National Whitewater Center. The first asked respondents how they would best describe the physical environment of the U.S. National Whitewater Center. Findings revealed a significant difference between the perceptions of whitewater rafters and whitewater kayakers, with rafters perceiving the setting as more natural. This finding may be due in part to the whitewater rafter’s lower level of experience. When respondents’ perceptions of the physical environment were analyzed by level of engagement, there was a significant

difference between the introduction phase and the commitment phase, but not between the introduction and development phases or the development and commitment phases.

Similarly, the second question asked how respondents' perceptions of the social environment (i.e., number of other visitors, behavior of other visitors, noise, etc.) compared to their expectations. The difference between whitewater rafters and whitewater kayakers was found to be significant. No significant differences existed between males and females. Comparisons between the levels of engagement found a significant difference between the introduction phase and the development phase, and the introduction and the commitment phases. This seems to be consistent with Schuett's (1994) findings that kayakers and more highly skilled participants do in fact seek out more natural environments.

Appropriateness of the Adventure Recreation Model as a Means of Describing Users of Built Adventure Recreation Environments

The correlation tests performed for Level of Engagement (LOE) and the dependent variables used in the ARM were not found to be useful in predicting user behavior. In the case of whitewater rafters, the only individual attribute that was significant and positively correlated with LOE was "skill." The setting attributes of "type of environment" and "preferred level of risk" were also found to be significant and positively correlated with LOE. Additionally, only 3 of the 24 motivation factors, "to develop my whitewater rafting skills," "because I am good at it," and "I enjoy

associating with other whitewater rafters” were found to be significant and positively correlated with LOE. One motivation factor “to experience a change from my normal routine”, was found to be significant and negatively correlated with LOE.

The results for whitewater kayakers were also not found to be useful in predicting behavior. Only two individual attributes, “skill,” and “frequency of participation” were significant and positively correlated with LOE, and a third “locus of decision making” was found to be significant and negatively correlated with LOE. None of the setting attributes were significantly correlated with LOE. Similarly, only 6 of the 24 motivation factors, “for the friendship(s),” “to have a close interaction with other people,” “for the close interaction with a natural environment,” “to satisfy personal needs,” “because I am good at it,” “it makes me feel good about myself,” and “I enjoy associating with other whitewater rafters” were found to be significant and positively correlated with LOE.

Natural and Built Environments

While the distinction between natural and built environments is essential to the discussion of activities and experiences that occur in each, this difference is not always clear. Overall, respondents considered the USNWC to be more human-made than natural. However, the range of responses supports the view of an environmental continuum, based on the degree of human influence (Driver & Greene, 1977). Recreation settings like the USNWC would be classified as urban under the Recreation Opportunity Spectrum (Clark & Stankey, 1979).

Implications

Built adventure recreation environments are becoming more prevalent. Simultaneously, there is concern about visitation rates declining in U.S. National Parks and other traditional or natural outdoor recreation sites (Pergams & Zaradic, 2006). While declining visitation rates are a serious concern for managers, one potential benefit is reduced impact on the natural resource. Rather than viewing built environments as a threat to their more natural counterparts, built environments should be viewed as an alternative. These environments can be used for instruction and training purposes as identified by Attarian (1999), introducing and preparing individuals looking to participate in outdoor recreation environments. This study found that a highly developed site like the USNWC enhances the experience of those users opting for a built environment. This suggests that for some adventure recreationists a natural environment is not necessary, particularly in the case of those individuals seeking to develop their whitewater rafting or kayaking skills.

The findings of this study emphasized the importance of the social aspect of these activities for users of the USNWC. The map of the USNWC (see Figure 2) and photographs of the facility (see Appendix B) help to illustrate that the social aspect of these activities is enhanced by the physical environment, through the onsite restaurant and seating and space for groups to gather. While not advocating for all adventure recreation environments to become highly developed, these findings do

support the need for a broad spectrum of recreation environments (Clark & Stankey, 1979; Driver et al., 1987; Moore & Driver, 2005).

While this study did not find the Adventure Recreation Model (ARM) to be particularly useful in predicting user behavior in built adventure recreation environments; it does seem useful as a tool for examining and describing users of built environments. While specific concerns with the ARM will be discussed in the next section, additional research is needed to determine its capacity to be used in built environments as well as possible modifications to improve performance.

Limitations

This was one study involving a single site, with a relatively small sample size, making it difficult to reach any definite conclusions. Furthermore, the small sample size limited the detailed analysis within certain variables such as activity type, gender, and level of engagement. The current study was delimited to those individuals over 18 years of age; disregarding younger participants could provide additional understanding of this phenomenon.

Results of the current study are also limited by the fact that they were not based on a random sample. Due to restrictive budget and time constraints, all possible rafters and kayakers were approached. While this limits the ability to compare or generalize the results to other populations, this study was exploratory and so a larger non-random sample was deemed preferable to a much smaller random sample.

Limitations of the Adventure Recreation Model

Three concerns arose through the use of the ARM in the current study. The first was that Level of Engagement had been operationalized as a single item, the respondent's self report of their experience level. The respondent's self report of experience is subjective as well as having the potential to be inflated due to social desirability. The second concern that locus of decision making was used as a surrogate for locus of control, rather than actually measuring the true variable. Finally, the motivation factors used, while applicable to natural environments are not all well suited for built environments. Since this was only a single study with a relatively small sample, it is difficult to reach any definitive conclusion on the use of the ARM in built environments. Further application and refinement could yield an effective tool for predicting user behavior.

Recommendations for Future Research

Ideally, this study should be replicated using additional sites either nationally or internationally. While this is the only facility of its kind, other whitewater venues including modified natural rivers might provide a middle ground perspective between the USNWC and completely natural whitewater environments. While many studies have examined adventure recreation in natural environments (Ewert & Hollenhorst, 1994; Schuett, 1994; Scott & Shafer, 2001), and a few have considered built environments (Clark et al., 2008; Forrester et al., 2005; Rapelje, 2004) research comparing adventure recreation across this continuum is virtually nonexistent.

Conducting a similar study in which data were collected simultaneously at both built and natural sites within a geographic region could help better delineate any regional trends as well as exploring the fundamental differences that exist between users of natural and built environments.

Future research, with less restrictive time and funding constraints should incorporate random sampling as well as sampling throughout an entire season, year, or possibly longer, so as to avoid seasonal or annual variations. For example, events such as the recent, regional drought affecting the southeast may have forced whitewater paddlers to abandon their preferred venue for one with guaranteed acceptable flow levels. Furthermore, a larger study, with a larger sample would allow for greater detail in the analysis. Future studies should re-evaluate the motivation factors used in the current study in terms of their application to built environments and consider incorporating motivation factors from other domains: learning, family togetherness, social security, risk reduction, and physical fitness, that might better fit the experiences associated with these environments (Manning, 1999). Studies involving both natural and built environments should include motivation factors thought to be associated with each type of environment (e.g., risk taking and risk reduction) as well as those that thought to bridge setting differences (e.g., skill development; Manning)

Future research involving built environments or a combination of natural and built should also involve qualitative or mixed methods to develop a deeper, richer

understanding of the participants experience and better answer why some of these finding were reached. As built adventure recreation environments become more prevalent and diverse research should also focus on expanding or adapting the ROS to better accommodate these varying degrees of human influence. Future research involving the ARM, should also consider the use of a multi-item composite based on the self reported experience level as well as frequency of participation, skill, and some measure of centrality (Scott & Shafer, 2001) could provide a more useful measure of Level of Engagement.

Summary

Nash (2001) identified the equipment revolution as a contributing factor in the growth of outdoor recreation during the mid twentieth century. Russell (2005) later described the technological revolution, discussing the effects of technology on leisure. These advances have now changed outdoor and adventure recreation environments along with the activities and experiences that occur in them. This trend will likely continue in the future. In order to keep pace with these changes, research and practice need to make a continuous effort to understand the users and uses of built recreation environments.

While natural settings require the user to adapt to match the environment, built environments can be adapted to match the user. It is only through developing a thorough understanding of the user and uses of these settings that managers of built

adventure recreation environments can maximize the experience and satisfaction of participants.

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APPENDICES

Appendix A

Major Events in Outdoor Recreation

(Raiola & O'Keefe, 1999, unless otherwise noted)

1864 Yosemite Valley granted to California as state park

1872 Yellowstone established as first National Park

1876 Appalachian Mountain Club (AMC) established

1885 Adirondack State Park established

1887 Boone and Crockett Club founded (Reiger, 1993)

1892 Sierra Club established

1905 Forrest Service established

1910 Boy Scouts of America (BSA) established

1912 Girl Scouts of America (GSA) established

1914 World War I begins

1916 National Park Service established

1917 U.S. enters World War I

1929 Stock market chased, Great Depression began

1933 Civilian Conservation Corps (CCC) established

1939 World War II begins

1941 U.S. enters World War II

1945 WWII ends

1958 Outdoor Recreation Resources Review Commission (ORRRC) established

1962 Colorado Outward Bound School established

1965 National Outdoor Leadership School (NOLS) established

1968 Wild and Scenic Rivers Act passed

1971 Project Adventure (PA) established

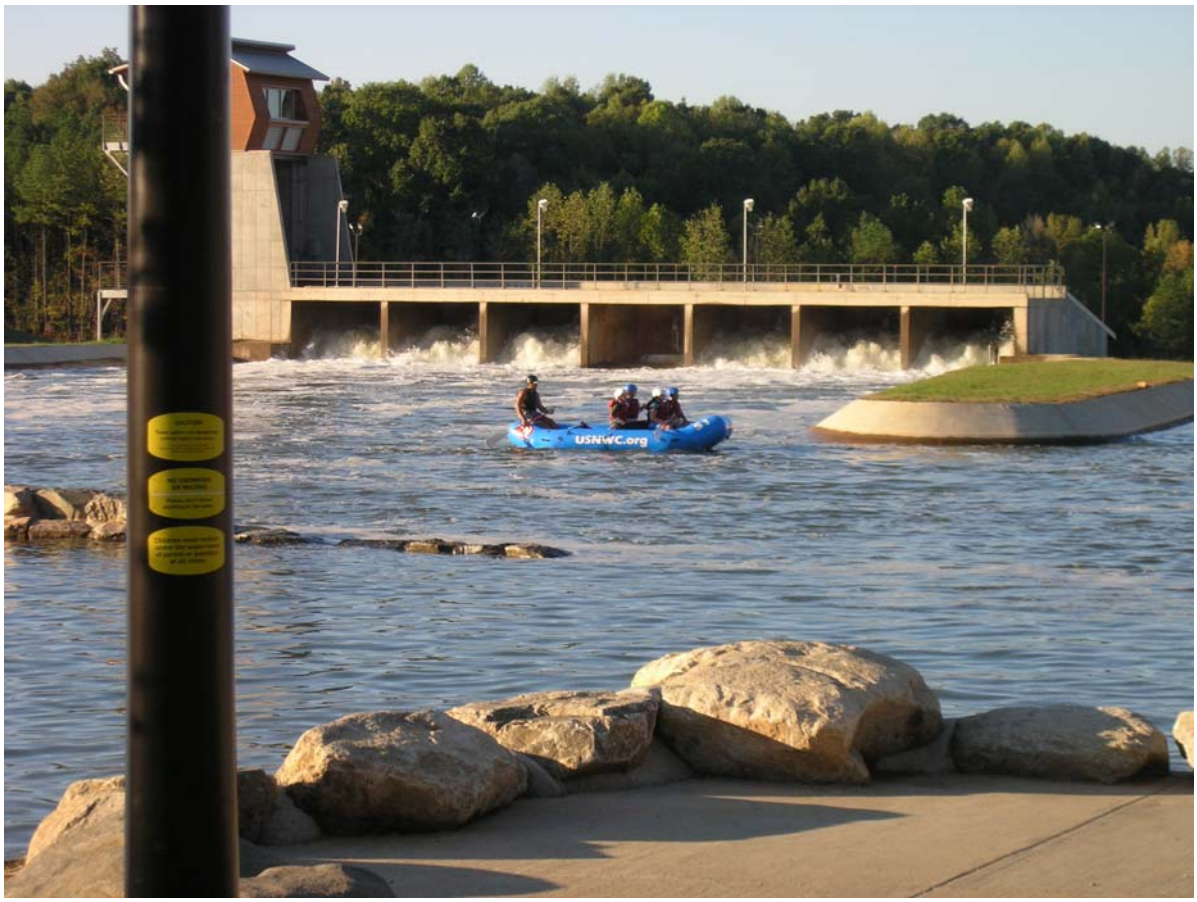
1974 Association for Experiential Education (AEE) established

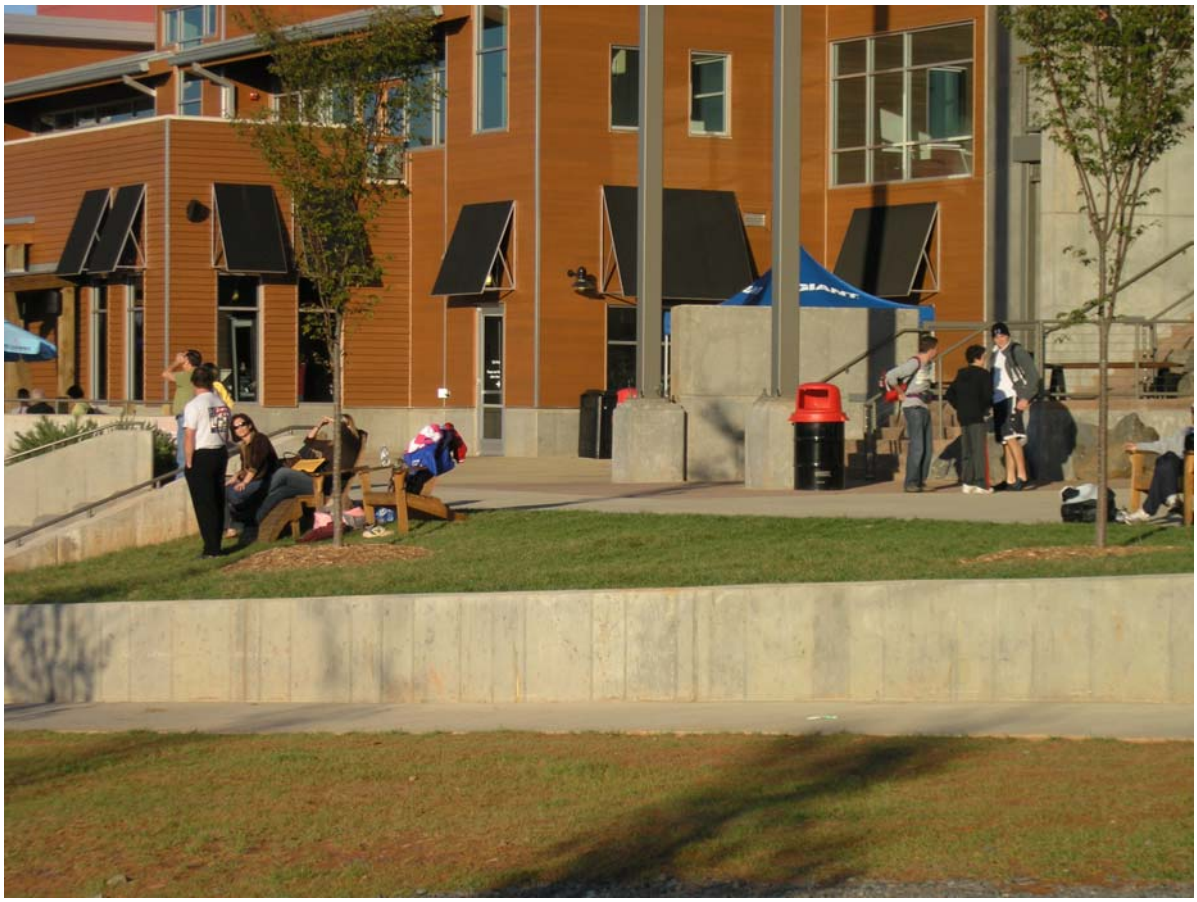
1977 Wilderness Education Association (WEA) founded (Martin et al., 2006)

1993 Association for Challenge Course Technology (ACCT) established

Appendix B

Photographs of the U.S. National Whitewater Center


USNWC.org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Appendix C

Survey Instrument

U.S. National Whitewater Center

1. Introduction

Thank you for agreeing to participate in this research study and spending the time to complete this survey. The purpose of this study is to develop an understanding of the users of human made adventure recreation environments and to better understand the role that human made environments play in adventure recreation.

U.S. National Whitewater Center

2. Informed Consent

Informed Consent

Risks
There are no foreseeable risks or discomforts, associated with the procedures to be used in the study.

Benefits
There are no predetermined direct benefits to be gained by participating in this study. The indirect benefit is that you are contributing to the knowledge which could benefit managers and future users of this and other human made adventure recreation facilities.

Confidentiality
The information in the study records will be kept strictly confidential. Surveys will be completed and stored in this online survey service. Data from completed surveys will be entered by the researcher. Upon completion of the study they will be destroyed. All personal and identifying information will be kept confidential. No individual data will be reported and no reference will be made in oral or written reports which could link you to the study.

Compensation
For participating in this study you will be entered into a drawing for two U.S. National Whitewater Center Raft Trip Vouchers.

Contact
If you have questions at any time about the study or the procedures, you may contact the researcher, Bill James, at bill_james@ncsu.edu, or 919-306-5134. You may also contact Dr. Jason Bocarro, the faculty advisor for the study at jnbocarro@ncsu.edu, or 919-513-8025. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. David Kaber, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/515-3086) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148)

Participation
You must be 18 years of age or older to participate in this study. Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

Consent
I have read and understand the above information. I agree to participate in this study with the understanding that I may withdraw at any time.

Please click on the "I agree" button below to continue if you agree with the conditions of this statement.

◯ I agree

U.S. National Whitewater Center

◯ I do not agree and wish to exit this survey

U.S. National Whitewater Center

3. Recreation Activities

During your visit to the U.S. National Whitewater Center where you were asked to participate in this study, which adventure recreation activity or activities did you participate in? (Check all that apply)

- ☐ Whitewater Rafting
- ☐ Whitewater Kayaking
- ☐ Flat-water Kayaking
- ☐ Whitewater Canoeing (C1 decked canoe)
- ☐ Rock Climbing
- ☐ Mountain Biking
- ☐ Challenge Course
- ☐ I did not participate in an adventure recreation activity today

U.S. National Whitewater Center

4. Primary Recreation Activity

During that same visit, what was the primary adventure recreation activity you participated in at the U.S. National Whitewater Center? (Check only one)

- ◯ Whitewater Rafting
- ◯ Whitewater Kayaking
- ◯ Flat-water Kayaking
- ◯ Whitewater Canoeing (C1 decked canoe)
- ◯ Rock Climbing
- ◯ Mountain Biking
- ◯ Challenge Course

U.S. National Whitewater Center

5. Whitewater Kayaking

How many years have you been involved in whitewater kayaking?

On average, how many times per year do you participate in whitewater kayaking? (i.e. paddling rivers, paddling at whitewater parks, roll clinics etc.)

Approximately how many different rivers and/or whitewater parks have you visited in the last five years in pursuing whitewater kayaking?

Including the visit when you were asked to participate in this study, how many times have you participated in whitewater kayaking at the U.S. National Whitewater Center?

U.S. National Whitewater Center

6. Whitewater Kayaking Continued

Please refer to the following descriptions when answering the questions below:

International Scale of River Difficulty

Class I: Easy
Fast moving water with riffles and small waves.
Few or no obstructions, all easy to avoid.
Risk to swimmers is slight.
Self-rescue is easy.

Class II: Novice
Straightforward rapids with wide, clear channels that are obvious without scouting.
Occasional maneuvering may be required, but rocks and medium sized waves are easily avoidable by trained paddlers.
Swimmers are seldom injured, and group rescue while helpful, is seldom needed.

Class III: Intermediate
Rapids with moderate, irregular waves that may be difficult to avoid and are capable of swamping an open canoe.
May include fast current and narrow passages that require complex maneuvers and good boat control.
Large waves, holes and strainers may be present but are easily avoided.
Strong eddies and powerful current effects may be present, particularly on large volume rivers.
Scouting is advisable for inexperienced paddlers.
Chance of injury while swimming is low, but group assistance may be needed to prevent long swims.

Class IV: Advanced
Intense, powerful rapids requiring precise boat handling in turbulent water.
Depending on the character of the river there may be long, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure.
A fast reliable eddy turn may be needed to navigate a drop, pull over and scout rapids or rest.
Rapids may require "must" moves above dangerous hazards.
Scouting is necessary the first time the stretch is run.
Risk of injury to swimmers is moderate to high, and water conditions may make rescue difficult.
Group assistance is often essential, but requires practiced skills.
The ability to perform a strong Eskimo roll is highly recommended.

Class V: Expert
Extremely long, obstructed or violent rapids that expose the paddler to above average risk of injury.
Drops may contain very large unavoidable waves and hole, or steep congested chutes with complex, demanding routes.
Rapids often continue for long distances between pools or eddies, demanding a high level of fitness.
What eddies exist may be small, turbulent or difficult to reach.
Several of the above factors may combine in the most difficult water of this class.
Scouting is mandatory.
Rescue extremely difficult, even for experts.
A very reliable Eskimo roll and above average rescue skills are essential.

Class VI: Extreme

U.S. National Whitewater Center

Features of Class V extended to the limits of navigability.
Nearly impossible and very dangerous.
Rescues may be impossible.
For teams of experts only, and only in favorable water levels after close study with all precautions.
The frequency with which a rapid is run should have no effect on this rating, as a number of Class VI rapids are regularly attempted.

(Basic Canoeing 2003 pp 60-61)

Based on the International Scale of River Difficulty above, at what level of proficiency do you whitewater kayak?

- ◯ Flatwater
- ◯ Class I
- ◯ Class II
- ◯ Class III
- ◯ Class IV
- ◯ Class V
- ◯ Class VI

Based on the International Scale of River Difficulty above, what is the most difficult class of whitewater you feel you may be able to comfortably paddle in your whitewater kayaking career?

- ◯ Flatwater
- ◯ Class I
- ◯ Class II
- ◯ Class III
- ◯ Class IV
- ◯ Class V
- ◯ Class VI

U.S. National Whitewater Center

7. Whitewater Kayaking Continued

Compared with other recreation activities, how important is whitewater kayaking to you?

- ◯ Most important
- ◯ More important than most
- ◯ Less important than most
- ◯ Least important

When you go whitewater kayaking are you typically:

- ◯ By yourself
- ◯ Part of an organized or guided group
- ◯ With a group of friends
- ◯ Leading a group/instructing others

While on a typical whitewater kayaking trip or outing, who usually makes the critical decisions in your group? (i.e. decisions that involve assessing the risk, whether to proceed or not, and other similar issues)

- ◯ Myself
- ◯ Someone in the group, usually other than myself
- ◯ The guide/instructor or outfitter
- ◯ I am usually the instructor/guide or outfitter

When whitewater kayaking, I prefer:

- ◯ To feel as though I am not putting myself at risk
- ◯ To feel as though I am putting myself at risk without actually doing so
- ◯ To actually put myself at a moderate level of risk
- ◯ To actually put myself at a high level of risk

What type of environment do you generally prefer in pursuing whitewater kayaking?

- ◯ Highly developed human made facilities
- ◯ Developed with facilities
- ◯ Some facilities
- ◯ Mostly remote, backcountry or wilderness
- ◯ No preference as long as I can whitewater kayak

U.S. National Whitewater Center

8. Whitewater Kayaking Experience and Skills

Regarding your whitewater kayaking experience, how would you rate yourself?

- ◯ I have little or no whitewater kayaking experience
- ◯ I have a moderate level of experience whitewater kayaking
- ◯ I have participated in a variety of whitewater kayaking trips and at different locations
- ◯ I have participated in a wide variety of trips, requiring a relatively high level of commitment and exposure to risk
- ◯ I am a whitewater kayaking guide/instructor

U.S. National Whitewater Center

9. Whitewater Kayaking Experience and Skills Continued

Please refer to the following descriptions when answering the question below:

International Scale of River Difficulty

Class I: Easy
Fast moving water with riffles and small waves.
Few or no obstructions, all easy to avoid.
Risk to swimmers is slight.
Self-rescue is easy.

Class II: Novice
Straightforward rapids with wide, clear channels that are obvious without scouting.
Occasional maneuvering may be required, but rocks and medium sized waves are easily avoidable by trained paddlers.
Swimmers are seldom injured, and group rescue while helpful, is seldom needed.

Class III: Intermediate
Rapids with moderate, irregular waves that may be difficult to avoid and are capable of swamping an open canoe.
May include fast current and narrow passages that require complex maneuvers and good boat control.
Large waves, holes and strainers may be present but are easily avoided.
Strong eddies and powerful current effects may be present, particularly on large volume rivers.
Scouting is advisable for inexperienced paddlers.
Chance of injury while swimming is low, but group assistance may be needed to prevent long swims.

Class IV: Advanced
Intense, powerful rapids requiring precise boat handling in turbulent water.
Depending on the character of the river there may be long, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure.
A fast reliable eddy turn may be needed to navigate a drop, pull over and scout rapids or rest.
Rapids may require "must" moves above dangerous hazards.
Scouting is necessary the first time the stretch is run.
Risk of injury to swimmers is moderate to high, and water conditions may make rescue difficult.
Group assistance is often essential, but requires practiced skills.
The ability to perform a strong Eskimo roll is highly recommended.

Class V: Expert
Extremely long, obstructed or violent rapids that expose the paddler to above average risk of injury.
Drops may contain very large unavoidable waves and hole, or steep congested chutes with complex, demanding routes.
Rapids often continue for long distances between pools or eddies, demanding a high level of fitness.
What eddies exist may be small, turbulent or difficult to reach.
Several of the above factors may combine in the most difficult water of this class.
Scouting is mandatory.
Rescue extremely difficult, even for experts.
A very reliable Eskimo roll and above average rescue skills are essential.

Class VI: Extreme

U.S. National Whitewater Center

Features of Class V extended to the limits of navigability.
Nearly impossible and very dangerous.
Rescues may be impossible.
For teams of experts only, and only in favorable water levels after close study with all precautions.
The frequency with which a rapid is run should have no effect on this rating, as a number of Class VI rapids are regularly attempted.

(Basic Canoeing 2003 pp 60-61)

Regarding your whitewater kayaking skills, how would you rate yourself? (Refer to the International Scale of River Difficulty above)

- ◯ I am just beginning this activity with low levels of skill and ability
- ◯ I am able to whitewater kayak comfortably at an intermediate skill level (Class 2-3)
- ◯ I am able to whitewater kayak comfortably at an advance level (Class 3-4, and/or wilderness river travel)
- ◯ I am able to whitewater kayak comfortably at an expert level (Class 4-5)
- ◯ I spend much of my time as a whitewater kayak guide/instructor

U.S. National Whitewater Center

10. Whitewater Kayaking Motivations

Below is a list of possible reasons people engage in whitewater kayaking. After each statement select the number that best represents your feelings about that item.

I whitewater kayak.....

	Not Important (1)	2	3	4	Very important (5)
For the exhilaration	○	○	○	○	○
For the sense of accomplishment	○	○	○	○	○
To face the risk and danger	○	○	○	○	○
To be physically and emotionally challenged	○	○	○	○	○
To be part of a group or team	○	○	○	○	○
For the friendship(s)	○	○	○	○	○
To have a close interaction with other people	○	○	○	○	○
To be able to do something outside my normal routine	○	○	○	○	○
To be known as a whitewater kayaker	○	○	○	○	○
To show others that I can whitewater kayak	○	○	○	○	○
To develop my whitewater kayak skills	○	○	○	○	○
It allows me to reach a variety of goals I have for myself	○	○	○	○	○
To test myself/my abilities	○	○	○	○	○
For the close interaction with a natural environment	○	○	○	○	○
To satisfy personal needs	○	○	○	○	○
To experience a change from my normal life/routine	○	○	○	○	○
To use my equipment	○	○	○	○	○

U.S. National Whitewater Center

For self-expression	○	○	○	○	○
To be in control and make decisions	○	○	○	○	○
For spiritual development	○	○	○	○	○
Because I am good at it	○	○	○	○	○
It makes me feel good about myself	○	○	○	○	○
I enjoy associating with other whitewater kayakers	○	○	○	○	○
I enjoy pushing myself to the "edge"	○	○	○	○	○

U.S. National Whitewater Center

11. Whitewater Rafting

How many years have you been involved in whitewater rafting?

On average, how many times per year do you participate in whitewater rafting? (i.e. rafting rivers, rafting at whitewater parks etc.)

Approximately how many different rivers and/or whitewater parks have you visited in the last five years in pursuing whitewater rafting?

Including the visit when you were asked to participate in this study, how many times have you whitewater rafted at the U.S. National Whitewater Center?

U.S. National Whitewater Center

12. Whitewater Rafting Continued

Please refer to the following descriptions when answering the questions below:

International Scale of River Difficulty

Class I: Easy
Fast moving water with riffles and small waves.
Few or no obstructions, all easy to avoid.
Risk to swimmers is slight.
Self-rescue is easy.

Class II: Novice
Straightforward rapids with wide, clear channels that are obvious without scouting.
Occasional maneuvering may be required, but rocks and medium sized waves are easily avoidable by trained paddlers.
Swimmers are seldom injured, and group rescue while helpful, is seldom needed.

Class III: Intermediate
Rapids with moderate, irregular waves that may be difficult to avoid and are capable of swamping an open canoe.
May include fast current and narrow passages that require complex maneuvers and good boat control.
Large waves, holes and strainers may be present but are easily avoided.
Strong eddies and powerful current effects may be present, particularly on large volume rivers.
Scouting is advisable for inexperienced paddlers.
Chance of injury while swimming is low, but group assistance may be needed to prevent long swims.

Class IV: Advanced
Intense, powerful rapids requiring precise boat handling in turbulent water.
Depending on the character of the river there may be long, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure.
A fast reliable eddy turn may be needed to navigate a drop, pull over and scout rapids or rest.
Rapids may require "must" moves above dangerous hazards.
Scouting is necessary the first time the stretch is run.
Risk of injury to swimmers is moderate to high, and water conditions may make rescue difficult.
Group assistance is often essential, but requires practiced skills.
The ability to perform a strong Eskimo roll is highly recommended.

Class V: Expert
Extremely long, obstructed or violent rapids that expose the paddler to above average risk of injury.
Drops may contain very large unavoidable waves and hole, or steep congested chutes with complex, demanding routes.
Rapids often continue for long distances between pools or eddies, demanding a high level of fitness.
What eddies exist may be small, turbulent or difficult to reach.
Several of the above factors may combine in the most difficult water of this class.
Scouting is mandatory.
Rescue extremely difficult, even for experts.
A very reliable Eskimo roll and above average rescue skills are essential.

Class VI: Extreme

U.S. National Whitewater Center

Features of Class V extended to the limits of navigability.
Nearly impossible and very dangerous.
Rescues may be impossible.
For teams of experts only, and only in favorable water levels after close study with all precautions.
The frequency with which a rapid is run should have no effect on this rating, as a number of Class VI rapids are regularly attempted.

(Basic Canoeing 2003 pp 60-61)

Based on the International Scale of River Difficulty above, at what level of proficiency do you whitewater raft?

- ◯ Flatwater
- ◯ Class I
- ◯ Class II
- ◯ Class III
- ◯ Class IV
- ◯ Class V
- ◯ Class VI

Based on the International Scale of River Difficulty above, what is the most difficult class of whitewater you feel you may be able to comfortably paddle in your whitewater rafting career?

- ◯ Flatwater
- ◯ Class I
- ◯ Class II
- ◯ Class III
- ◯ Class IV
- ◯ Class V
- ◯ Class VI

U.S. National Whitewater Center

13. Whitewater Rafting Continued

Compared with other recreation activities, how important is whitewater rafting?

- ◯ Most important
- ◯ More important than most
- ◯ Less important than most
- ◯ Least important

When you go whitewater rafting are you typically:

- ◯ Part of an organized or guided group
- ◯ With a group of friends
- ◯ Leading a group/instructing others

While on a typical whitewater rafting trip or outing, who usually makes the critical decisions in your group? (i.e. decisions that involve assessing the risk, whether to proceed or not, and other similar issues)

- ◯ Myself
- ◯ Someone in the group, usually other than myself
- ◯ The guide/instructor or outfitter
- ◯ I am usually the instructor/guide

When whitewater rafting, I prefer:

- ◯ To feel as though I am not putting myself at risk
- ◯ To feel as though I am putting myself at risk without actually doing so
- ◯ To actually put myself at a moderate level of risk
- ◯ To actually put myself at a high level of risk

What type of environment do you generally prefer in pursuing whitewater rafting?

- ◯ Highly developed human made facilities
- ◯ Developed with facilities
- ◯ Some facilities
- ◯ Mostly remote, backcountry or wilderness
- ◯ No preference as long as I can whitewater raft

U.S. National Whitewater Center

14. Whitewater Rafting Experience and Skills

Regarding your whitewater rafting experience, how would you rate yourself?

- ◯ I have little or no whitewater rafting experience
- ◯ I have a moderate level of experience whitewater rafting
- ◯ I have participated in a variety of whitewater rafting trips and at different locations
- ◯ I have participated in a wide variety of trips, requiring a relatively high level of commitment and exposure to risk
- ◯ I am a whitewater rafting guide/ instructor

U.S. National Whitewater Center

15. Whitewater Rafting Experience and Skills

Please refer to the following descriptions when answering the question below:

International Scale of River Difficulty

Class I: Easy
Fast moving water with riffles and small waves.
Few or no obstructions, all easy to avoid.
Risk to swimmers is slight.
Self-rescue is easy.

Class II: Novice
Straightforward rapids with wide, clear channels that are obvious without scouting.
Occasional maneuvering may be required, but rocks and medium sized waves are easily avoidable by trained paddlers.
Swimmers are seldom injured, and group rescue while helpful, is seldom needed.

Class III: Intermediate
Rapids with moderate, irregular waves that may be difficult to avoid and are capable of swamping an open canoe.
May include fast current and narrow passages that require complex maneuvers and good boat control.
Large waves, holes and strainers may be present but are easily avoided.
Strong eddies and powerful current effects may be present, particularly on large volume rivers.
Scouting is advisable for inexperienced paddlers.
Chance of injury while swimming is low, but group assistance may be needed to prevent long swims.

Class IV: Advanced
Intense, powerful rapids requiring precise boat handling in turbulent water.
Depending on the character of the river there may be long, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure.
A fast reliable eddy turn may be needed to navigate a drop, pull over and scout rapids or rest.
Rapids may require "must" moves above dangerous hazards.
Scouting is necessary the first time the stretch is run.
Risk of injury to swimmers is moderate to high, and water conditions may make rescue difficult.
Group assistance is often essential, but requires practiced skills.
The ability to perform a strong Eskimo roll is highly recommended.

Class V: Expert
Extremely long, obstructed or violent rapids that expose the paddler to above average risk of injury.
Drops may contain very large unavoidable waves and hole, or steep congested chutes with complex, demanding routes.
Rapids often continue for long distances between pools or eddies, demanding a high level of fitness.
What eddies exist may be small, turbulent or difficult to reach.
Several of the above factors may combine in the most difficult water of this class.
Scouting is mandatory.
Rescue extremely difficult, even for experts.
A very reliable Eskimo roll and above average rescue skills are essential.

Class VI: Extreme

U.S. National Whitewater Center

Features of Class V extended to the limits of navigability.
Nearly impossible and very dangerous.
Rescues may be impossible.
For teams of experts only, and only in favorable water levels after close study with all precautions.
The frequency with which a rapid is run should have no effect on this rating, as a number of Class VI rapids are regularly attempted.

(Basic Canoeing 2003 pp 60-61)

Regarding your whitewater rafting skills, how would you rate yourself? (Refer to the International Scale of River Difficulty above)

- ◯ I am just beginning this activity with low levels of skill and ability
- ◯ I am able to whitewater raft comfortably at an intermediate skill level (Class 2-3)
- ◯ I am able to whitewater raft comfortably at an advanced level (Class 3-4, and/or wilderness river travel)
- ◯ I am able to whitewater raft comfortably at an expert level (Class 4-5)
- ◯ I spend much of my time as a whitewater rafting guide/instructor

U.S. National Whitewater Center

16. Whitewater Rafting Motivations

Below is a list of possible reasons people engage in whitewater rafting. After each statement select the number that best represents your feelings about that item.

I whitewater raft.....

	Not Important (1)	2	3	4	Very important (5)
For the exhilaration	○	○	○	○	○
For the sense of accomplishment	○	○	○	○	○
To face the risk and danger	○	○	○	○	○
To be physically and emotionally challenged	○	○	○	○	○
To be part of a group or team	○	○	○	○	○
For the friendship(s)	○	○	○	○	○
To have a close interaction with other people	○	○	○	○	○
To be able to do something outside my normal routine	○	○	○	○	○
To be known as a whitewater rafter	○	○	○	○	○
To show others that I can whitewater raft	○	○	○	○	○
To develop my whitewater rafting skills	○	○	○	○	○
It allows me to reach a variety of goals I have for myself	○	○	○	○	○
To test myself/my abilities	○	○	○	○	○
For the close interaction with a natural environment	○	○	○	○	○
To satisfy personal needs	○	○	○	○	○
To experience a change from my normal life/routine	○	○	○	○	○
To use my equipment	○	○	○	○	○
For self-expression	○	○	○	○	○

U.S. National Whitewater Center

To be in control and make decisions	○	○	○	○	○
For spiritual development	○	○	○	○	○
Because I am good at it	○	○	○	○	○
It makes me feel good about myself	○	○	○	○	○
I enjoy associating with other whitewater rafters	○	○	○	○	○
I enjoy pushing myself to the "edge"	○	○	○	○	○

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17. Demographics

What is your current age?

- ◯ Under 25
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65 or older

Please indicate your gender:

- ◯ Male
- ◯ Female

Please indicate your race:

- ◯ White non-Hispanic
- ◯ Hispanic
- ◯ African-American
- ◯ Native-American
- ◯ Asian
- ◯ Other (please specify)

Which of the following category/categories apply to you? (check all that apply)

- ☐ Employed full time
- ☐ Unemployed
- ☐ Retired
- ☐ Employed part time/temporary
- ☐ Student
- ☐ Self-employed
- ☐ Homemaker

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Please indicate the highest level of education completed:

- ◯ Some High School
- ◯ High School Graduate or Equivalent
- ◯ Some College
- ◯ Associates Degree
- ◯ Bachelors Degree
- ◯ Post Graduate Degree

When you visited the U.S. National Whitewater Center, were you (check all that apply)

- ☐ Alone
- ☐ With spouse or partner
- ☐ With family
- ☐ With friends
- ☐ Other (please specify)

Which of the following categories best describes your annual household income last year?

- ◯ $10,000 or less
- ◯ $10,001-20,000
- ◯ $20,001-35,000
- ◯ $35,001-50,000
- ◯ $50,001-75,000
- ◯ $75,001-100,000
- ◯ $100,001 or more

How far did you travel (one way) to visit the U.S. National Whitewater Center?

- ◯ 10 miles or less
- ◯ 11 - 25 miles
- ◯ 26 – 50 miles
- ◯ 51 – 100 miles
- ◯ 101 -250 miles
- ◯ More than 250 miles

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18. Facility Attributes

Please rate how the following characteristics add to or detract from your outdoor adventure experiences. After each statement select the descriptor that best represents your feelings about that item.

	Strongly Detracts (1)	Detracts (2)	Does Not Effect (3)	Adds (4)	Strongly Adds (5)
Restrooms available on site	○	○	○	○	○
Close to home	○	○	○	○	○
Information available at site	○	○	○	○	○
Instructors available at site	○	○	○	○	○
The site is developed	○	○	○	○	○
Other activities available at site	○	○	○	○	○
Food available at site	○	○	○	○	○
Rental equipment available on site	○	○	○	○	○

Physical Attributes

	Completely Human Made (1)	More Human Made Than Natural (2)	Unsure (3)	More Natural Than Human Made (4)	Completely Natural (5)
How would you best describe the physical setting of the U.S. National Whitewater Center?	○	○	○	○	○

Social Attributes

	Failed to meet my expectations (1)	(2)	Met my expectations (3)	(4)	Exceeded my expectations (5)
The social characteristics (number of other visitors, behavior of other visitors, noise etc.) of the U.S. National Whitewater Center...	○	○	○	○	○

U.S. National Whitewater Center

19. Thank you

Please double-check that you responded to all questions.

Thank you! Your willingness to participate in this study is greatly appreciated. Through your efforts, you are helping us to better understand the adventure experience. So that we may enter you into the drawing for two Raft Trip Vouchers from the U.S. National Whitewater Center please provide the following information:

Your first name

Your email address

U.S. National Whitewater Center

20. Exit Survey

Exit Survey

Appendix D

Initial Email to Participants

Name, thank you for agreeing to participate in this research study. Within the next two to three days you will receive an email containing the link to the online survey. Your continued support and cooperation is invaluable as we attempt to develop an understanding of the users of human made adventure recreation environments and to better understand the role that these environments play in adventure recreation. If you have any questions please contact Bill James, bill_james@ncsu.edu or 919-306-5134. Thank you again.

Appendix E

First Survey Monkey Email

Name, I would like to take this opportunity to once again thank you for agreeing to participate in this research study. Below you will find the link to the online survey. Without your continued support and cooperation our attempt to develop an understanding of the users of human made adventure recreation environments and to better understand the role that human made environments play in adventure recreation would be impossible.

Appendix F

Survey Monkey Follow-up Email

Name, approximately one week ago you were sent an email containing the link to the online survey. If you did not receive this email, please let us know and we will verify that we have your email correct, and resend it. If you received it but have not completed the survey yet, we would ask that you take approximately 15 minutes and complete it. Without your continued support and cooperation our attempt to develop an understanding of the users of human made adventure recreation environments and to better understand the role that human made environments play in adventure recreation would be impossible.

Appendix G

Final Survey Monkey Follow-up Email

Name, approximately two weeks ago you were sent an email containing the link to the online survey. If you did not receive this email, please let us know and we will verify that we have your email correct, and resend it. If you received it but have not completed the survey yet, we would ask that you take approximately 15 minutes and complete it. Without your continued support and cooperation our attempt to develop an understanding of the users of human made adventure recreation environments and to better understand the role that human made environments play in adventure recreation would be impossible.

Appendix H

Thank-you Email

Name, I want to thank you again for participating in this research study. Your support and cooperation has been invaluable as we attempt to develop an understanding of the users of human made adventure recreation environments and to better understand the role that these environments play in adventure recreation. If you would like to receive a copy of the study summary when it is completed, please let me know by replying to this email. If you have any additional questions please contact Bill James, bill_james@ncsu.edu, or 919-306-5134. Thank you again for your time and effort.

Appendix I

Ewert's Whitewater Survey Instrument

Understanding the Adventure Experience
Whitewater Kayaking Instrument

Adventure Recreation: Activities using interaction with the natural environment, that contain real or perceived risk, in which the outcome is uncertain but can be influenced by the participant and circumstance.

Understanding the Adventure Participant

In this section, we are seeking information on some of the demographic variables of the adventurer. Please answer each question to the best of your ability.

1. How many years have you been involved in whitewater kayaking? _____
   How did you get started in this activity?

   _____

   _____

   _____

2. On average, how many times per year do **you** participate in whitewater kayaking?

   _____

3. If you are an **instructor**, how many times per year do you participate in whitewater kayaking instruction? _____ At what skill level do you typically instruct? _____

4. Approximately how many different places have **you** visited in the last five years in pursuing whitewater kayaking? _____

5. What is the highest level of difficulty (Class 1-6) **you** feel comfortable whitewater kayaking? (Please check all that apply)

Flatwater _____

Whitewater Kayak Trips _____

Class 1 -2 _____

Class 2-3 _____

Class 3 -4 _____

Class 5 - 6 _____

6. Compared with other recreation activities, how important is **whitewater kayaking**? (Please check one)

Most Important _____

More Important than Most _____

Less Important than Most _____

Least Important _____

7. Up to this point in time, when you go whitewater kayaking are you usually: (Please check one)

By yourself _____

Part of an organized or guided group _____

As a group of friends _____

8. While on a typical whitewater kayaking trip or outing, who usually makes the critical decisions in your group? By critical, we mean decisions that involve assessing the risk, whether to proceed or not, and other similar types of issues. (Please check one)

Myself _____

Someone in the group, usually other than myself _____

The guide/instructor or outfitter _____

I am usually the instructor/guide or outfitter _____

9 When participating in whitewater kayaking trips, what type of risk do **you** often find yourself dealing with? (Please check one)

Generally low and/or perceived (i.e., I could get hurt or killed but probably not easily). _____
Generally high and very real. Meaning, I could easily be hurt or killed. _____

I generally prefer to be "on the edge." _____

I prefer generally "safe" whitewater kayaking experiences. _____

10. What type of environment do **you** generally prefer in pursuing whitewater kayaking? (Please check one)

Highly developed human made facilities _____

Developed with facilities _____

Some facilities _____

Mostly backcountry/wilderness _____

No preference as long as I can whitewater kayak _____

11. Given the levels of difficulty of whitewater kayaking (e.g., flatwater, class 1, 2,3, etc.) that you currently feel comfortable with, what is the highest level of whitewater kayaking you think you will achieve in your whitewater kayaking career and still be comfortable at? _____

12. In what year were you born? _____

13. What is your gender? **(Circle One) Male Female**

14. Which of the following categories apply to you?
____Employed full time ____Unemployed ____Retired
____Employed part time/temporary ____Student ____Self-employed
____Homemaker

15. When you visited the US National Whitewater Center, did you do so… (check all that apply)
____ Alone ____With spouse or partner ____With family
____With friends ____Other_____ (please list)

16. What is your approximate annual household income before taxes?

____Under $10,000 ____$40,000-49,999 ____ $80,000-89,999

____ $10,000-19,999 ____$50,000-59,999 ____ $90,000-99,999

____$20,000-29,999 ____$60,000-69,999 ____ $100,000 or more

____$30,000-39,999 ____$70,000-79,999

Please rate how the following characteristics *add* to or *detract* from your outdoor adventure experiences. After each statement circle the number that best represents your feelings about that item.

17. Has restrooms

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

18. Close to home

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

19. Information available at site

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

20. Instructors available at site

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

21. Overnight camping available

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

22. The site is developed

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

23. Other activities available at site

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

24. Food available at site

Detracts Strongly							**Adds Strongly**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

25. Rental equipment available on site

Detracts Strongly **Adds Strongly**

1 2 3 4 5 6 7 8 9

Experience and Skills

26. Regarding your whitewater kayaking experience, how would you rate yourself? (Please check)

_____ **Little or no whitewater kayaking experience.**
_____ **A modest level of experience whitewater kayaking.**
_____ **Have participated in a variety of whitewater kayaking trips and at different locations.**
_____ **Have participated in a wide variety of trips, requiring a relatively high level of commitment and exposure to risk.**
_____ **I am a whitewater kayaking instructor**

27. Regarding your **whitewater kayaking** skills, how would you rate yourself? (Please check)

_____ **Just beginning this activity with low levels of skill and ability.**
_____ **Able to whitewater kayak comfortably at an intermediate skill level. (Class 2-3)**
_____ **Able to whitewater kayak comfortably at an advance level. (Class 3-4, and/or Wilderness River travel)**
_____ **Able to whitewater kayak comfortably at an expert level. (Class 4-5)**
_____ **Much of my time is spent as a whitewater kayak instructor**

Motivation for Being Here

Below is a list of possible reasons people may engage in whitewater kayaking. After each statement circle the number that best represents your feelings about that item. For example,

I whitewater kayak for the close interaction with nature.

Not important **Very Important**

1 2 3 4 5 6 7 8 9

I Whitewater kayak…..

28. For the exhilaration

Not important **Very Important**

1 2 3 4 5 6 7 8 9

29. For the sense of accomplishment

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

30. To face the risk and danger

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

31. To be physically and emotionally challenged

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

32. To be part of a group or team

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

33. For the friendship(s)

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

34. To have a close interaction with other people

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

35. To be able to do something outside my normal routine

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

36. To be known as a whitewater kayaker

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

37. To show others that I can whitewater kayak

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

38. To develop my whitewater kayak skills

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

39. It allows me to reach a variety of goals I have for myself

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

50. To test myself/my abilities

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

41. For the close interaction with a natural environment

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

42. To satisfy personal needs

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

43. To experience a change from my normal life/routine

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

44. To use my equipment

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

45. For self-expression

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

46. To be in control and make decisions

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

47. For spiritual development

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

48. Because I am good at it

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

49. It makes me feel good about myself

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

50. I enjoy associating with other whitewater kayakers

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

51. I enjoy pushing myself to the “edge”

Not important								**Very Important**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

PLEASE DOUBLE-CHECK THAT YOU RESPONDED TO ALL QUESTIONS

Thank you! We appreciate your willingness to participate in this study. Through your efforts, you are helping us better understand the adventure experience.

2/10/2008