The purpose of this research was to examine the outcomes prompting hiking along the Appalachian Trail (AT). By using means-end theory, linkages between attributes, consequences, and values of the AT hiking experience were made. The researchers conducted forty-three interviews of AT hikers. Self-fulfillment, self-reliance, fun and enjoyment of life, and warm relationships with others were some of the values that emerged. Specifically, strong links existed between hiking and exercise, exercise and health, health and fun and enjoyment of life. While this area of research on the AT is new, results of this study can be used by recreational professionals that work with the AT or other hiking trails to promote appropriate use of natural resources.

The AT is considered the People's Path (ATC, n.d.; NPS, 2007), the AT is considered America's first National Scenic Trail, is a component of approximately 2,175 miles of continuous footpath spanning 14 eastern states (National Park Service [NPS], 2007). The AT is also known as the People's Path because nearly two-thirds of the American population is within a day's drive of it (NPS, 2007).

In 2006, the U.S. Census Bureau estimated over 299 million people were living in the United States (U.S. Census Bureau, 2006). Despite the fact that 200 million people reside reasonably near the AT, the National Park Service (NPS) estimates that only four million people, or two percent of the population within a day's drive, visit the trail each year (NPS, 2007). Society is plagued with health issues directly correlated with sedentary lifestyles, and local and national trails (e.g., AT) could be used to endorse physical activity. Thus, it is important to realize the potential use for these resources. Research geared toward helping this diverse group of natural resource managers decide how best to market, maintain, and develop the trail is sparse.

In addition to affording the opportunity to be physically active, the AT offers the opportunity to directly experience nature; direct experiences with nature may offer additional benefits. The Benefits Movement, within the recreation profession, was launched in the 1990s and included three components: management, programming, and awareness (Allen & Cooper, 2003). The movement assisted in the advocacy of evidence-based research among recreation professionals in areas such as environmental benefits. As highlighted in Last Child in the Woods: Saving our Children from Nature-Deficit Disorder by Richard Louv (2007):

A widening circle of researchers believes that the loss of natural habitat, or the disconnection from nature even when it is available, has enormous implications for human health and child development. They say the quality of exposure to nature affects our health at an almost cellular level...many studies credit exposure to plants or nature with speeding up recovery time from injury. (p. 43-46)

Direct experiences with nature, such as hiking on the AT, are also beneficial in that participation in outdoor activity may lead to a connection with the environment. This connection may be useful in promotion of environmental stewardship. As Louv asserts, "The protection of nature depends on more than the organizational strength of stewardship organizations; it also depends on the quality of the relationship between the young and nature – on how, or if, the young attach to nature" (p. 154). Thus, for this reason too, it is important to realize the potential use for resources such as the AT.

**Literature Review**

**The Appalachian Trail**

The Appalachian National Scenic Trail was designed, structured, and marked by a conglomeration of volunteer hiking clubs brought together by the Appalachian Trail Conference (Manning et al., 2001). The first section of the AT was planned in 1921. The trail was completed in 1937 and designated as our nation’s first official National Scenic Trail in 1968 by the National Trails System Act (ATC, n.d.; Manning et al.). Within the trail’s borders are eight national forests, six national parks, numerous state and local forests, many state and local parks, and more than 2,000 plant and animal species that are deemed rare, threatened, endangered, or sensitive (ATC, n.d.). Consisting of approximately 2,175 continuous miles of footpath, stretching from Georgia to Maine (ATC, n.d.; NPS, 2007), the AT is considered to be a natural crown jewel (Sinclair, 2000).
The AT is a component of the NPS (ATC, n.d.; Nisbett & Hinton, 2005). While the NPS is the official administrator of the trail’s protection, the NPS does not manage all of the properties within the trail’s domain. Routine management of the footpath is mostly entrusted to the Appalachian Trail Conservancy, formerly known as the Appalachian Trail Conference (Nisbett & Hinton). Management of the AT is rather unique in that several public and private sectors, such as the NPS, USDA Forest Service, several state agencies, ATC, and thirty trail maintaining clubs work collaboratively to manage the footpath (ATC, n.d.). However, research geared toward helping this diverse group of managers decide how best to market, maintain, and develop the trail is sparse.

After reviewing the literature on the AT, very few evidence-based studies were found. In fact, the most significant study was from data less than ten years old. In this study, Manning et al. (2001) explored use and users of the trail. After surveying nearly 2,000 hikers, Manning and colleagues found that nearly 37% of those that visit the AT were day users, approximately 32% were overnight users, slightly more than 15% were section hikers (users hiking a substantial portion of the trail), and roughly 16% of users were thru-hikers. These groups averaged 7.2 hiking days and 71 miles of hiking. The vast majority of users were male (69%); nearly 97% of users were White; users averaged the mid-to-upper thirties in age; and nearly 70% of all topologies of hikers had completed college. Yearly visitation by those who live reasonably near the AT equals two percent, but usage of the People’s Path has increased dramatically since its inception. In particular, thru-hiking – hiking the entire length of the approximately 2,175 mile trail – increased twenty fold from the 1960s to the 1970s, doubled from the 1970s to the 1980s, and more than doubled again from the 1980s to the 1990s (ATC, n.d.). While thru-hiking has increased, thru-hikers compose a small percentage of trail users in most areas along a National Scenic Trail, as primary use of the AT is for short hikes (Sinclair, 2000). Understanding outcomes or benefits of all those who do choose to utilize the trail may be instrumental in marketing to the AT user population and encouraging trail use by a more diverse population.

Regardless of the amount of use throughout its eighty-year history, research on the AT is limited. Much of the research on the AT focused on place attachment (Kyle, Graefe, & Manning, 2004; Kyle, Graefe, Manning, & Bacon, 2004) and safety (Burns, Lee, & Graefe, 1999; Manning et al., 2001). Although Kyle and colleagues (2003, 2004) extended the investigation of place attachment in order to include an examination of how AT hiking trip motivation and setting motivation correlated to place attachment, the only motivation focused study found was Nisbett and Hinton’s (2005) study which explored the motivations for AT hikers with disabilities. This exploratory research uncovered five motivational themes: knowing one’s self, importance of people as support, determination, viewing the AT as a challenge, and adaptations. However, it should be noted that this study only interviewed seven individuals.

Given the current lack of literature and contemporary challenges of leisure behavior on trails, a need for further research was evident. Use of means-end theory as a theoretical framework for this research aligned well with both the need to increase the amount of theory-based research on the AT and the need to encourage physical activity, stewardship, and usage of trails by diverse populations.

**Means-End Theory**

Gutman (1982) linked research findings concerning marketing, values, benefits, and means-end in order to produce a viable, theory-based methodology for approaching marketing of a product. Gutman founded his theory on Rokeach’s (1973) principles associated with values. Gutman’s theory makes a connection between Rokeach’s value systems and consumer choice of products. A company would be better able to market a product after understanding the connection between the customer’s value system and a product’s physical attributes because the company could relate the product to a desired consumer benefit and/or consumer’s goal orientation, also known as desired end-state (Gutman).

Thus, Gutman (1982) developed means-end theory as a method of analyzing factors driving a consumer’s purchasing behavior. Means-end theory links physical objects or services and means with outcomes and personal values of the individual (Klenosky, Frauman, Norman, & Gengler, 1998). The theory focuses on interrelationships among attributes, consequences, and values as three levels of abstraction (Goldenberg, Klenosky, O’Leary, & Templin, 2000). It views consumers as goal-oriented decision makers who are motivated to choose behaviors that will lead to specific desirable outcomes (Costa & Dekker, 2004). This is not unlike expectancy-value theory; expectancy-value theory states that consumer actions produce consequences and learn to associate specific consequences with particular aspects of a product (Gutman & Miaoulis, 2003). Both theories examine the process of how consumers develop an opinion about a product or service and how that process leads to the intended outcome. Yet, means-end theory looks beyond direct consequences and continues to more abstract values associated with those consequences.

Attributes within means-end theory are physical objects, services, or experiences of the individual and are viewed as being relatively concrete (Goldenberg, Klenosky, McAvoy, & Holman, 2002). Goldenberg and colleagues examined Outward Bound courses to understand outcomes associated with participating in a wilderness experience. Attributes, consequences, and values emerged from the study that could be similar to a study associated with hikers on the AT. Attributes of an outdoor education experience could include length of time, methods of transportation, group size, or activities such as hiking or backpacking. An attribute such as hiking could be a concrete example of why one would be interested in the activity of backpacking.

Consequences, either positive or negative, are the direct result of attributes. Negative consequences are referred to as costs or risks; whereas, positive consequences are frequently referred to as benefits. Some examples of an outdoor experience’s positive consequences may include developing technical skills, learning leave no trace principles, or developing interpersonal skills. Some possible negative consequences of the same experience may include injury, loss of social connection, or physical exhaustion.

In means-end theory, values are defined as the participants’ desired end-state. In other words, values are the participants’ end destination as they travel up the means-end ladder of abstraction from more concrete attributes to highly abstract value-states (Klenosky, Gengler, & Mulvey, 1993). Klenosky et al. explored attributes, consequences, and values for ski destination choice. Strong links were made of the attributes hills and trails, to the consequences of ski variety and challenge, resulting in the values of fun and excitement and achievement. Ski resorts could use these values as they design promotional materials. In addition, knowledge of such values could assist leisure professionals in gaining insight of a participant’s perspective and how that may or may not differ from the organization’s mission or vision, eventually leading to more effective leisure services.

Linkages between attributes,
consequences, and values are described as means-end chains. Each link in the means-end chain describes how a participant’s thoughts have progressed from either attribute to consequence or consequence to value. In this way, the thought process of the individual can be followed from start to finish. For example, a means-end chain for an AT experience may include the attribute trail. This attribute may then be linked to the consequence awareness, which may be linked to the value self-fulfillment. These elements would form the means-end chain, which illustrates that this participant’s ladder response has indicated that the trail experience itself increased their awareness and was personally fulfilling.

Means-end chains are constructed by a data collection technique known as laddering. Laddering was first conceived by Olson and Reynolds (1983) and further developed in theory and application by Reynolds and Gutman (1988). The application by Reynolds and Gutman assisted means-end researchers with a variety of information including two main problems with laddering. One such problem occurs when participants do not know the answer. In other words, they may not have given prior conscious thought to their response, resulting in the inability to provide an answer. This could, at times, be problematic for the interviewer, especially if the participant is not skilled at the laddering technique of interviewing. One technique that can be used is to rephrase the question in a specific context. The second potential problem with laddering is when information becomes too sensitive, resulting in a participant stating, “I just don’t know.” One common approach, identified by Reynolds and Gutman, is to make a note of concern and revisit that question later in the interview.

Laddering builds means-end chains by asking a participant why an attribute is important; the response will either be another attribute or a consequence. The researcher then repeatedly asks the participant why each subsequent response is important until the participant eventually gives an answer reflecting a value state or can no longer give a response. In this method, each response is similar to a rung on a ladder. Each rung leads the researcher to the top level of the participants’ thinking, the end states (i.e., values). This technique facilitates the arguably redundant process of having participants reflect in order to respond to the underlying value associated with the experience.

While means-end theory has been used repeatedly and with much success in the field of marketing (e.g., Klenosky et al., 1993; Mulvey, Olson, Celsi, & Walker, 1994; Walker & Oslon, 1991), the theory has other pragmatic applications not yet fully explored including a practical framework for researching outcomes produced in outdoor adventure experiences. Understanding the relationship between program attributes, consequences, and values can help programs or hiking clubs to better market an experience (Goldenberg et al., 2002). Therefore, the purpose of this study was to determine answers to the following research questions:

1. What are the attributes, consequences, and values associated with AT hikers?
2. What is the strength of the relationship between attributes, consequences, and values associated with AT hikers?

### METHODOLOGY

#### DATA COLLECTION PROCEDURES

Data were collected using a convenience sampling method during fall 2006. Researchers presented the potential project at the Tidewater Appalachian Trail Club (TATC) officers’ meeting. The meeting was used as a forum to determine if the TATC was interested in having their members participate. Officers were very supportive and set up a date and time for researchers to present at one of the general meetings. Immediately following the researchers’ presentation at the general meeting, interested participants were asked to sign up with a preferred day of the week. Approximately 65 TATC members attended the meeting, of which 50 agreed to participate in the study. Afterwards, contacts were made in order to set up specific dates and times for interviews with all interested members. Most interviews took about 5-10 minutes and were conducted over the telephone. Interviews were conducted with five levels of AT hikers: day hikers, weekenders, multi-use hikers, section-hikers, and thru-hikers.

Data were entered into LadderMap, a software program that creates a value map of the attributes, consequences, and values (Gengler & Reynolds, 1995). As data were entered into LadderMap by the researcher, each comment from the participants was given a content code by reviewing and grouping all responses. Once coding was completed and a complete list of codes compiled, 50% of the data was stripped of its codes and given to another researcher to blindly code. After the second coding was completed, the two coded-versions were compared to determine intercoder reliability. Once initial intercoder reliability was determined (88.62%), researchers worked together to resolve differences in coding of the data.

The next step in data analysis was to utilize LadderMap in the creation of an implication matrix. The implication matrix is an extensive matrix that shows every association made by participants between different attributes, consequences, and values of the study. The implication matrix is an extremely useful tool for showing frequency of certain associations. In order to simplify results and provide a visual that is easy to follow, a hierarchical value map (HVM) was produced. The HVM can convey an
understanding of the thought processes of participants, for a HVM provides a graphical summary of linkages that emerge across participants’ ladders. This tool could be used for programming within related fields. In this case, managers of the AT could view a HVM to determine what people gain from their participation on the AT, or they could view the HVM to discover what it takes to obtain certain values from the AT. HVMs provide a clear understanding of both the thought processes of participants and what the experience ultimately means to them.

**Results**

A total of 43 participants were interviewed. Seven interested participants were unable to be reached during the course of the study. Descriptive statistics were run to determine demographics of the sample. The sample consisted of 41% (n = 17) weekenders, 27% (n = 12) day hikers, 16% (n = 7) thru-hikers, 12% (n = 5) section hikers, and 4% (n = 2) who classified themselves multi-use hikers. Atypical of many hiker studies, females represented the majority of this sample (65%, n = 28). Participants were 98% (n = 42) Caucasian, with only one African American participant. Occupations held were diverse; however, the largest single group was retired individuals (23%, n = 8). Ages ranged from 21-75 years.

HVMs can be thought of as a roadmap of participants’ thoughts on any given attribute. HVMs visually depict means-end chains by linking attributes of focus to consequences and values associated with each. Chains are formed utilizing lines of varying thickness representing frequency of linkages between two items connected via the line. In this structure, linkages appearing more frequently are represented by thicker lines; conversely, thinner lines join less frequently occurring linkages. To aid in differentiation, attributes, consequences, and values on the HVM appear in different colors. Attributes are white circles, consequences are light gray circles, and values appear in black circles. Thickness of lines and coloration help to clearly distinguish between different components and understand frequency of the component’s associations.

An HVM was created for all 43 participants’ responses and indicated what components of the AT experience were the most meaningful and why those components were important (Figure 1). Attributes that emerged from the data included being outdoors, hiking, the trail, and survival. Consequences that emerged included environmental awareness, physical challenge, camaraderie, and exercise. Self-fulfillment, self-reliance, fun, and enjoyment of life, and warm relationships with others are some of the values that emerged. Specifically, strong links existed between hiking and exercise, exercise and health, and health and fun and enjoyment of life. Other strong links existed between outdoors and environmental awareness, and outdoors and self-awareness. Interactions were strongly linked with camaraderie, and camaraderie was linked with fun and enjoyment of life. Generally, data indicate that people hike the AT for fun and enjoyment of life and to develop warm relationships with others. Predominant attributes mentioned by individuals were hiking, the outdoors, and the trail in general. The most referred consequences were environmental awareness and camaraderie followed by health, exercise, and overall awareness. This means that these attributes and consequence were most often identified regardless of their relationship to certain values. Although not a link to any other attribute, consequence, or value in the HVM, survival was found to lead to self-reliance. One last interesting finding was revealed in the HVM. Four attributes were linked directly to a value, thereby skipping the mediating variable of a consequence. These were scenic beauty linked to fun and enjoyment of life, outdoors linked to self-awareness, hiking linked to satisfaction, and survival linked to self-reliance. This is consistent with means-end literature. Some individuals are able to identify their underlying motive or value without being taken through the second step of a consequence. As an illustration, when a participant was asked to identify a list of outcomes received from hiking on the AT she responded with scenic beauty. When she was asked “Why is scenic beauty important to you?” she responded with “It provides me fun and enjoyment of life.” Her response was a value; therefore, that ladder was complete.

**Discussion**

The recreation profession has been criticized for lacking empirical evidence and ineffectively communicating intended benefits to constituents (Driver & Moore, 2005). The need to justify, in terms of tangible outcomes, utility of public services receiving tax funds has been an ever-growing demand of the general populace (Allen & Cooper, 2003; Moore & Driver). This need to justify recreation and leisure experiences led to the Benefits Movement, an “ongoing process of leisure service providers to identify desirable individual, social, economic and environmental benefits derived from recreational experiences” (Allen & Cooper, p. 30).

This current study addresses the need to identify specific benefits gained from hiking. Information gathered about specific benefits hikers perceive to gain by hiking the AT may be useful in benefits-based marketing, programming, and management. Further research in regards to the motivation for and benefits of hiking the AT is necessary so that trail managers, natural resource managers, and recreation professionals associated with the trail can disseminate evidence of the benefits.

While recent research has explored the meaning of the trail (Kyle et al., 2004) and trail usage among people with disabilities (Nesbitt & Hinton, 2005), an even more recent study was conducted on energy expenditure while hiking on the AT (Hill, Swain, & Hill, 2008). Noting the trend of recent AT research, one could speculate that interest in the use, diversity, benefits, and impact of the trail usage is growing.

ATC, land managers, and other organizations attempt to promote and protect the AT as the trail is a living catalog of hundreds of rare, threatened, and endangered species and is internationally reputed as a recreational resource (ATC, n.d.). Thus, promotion and protection of this great national resource is appropriately timed. Protecting our limited natural resources will help ensure that future generations have the opportunity to enjoy them as well. One way to educate, and thereby protect, is by encouraging the first person experience. The successfulness of a promotional campaign for the first person experience of AT hiking may be improved by understanding motivations of past and current AT hikers.

Data from this study revealed a number of concrete attributes among hikers such as the trail, being outdoors, scenic beauty, and interactions. These basic motives are what initially attract hikers, as the means-end literature indicates. The hiker then hopes to gain by-products or consequences such as health, peace, physical challenge, and environmental awareness. Finally, data from this study explored values or underlying motives for one to hike on the AT such as self-fulfillment, appreciation, and self-esteem. An interesting and timely finding from this study was that participants strongly link the attribute of the outdoors to the consequence of environmental awareness. Further research is needed to provide additional empirical evidence of this finding. This portion of the data also
parallels Louv’s (2007) notion of the need for a primary experience with the outdoors and environmental stewardship. Louv claimed:

For a new generation, nature is more abstraction than reality. Increasingly, nature is something to watch, to consume, to wear — to ignore. Reducing that deficit — healing the broken bond between our young and nature — is in our self-interest, not only because aesthetics or justice demands it, but also because our mental, physical, and spiritual health depends upon it. The health of the earth is at stake as well. (p. 2-3)

Another way to educate, and thereby promote protection of the trail, is by advertising perceived benefits of trail usage. Data from this study supported that participants strongly associated hiking with social interactions, camaraderie and fun, and enjoyment of life. Further research should be conducted to validate these findings. By advertising benefits (i.e., Benefits-Based Awareness), we can better offer scientific knowledge on results of recreation participation. Potential trail users may be encouraged to hike because the hiking experience has been linked with an outcome found to be desirable, such as the development of self-reliance.

Yet another method of educating and, thus, promoting protection of this natural resource is by intentionally programming for desired benefits and outcomes. One educational program exemplifying outdoor education’s use in promoting both conservation values and healthy lifestyles is “A Trail to Every Classroom,” which brings together teachers, trail managers, and children in order to engage in physical exercise, explore nature, and learn about the AT as a natural and cultural resource (A Trail to Every Classroom, n.d.). Programs and partnerships such as the one aforementioned are critical in allowing for future generations’ usage and enjoyment of trails.
RESULTS
Results of this study suggest that hikers of the AT are motivated largely by fun and enjoyment of life and warm relationships with others. This suggests that the social component of the experience is meaningful, and hiking is not purely sought after as an individual experience. Other individual values were significantly present, such as self-fulfillment and self-esteem. An examination of the extent to which hikers are motivated by social factors may provide for interesting comparisons with other long distance hikes such as the Pacific Crest Trail (PCT), which receive far fewer visitors and travels through mostly isolated wilderness.

LIMITATIONS AND FUTURE STUDIES
One of the most significant limitations of the study was the sample size. With only 43 participants, it becomes difficult to generalize. In addition, the majority of this sample was limited to members of one trail club (i.e., TATC). Using a larger sample size (based on previous research) could afford a quasi-qualitative scale. A scale of this type could also be used as an online option. Finally, the last limitation is that of skewed distribution of males in the study. The majority of this sample was male, which is atypical of many AT hikers studies and users of the AT.

CONCLUSION
This research demonstrates the potential use of means-end theory in the examination of outcomes of a hiking experience. Research should continue by expanding the knowledge of hiking experience outcomes and examining different subsets of AT hikers (such as day-hikers) and users of other trails and pathways. This should be accomplished to
assist large land management organizations at the national, state, and local level to understand their users and educate the public about both benefits of their work and services they provide (e.g., fun and enjoyment of life as a value).

Positive values that individuals obtained (e.g., self-fulfillment, fun and enjoyment of life) parallel much of the recreation benefits movement. Many would argue that these outcomes are highly valuable and would benefit users that have not yet experienced hiking on the AT. Information from this study can add to the body of recreation literature as recreation professionals continually strive to increase awareness of benefits of outdoor recreation while implementing programs that specifically target development of those benefits. Finally, this type of research can serve as a partnership model between recreation agencies and academia to foster evidence-based practices such as promoting healthy lifestyles through physical activity.

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References


York: The Sagamore.

Appendix A. Interview Script

Means-end Approach of an Appalachian Trail Hiker

Participation Number: ________________   1. Male  or  Female

Introduction: Good morning/afternoon/evening. I’m XXXX, talking to you on behalf of XXXX. I am interested in understanding what you got from your participating hiking on the AT trail. Would you be willing to participate in a 10-minute interview?

As you know the purpose of this interview is to find out what your outcomes are from hiking on the AT trail. There are no right or wrong answers to these questions. I want you to feel comfortable talking with me and answering my questions. Please be assured that all of your responses will remain completely confidential. Also, when answering a question please refer only to your most recent AT trail experience rather than any other previous outdoor experiences you might have had. Any questions for me? OK, let’s begin?

SECTION 1 – General Questions

2. How old are you? ________________
3. Which of the following best describes you? (please circle one)
   White or Caucasian   Black or African American   Asian or Pacific Islander
   American Indian/Native American   Hispanic or Latino   Other: ________________
4. What is your hiker type? (please “X” one)  Student   Self-employed
   weeknder ____ day hiker _____ thru-hiker _____ section hiker _____ multi-use hiker_____
5. How many miles have you hiked on the AT trail?
   a. ____________ miles/this trip
   b. ____________ miles/per year
   c. ____________ miles (total miles)
6. I am interested in what you feel you have gotten from hiking the AT trail. That is, I would like you to think about the things you learned and the outcomes you received from hiking on the trail. Please tell me some of the outcomes that you received. Any others? (TRY TO GET AT LEAST 3-4… BUT ALLOW FOR MORE)

   List of Outcomes: ____________________________________________  Ranking: _____________
   ____________________________________________  _____________
   ____________________________________________  _____________

7. Now, I want you to think about the importance of each of these outcomes. Which of the outcomes you mentioned would you say is the most important to you? Which is the next most important? (REPEAT TILL ALL ARE RANKED)

SECTION 2 – Laddering the Outcomes

Now, I am going to ask you about some outcomes that you mentioned. You should know that some of my questions will seem obvious or repetitive to you. It is not that I don’t understand the obvious, it’s just that I need to hear things in your own words to know exactly what you mean. Are you ready to begin?

OUTCOME #1:
Now you mentioned that (outcome #1) ____________________ was something that you got out of your AT experience. Why is _______________ important to you? …And why is that important to you?

 ATTRIBUTE  CONSEQUENCE  VALUE

THANK YOU FOR YOUR TIME!!