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Situational Influences on Experiences of Long-Distance Hikers

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Abstract

The Appalachian Trail (AT), Pacific Crest Trail (PCT), and Continental Divide Trail (CDT) are arguably the most popular long-distance hiking routes in the United States. With increasing need for recreational space, these trails are experiencing heavier visitation and impact. Research on the experiences of long-distance hikers can be used as a means of justifying funding for the management of the AT, PCT, CDT, and other long-distance trails. This study used the Benefits of Hiking Scale to determine whether benefits of participation and components of means-end theory varied based on the duration and location of long-distance hiking experiences. The study used an online survey to collect data from 292 hikers, who were classified as non-thru-hikers, AT thru-hikers, or thru-hikers of other long-distance trails. The number of thru-hikes completed in the last 10 years was also calculated. Results suggest that non-thru-hikers seek to maintain or improve physical health to a greater degree than thru-hikers, who appear to be motivated by other aspects of the hiking experience.

KEYWORDS: means-end theory; health outcomes; psychological benefits; Appalachian Trail; Continental Divide Trail; Pacific Crest Trail

The Appalachian Trail (AT), Pacific Crest Trail (PCT), and Continental Divide Trail (CDT) are perhaps the most popular of the 11 National Scenic Trails in the United States. The AT was completed in 1937 with the help of thousands of volunteers, the PCT was officially completed in 1993, and the CDT has yet to be completed. The AT and PCT became National Scenic Trails in 1968, with the CDT following shortly after in 1978. With all three trails stretching over 2,000 miles, each provides copious recreation opportunities. Today the management of all three trails is largely volunteer based, with the AT being maintained by the Appalachian Trail Conservancy (ATC), the PCT by the Pacific Crest Trail Association (PCTA), and the CDT by the Continental Divide Trail Coalition (CDTC). These trails are known for long-distance hiking and have become increasingly popular with the release of Bill Bryson's *A Walk in the Woods* in 1997 and *Wild* by Cheryl Strayed in 2012. These books offer personal accounts of thru-hiking 2,175 miles on the AT and 2,650 miles on the PCT. Although the AT and PCT are designated National Scenic Trails, these books tell very different stories due to differences in physical features, terrain, wildlife, and remoteness. Today, over 14,000 individuals have thru-hiked the AT and over 5,400 the PCT. An accurate count of CDT thru-hikers is unavailable, but the number is thought to be much lower due to the length, difficulty, and remoteness of the trail.

Concerns about health and well-being may contribute to increased rates of outdoor recreation participation, including use of National Scenic Trails. Cordell, Green, and Betz (2009) reported increased participation rates in walking for pleasure (111% increase), day hiking (210% increase), and backpacking (161% increase) across U.S. households from 1982 to 2009. Kil, Holland, and Stein (2015) noted that the natural features in outdoor recreation settings can promote physical and mental health, both of which are important outcomes for hikers. More recently, Frumkin et al. (2017) argued that there is substantial evidence for health outcomes resulting from exposure to nature, leading them to propose a national research agenda that addresses seven domains of public health benefits resulting from contact with natural environments. For example, obesity rates in the United States have been on the rise for several decades. In 2012, 16.9% of children were at or above the 95th percentile of the sex-specific Centers for Disease Control body mass index (BMI) age growth charts and 34.9% of adults had a BMI of 30 or above (Ogden, Carroll, Kit, & Flegal, 2014). Obesity has been linked to several chronic conditions such as diabetes, asthma, heart disease, and cancer (U.S. Department of Health and Human Services [DHHS], 2001). Lack of physical activity is a contributing factor in nearly all of these chronic conditions, leading the Surgeon General to include the availability of outdoor recreation facilities in *The Surgeon General's Vision for a Healthy and Fit Nation* (DHHS, 2010). Until the early 2000s, most studies on the health outcomes of outdoor recreation focused on tangible aspects of physical health, such as heart conditions and caloric intake (Devoe, 2001). This line of research demonstrated that hiking can increase the aerobic capacity of relatively inactive subjects and result in a higher expenditure of calories that can be linked to other health benefits (L. Hill, Swain, & Hill, 2008).

While numerous studies have concluded that outdoor recreation can help reduce the risk of chronic illness such as diabetes and heart disease (California State Parks, 2005; Devoe, 2000; Frumkin et al., 2017), fewer studies have been conducted on the psychological and spiritual benefits of hiking (Heintzman, 2009). Although empirical evidence is sometimes lacking, Frumkin et al. (2017) and Wilson (2014) argued that experiences in the outdoors do more than improve physical health. Professionals in the recreation field have used means-end theory to investigate different types of benefits resulting from outdoor pursuits (Goldenberg, Klenosky, McAvoy, & Holman, 2002). These include the tangible attributes of the experience, the consequences that result from these attributes, and the values that reflect underlying motivations and benefits of the experience. Researchers have used this theoretical framework to study the factors that motivate AT and PCT hikers, along with the outcomes associated with their experiences (Freidt, Hill, Gómez, & Goldenberg, 2010; Gómez, Freidt, Hill, Goldenberg, & Hill, 2010; E. Hill, Goldenberg,

& Freidt, 2009). Few studies have examined how experiences differ between AT hikers, PCT hikers, and hikers of other long-distance trails. This study used the Benefits of Hiking Scale (BHS; Freidt et al., 2010; Gómez et al., 2010) to determine whether benefits of participation and components of means-end theory varied based on the duration and location of long-distance hiking experiences.

Background

Benefits of Recreation

Without tangible evidence that outdoor recreation is beneficial to the public, it is difficult for those in the outdoor recreation field to justify the need for tax funding to expand recreation programs and facilities. This sparked early lines of research on the benefits of recreation and leisure experiences, and it led to the development of the Recreation Experience Preference (REP) scales (Driver, 1983; Driver, Tinsley, & Manfredo, 1991; Manfredo, Driver, & Tarrant, 1996). The REP scales are now one of the most widely recognized approaches for identifying and evaluating the benefits of outdoor recreation (Driver, 1983; Driver et al., 1991). They were developed to help measure psychological benefits and are centered on the cognitive dissonance that individuals experience when their actual mental or physical state does not match their preferred mental or physical state (Manfredo et al., 1996). The idea behind the REP scales is that individuals use recreation to accomplish physical and psychological goals. This is similar to means-end theory (Reynolds & Gutman, 1988), which has emerged as another theoretical foundation for studying outdoor recreation benefits (Goldenberg et al., 2002; Goldenberg, Klenosky, O'Leary, & Templin, 2000).

Means-End Theory

Means-end theory originated with Gutman (1982), who identified three main components of consumer behavior: attributes, consequences, and values. Attributes were operationalized as physical properties of consumer goods, consequences as direct results of investing in attributes, and values as outcomes or end states of consumer decisions. In subsequent research, Reynolds and Gutman (1988) developed a ladder-style interview approach to further examine the complex nature of consumer decision making. Means-end theory could lead to greater understanding of the interactions that occur between outdoor recreationists and natural environments. For example, physical attributes of recreation settings will likely result in specific consequences that fulfill desired outcomes.

Goldenberg et al. (2002) used ladder-style interviews in a means-end study of Outward Bound experiences. Attributes included length of activities, length of course, location of course, and number of individuals on the course. Consequences included learning to work together as a team, learning skills needed to function in an outdoor setting, and learning personal limitations. Values included enjoyment of life, excitement, self-fulfillment, sense of belonging, and sense of accomplishment. More recently, E. Hill et al. (2009) used ladder-style interviews to investigate benefits of hiking the AT. Attributes were defined as physical objects, services, or personal experiences, including trails, hiking, being outdoors, scenic beauty, and survival. Consequences included camaraderie, environmental awareness, exercise, and physical challenge. Values were conceptualized as end states of the hiking experience and included fun, enjoyment of life, self-fulfillment, self-reliance, and warm relationships with others.

The AT, PCT, and CDT have known differences in physical and social attributes that will likely result in varying consequences and values. For example, the CDT is more remote and the likelihood of encountering dangerous wildlife is higher, which may lead to concerns for safety,

but a greater sense of self-reliance. Differences in the distance of the trails and duration of the hikes may influence levels of social interaction and comradery and, in turn, affect values such as enjoyment of life. Desired attributes, consequences, and values will also likely vary among different types of hikers (e.g., day hikers, section hikers, and thru-hikers). Similarly, Ewert (1998) argued that the outcomes sought by outdoor recreationists will likely vary based on residential proximity. More recently, Kil et al. (2015) reported that proximate visitors to the Florida National Scenic Trail were more likely to seek physical and mental health than were distant visitors.

Benefits of Hiking Scale

Recent research has integrated means-end theory and Driver's benefits (Driver, 1983; Driver et al., 1991) to better understand the experiences of hikers on the AT. The BHS (Freidt et al., 2010; Gómez et al., 2010) was developed through three categories of benefits derived from Driver (1998a, 1998b; Prevention of a Worsening Condition; Improved Condition; Realization of Psychological Experience) and the three components of means-end theory (Reynolds & Gutman, 1988). Freidt et al. (2010) established validity for a three-dimensional benefits model and found significant differences in Improved Condition based on types of AT hikers. No differences were found in terms of Prevention of a Worsening Condition or Realization of Psychological Experience. Gómez et al. (2010) reported positive associations between attributes, consequences, and values in their study of AT hikers, but found no significant differences in components of means-end theory when comparing different types of hikers (e.g., day hikers, overnight hikers, section hikers, thru-hikers, and multiuse hikers). Gómez et al. (2010) concluded that other research should adapt the BHS for use on other National Scenic Trails, such as the PCT, to further investigate differences in attributes, consequences, and values among different groups of hikers.

E. Hill et al. (2014) were the first to use the BHS to compare the experiences of AT and PCT hikers. They surveyed AT and PCT users who were affiliated with clubs or organizations that supported recreational use of the trail. They found differences in BHS scores between hikers of the two trails. The AT thru-hikers were more likely to be motived by the desire to prevent deteriorating health conditions, but no differences were found for the other types of benefits. Although attributes were less important to AT hikers, they scored higher on consequences and values. E. Hill et al. (2014) argued that this could be due to the ease of access to the AT, with those who live near the trail viewing it as a place for exercise and fresh air on a more frequent but less extended basis. They also noted that populations around the AT had a higher rate of obesity. Results suggested that motives and components of means-end theory varied based on the location of trails, leading E. Hill et al. (2014) to argue for additional studies that investigate national differences in motives and benefits of hiking. A potential source of variation in the BHS scores noted by E. Hill et al. (2014) was the "culture" of the AT. For example, the AT hosts more thru-hikers than the PCT, which results in more hostels and infrastructure (i.e., attributes) that accommodate higher use levels. Also, a unique thru-hiker subculture on the AT affects the trail as a whole (Littlefield & Siudzinski, 2011).

Research Questions

This study used the BHS (Freidt et al., 2010; Gómez et al., 2010) to determine how duration and location influenced the benefits, attributes, consequences, and values of long-distance hikers. The following research questions were addressed:

- Do benefits, attributes, consequences, and values vary based on the duration of hiking experiences?
- Do benefits, attributes, consequences, and values differ between non-thru-hikers, AT thru-hikers, and thru-hikers of other long-distance trails?

Method

Data Collection

This study used an online survey to collect data during the summer and fall of 2015. The sample population included different classifications of hikers on the AT, PCT, CDT, and other North American long-distance trails (200 miles or greater). The survey was distributed through a snowball sample administered to a list of hikers provided by the ATC and a small group of hikers identified through the ATC website, online PCTA forums, and social media. Upon completion of the survey, participants were asked to refer fellow hikers who might be interested in responding.

Hikers were categorized based on the duration and location of their hike. For the purpose of this study, duration was operationalized by classifying hikers as non-thru hikers, thru-hikers of one trail, and thru-hikers of multiple trails. This was necessary due to the limited number of respondents who successfully thru-hiked the CDT ($n = 15$), and this is a more accurate measure of duration than length of trail. Thru-hikers were defined as individuals who continuously hiked the entire span of the AT, PCT, CDT, or another long-distance trail within the last 10 years. Thru-hikers of multiples trails included those who had continuously hiked the entire span of two or more long-distance trails within the past 10 years. Non-thru-hikers were defined as those who had hiked on the AT, PCT, CDT, or another long-distance trail within the last 10 years without completing the hike in its entirety over the course of a single season. Location was operationalized by classifying respondents as non-thru-hikers, AT thru-hikers, and thru-hikers of other long-distance trails.

Study Areas

Appalachian Trail. The Appalachian National Scenic Trail that exists today was originally proposed in 1921 as "An Appalachian Trail: A Project in Regional Planning" (MacKaye, 1921). MacKaye's vision came to life in 1937 with the completion of the AT after 16 years of development and the help of thousands of volunteers. The AT runs through 14 states, terminating at Springer Mountain in Georgia and Mount Katahdin in Maine. The 2,175-mile footpath encompasses sections in eight national forests, six national parks, and numerous state and local parks (ATC, n.d.).

The Appalachian mountain range includes possibly the most diverse grouping of temperate zones in the world (ATC, n.d.). In addition to the well-known black bear and moose, the ATC (n.d.) argues that the Appalachian Mountains contain the largest amount of biodiversity of any National Park Service unit. The AT winds through primarily temperate zones, meaning the attributes of the trail as a whole are reasonably consistent. One can expect to spend the majority of their time hiking and camping below tree line with frequent access to water throughout the trail. The terrain of the AT is designed for foot traffic only. Although its highest peak is just over 6,000 ft, the gradient is so steep and rocky that it would be impossible for pack animals to traverse. The hiking trail may be difficult, but the AT is very accessible with hundreds of busy road crossings. The AT passes through towns such as Damascus, Virginia, and Hot Springs, North Carolina, which makes access to food, resupply, and medical care readily available.

Today, the trail continues to be managed by volunteers. The National Park Service (2014) estimates that 4 million people visit the trail every year and, as such, has been deemed the people's trail. The majority of visitors spend a weekend or less hiking on the trail. From the wide base of users, a small but growing group of hikers are referred to as "2000 milers"—those who have completed the 2,175-mile trail in one continuous journey from Georgia to Maine, or vice versa. The number of hikers attempting a thru-hike on the AT increased from 2,586 in 2013, to 3,867 in 2016. With a completion rate of 25% to 30% per year, the list of thru-hikers continues to grow (ATC, n.d.).

Pacific Crest Trail. Stretching over 2,650 miles, the PCT holds its place alongside the AT as a National Scenic Trail. Although the PCT was designated as a National Scenic Trail in 1968, it was officially completed in 1993. The PCT starts near Campo, California, and ends in Manning Provincial Park on the border of the United States and British Columbia. This long-distance trail traverses through Southern California, Central California, Northern California, Oregon, and Washington (U.S. Department of Agriculture, n.d.). The trail crosses 26 national forests, seven national parks, five state parks, and four national monuments.

The PCT is known for incredible diversity in terrain (Schaffer & Selters, 2004). The trail only passes through three states, but it traverses an array of biomes that are home to a variety of wildlife species including western diamondback rattlesnakes and American black bears. Some of these sections are home to deserts such as the Anza-Borrego, which is just above sea level, or mountain ranges such as the High Sierras, which are over 14,000 ft tall. This trail is more remote than the AT. With fewer road crossings than the AT, the PCT makes resupplying food much more difficult. In many locations, the nearest resupply is over 40 miles away. This also means that medical care can be several hours distant by car. Hikers can expect to hike the majority of the time above tree line, in the open, with scarce water sources. Although the trail is roughly 400 miles longer than the AT, the grade of the trail is much gentler, making it suitable for pack animals and mountain bikes in some sections (PCTA, n.d.-b).

The PCT was originally managed and maintained by a combination of the Pacific Crest Trail System Conference and the Pacific Crest Trail Club. Since 1977, the PCT has been managed by the PCTA (n.d.-b), which resulted from the merger of the conference and club. Today the PCT hosts hundreds of thousands of hikers, ranging from day hikers to section hikers who spend weeks on the John Muir Trail. Additionally, thru-hikers travel the entire trail in one continuous span. The number of PCT thru-hiking permits issued from 2013 to 2017 increased 236% from 1,041 in 2013, to 3,498 in 2016 (PCTA, n.d.-a). Although current estimates are relatively consistent with the number of hikers who attempt the AT each year, successful PCT thru-hikes have been less common. As of 2017, approximately 5,400 people have completed a PCT thru-hike. However, there were 724 successful thru-hikes in 2016, a notable increase over the 275 who completed the trail in 2013 (PCTA, n.d.-a).

Continental Divide Trail. Although still incomplete, the CDT is known to be the longest and most rugged of the Triple Crown Hiking Series (American Long Distance Hiking Association – West, n.d.). In addition, it is also known as the highest, most challenging, and most remote of the National Scenic Trails, with its lowest point being over 4,000 ft high. Designated by Congress in 1978, the CDT protects incredible natural, historic, and cultural resources. Like the PCT, the CDT spans from Canada to Mexico. More specifically, the CDT terminates in Big Hatchets Wilderness Study Area on the border of Mexico and the Canadian Border in Glacier National Park. It traverses five states, 25 national forests, 21 wilderness areas, three national parks, a national monument, and eight BLM resource areas. As of December 2015, about 85% of the CDT has been completed, with approximately 460 miles of patchwork trail left to be constructed that would make the trail continuous (CDTC, n.d.).

Although the U.S Forest Service is the lead federal agency responsible for completing the CDT, it works alongside the National Park Service, Bureau of Land Management, and nonprofit organizations such as the CDTC to maintain and manage the trail (U.S. Department of Agriculture, 2009). All of these agencies must work together to maintain the trail since the CDT winds through all three federal jurisdictions and private land. The CDT hosts a wide range of outdoor activities including motorized access in several segments. The CDT is best known for its difficulty. Only about 150 to 200 people attempt to thru-hike the trail on a yearly basis, compared to approximately 3,500 hikers who undertake the AT and PCT (ATC, n.d.; CDTC, n.d.; PCTA, n.d.-a).

Other long-distance trails. Although the AT, PCT, and CDT are the best known long-distance hiking routes in the United States, there are a number of other trails of various lengths. The Sierra High Route in California is approximately 200 miles long, while the American Discover trail spans 6,800 miles from coast to coast (Troxell, 2015). Each long-distance trail is unique with its own attributes that provide a variety of experiences to hikers. For the purposes of this study, long-distance trails were defined as those 200 miles or more in length.

Measurement

This study used an adapted version of the 32-item BHS, which has been tested for psychometric properties, with reliabilities ranging from .75 to .91 across six subscales: three from Driver's benefits (Freidt et al., 2010) and three from means-end theory (Gómez et al., 2010). Items were measured on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The BHS includes 16 questions that address three categories from Driver's benefits: Prevention of Worsening Condition (PREV), Improved Condition (IMP), and Realization of Physiological Experience (PSYC) (Driver, 1998a, 1998b). Examples include "I hike because I feel hiking reduces my number of illnesses" (PREV), "I hike because I feel that hiking improves my overall fitness" (IMP), and "I hike because I recognize that hiking gives me a sense of self-reliance" (PSYC; Freidt et al., 2010). The BHS also contains 16 questions that address the three components of means-end theory: Attributes (ATTRIB), Consequences (CONSEQ), and Values (VALS). Examples include "One of the main reasons I hike the AT is simply because I enjoy the act of hiking" (ATTRIB), "I hike the AT because hiking is good for my health" (CONSEQ), and "Overall, I feel that hiking the AT improves self-fulfillment" (VALS; Gómez et al., 2010).

Data Analysis

Responses to the online questionnaire were uploaded into SPSS v23 for analysis. Incomplete cases were minimal and were addressed through listwise deletion. Exploratory factor analysis ensured consistency with the psychometric properties reported by Freidt et al. (2010) and Gómez et al. (2010). Results indicated the presence of two distinct scales, each represented by three factor solutions: BHS (PREV, IMP, and PSYC) and components of means-end theory (ATTRIB, CONSEQ, and VALS). All factors were characterized by acceptable loading coefficients (≥ .4), an absence of cross-loading, interpretable structures, and acceptable interitem reliabilities (Netemeyer, Bearden, & Sharma, 2003). Mean indices were computed for each factor and multivariate analysis of variance (MANOVA) tested for differences based on duration and location. Analysis of variance (ANOVA) with Tukey's HSD post hoc tests identified differences between comparison groups.

Results

Descriptive Statistics

A total of 292 completed surveys were returned in a usable format. Of these, 66 (23%) were from the ATC mailing list. An additional 12 respondents were referrals from the ATC mailing list (4%). The remaining respondents (73%) were from online PCTA forums and open links posted on social media sites. The response rate for the ATC mailing list was 33%; the response rate for referrals from the ATC list, PCT forums, and social media sites was 68%.

Hikers ranged from 18 to 76 years of age, with a mean of 40 years. Males (48%) and females (49%) were equally represented, but White/Caucasian hikers made up 93% of the sample. Approximately 70% of respondents indicated that they were employed, with 11% stating that they were retired. Non-thru-hikers composed 36% of the sample. Approximately 48% of hikers had completed one thru-hike, while 16% had completed multiple thru-hikes. The AT thru-hikers represented 40% of respondents and other thru-hikers accounted for 24%. Of this 24%, only 15

respondents (5%) had completed a thru-hike on the CDT. Means and standard deviations of the response variables were 3.23 (.96) for PREV, 4.04 (.77) for IMP, 4.52 (.52) for PSYC, 4.57 (.43) for ATTRIB, 3.83 (.65) for CONSEQ, and 4.53 (.47) for VALS.

Research Question 1: Do Benefits, Attributes, Consequences, and Values Vary Based on the Duration of Hiking Experiences?

A MANOVA indicated significant differences between non-thru-hikers, thru-hikers of one trail, and thru-hikers of multiple trails, $F(12, 562) = 3.247$, $p \leq .001$, Wilk's $\Lambda = .875$, partial $\eta^2 = .065$. Follow-up ANOVAs with Tukey's HSD post hoc tests revealed that PREV, $F(2, 7.62) = 8.70$, $p \leq .001$, partial $\eta^2 = .057$, and IMP, $F(2, 3.13) = 5.50$, $p = .005$, partial $\eta^2 = .037$, differed between non-thru-hikers and thru-hikers of one or more long-distance trails. Non-thru-hikers scored higher than those who had thru-hiked one trail and those who had thru-hiked multiple trails. No differences were found for PSYC, ATTRIB, CONSEQ, or VALS (Table 1).

Table 1

Differences Between Non-Thru-Hikers, Thru-Hikers of One Trail, and Thru-Hikers of Multiple Trails

Factor	Non-thru-hiker	1 thru-hike	Multiple thru-hikes
PREV	3.53_a	3.10_b	2.99_b
IMP	4.22_a	3.97_b	3.82_b
PSYC	4.55	4.52	4.42
ATTRIB	4.60	4.55	4.59
CONSEQ	3.86	3.84	3.73
VALS	4.55	4.49	4.59

Note. Subscripts indicate significant mean differences at $\alpha \leq .05$.

Research Question 2: Do Benefits, Attributes, Consequences, and Values Differ Between Non-Thru-Hikers, AT Thru-Hikers, and Thru-Hikers of Other Long-Distance Trails?

A MANOVA indicated significant differences between non-thru-hikers, AT thru-hikers, and thru-hikers of other long-distance trails, $F(12, 562) = 2.799$, $p \leq .001$, Wilk's $\Lambda = .890$, partial $\eta^2 = .056$. Follow-up ANOVAs with Tukey's HSD post hoc tests were also significant. PREV was greater among non-thru-hikers than AT thru-hikers and thru-hikers of other long-distance trails, $F(2, 7.61) = 8.70$, $p \leq .001$, partial $\eta^2 = .057$. IMP was greater in non-thru-hikers than AT thru-hikers; no other differences were found for this variable, $F(2, 2.76) = 4.81$, $p = .009$, partial $\eta^2 = .033$. No differences were found for PSYC, ATTRIB, CONSEQ, or VALS (Table 2).

Table 2

Differences Between Non-Thru-Hikers, AT Thru-Hikers, and Thru-Hikers of Other Long-Distance Trails

Factor	Non-thru hikers	AT thru-hikers	Other thru-hikers
PREV	3.53_a	3.02_b	3.11_b
IMP	4.22_a	3.92_b	3.94_{ab}
PSYC	4.55	4.51	4.47
ATTRIB	4.60	4.53	4.60
CONSEQ	3.86	3.82	3.80
VALS	4.55	4.48	4.58

Note. Subscripts indicate significant mean differences at $\alpha \leq .05$.

Discussion

In previous research, Freidt et al. (2010) found minimal differences in the benefits experienced by different types of AT hikers. Gómez et al. (2010) reported no differences in terms of ATTRIB, CONSEQ, and VALS. In subsequent research, E. Hill et al. (2014) reported that AT and PCT hikers (not necessarily thru-hikers) varied with respect to PREV and all three components of means-end theory. This study found that non-thru-hikers scored higher on PREV and IMP than did those who had thru-hiked one trail and those who had thru-hiked multiple trails. Similarly, non-thru-hikers, compared to AT thru-hikers and thru-hikers of other long-distance trails, scored higher on PREV. However, IMP only varied between non-thru-hikers and AT thru-hikers. Those who had thru-hiked other long-distance trails greatly outnumbered CDT thru-hikers (n = 15). Therefore, this finding may be attributable to the shorter distance typical of other trails, which may not be long enough to result in improved conditions. Additionally, most thru-hikers of other long-distance trails had also completed the AT, which likely explains the lack of significance compared to AT thru-hikers specifically. No differences were found in PSYC, which is consistent with Freidt et al.'s results. Furthermore, no differences were found in the components of means-end theory, which is consistent with Gómez et al.'s results.

Results of this study demonstrate that non-thru-hikers scored higher in the domains of PREV and IMP, which suggests they view hiking as a way to prevent adverse health conditions and improve current conditions. This is consistent with Kil et al.'s (2015) finding that hikers proximate to the Florida National Scenic Trail were more likely to seek physical and mental health benefits from outdoor recreation than were hikers who resided further from the trail. Such findings are logical given the retroactive nature of the data collection process used in both of these studies. For example, it is not uncommon for thru-hikers to experience improved physical and mental health after the conclusion of their thru-hike. However, they are less likely to be concerned with improving their health at the conclusion of a long-distance hike due to their level of physical conditioning. Thus, it seems that thru-hiking may change why people value hiking. This suggests a subtle yet important distinction between motives and benefits. Motives initially drive people to hike long-distance trails and are the reasons they continue to hike. Benefits, on the other hand, are the more tangible outcomes that hikers gain from their experiences.

Results suggest that a number of important factors drive hiking participation. Mean scores for IMP, PSYC, ATTRIB, and VALS ranged from 4.0 to 4.6. PREV and CONSEQ were lower (3.2 and 3.8), but still demonstrate the importance that hikers place upon outdoor recreation as a means of maintaining or improving health. This implies a validity to the health-related benefits of hiking and suggests a need to expand efforts to document the outcomes of outdoor recreation experiences. Recent research by Gómez, Hill, Zhu, and Freidt (2016) resulted in the development of the Perceived Health Outcomes of Recreation Scale (PHORS), an extension of the BHS, which demonstrated strong psychometric properties and the potential to serve as a means of documenting health-related outcomes for a wide range of outdoor recreation activities. The National Park Service is also developing strategies to monitor physical activity and promote health outcomes (U.S. Department of the Interior, National Park Service, 2011; Walden-Schreiner, Leung, & Floyd, 2014).

Collectively, studies that have used the BHS to investigate long-distance hiking experiences suggest that outcomes vary primarily in the physical domains (PREV and IMP; Freidt et al., 2010; Gómez et al., 2010; E. Hill et al., 2014). Psychological motives appear to be important to all hikers regardless of the trail or the duration of the hike. Although this study found no differences in components of means-end theory, E. Hill et al. (2014) reported variations when comparing AT hikers and PCT hikers without distinguishing between types of hikers. Thus, location of the trail appears to be a stronger situational influence on outcomes of the hiking experience than the amount of time that a hiker spends on the trail. Notable exceptions may include instances

when the goal of the hiking experience is to improve physical health, which is likely to require extended exposure. In contrast, psychological outcomes have been shown to improve in as little as 4 days (Atchley, Strayer, & Atchley, 2012).

Implications and Limitations

Although long-distance hiking trails span thousands of miles, they are still a limited resource. In many ways, the allure of these trails is to get away and disconnect, not only from technology, but also from crowds. Use of long-distance trails is projected to increase in coming years, which raises concerns regarding the effects of crowding, user conflicts, and biophysical conditions on the trails and surrounding areas. Funds allocated to maintenance are less than adequate to keep the trails clean and in optimal condition, so organizations such as the ATC, PCTA, and CDTC depend on volunteers to maintain the trails. Furthermore, the CDT and many other long-distance trails have not yet been completed. Dissemination of information on the benefits, attributes, consequences, and values important to hikers may help secure additional resources for trail construction and management, particularly when outdoor recreation opportunities can be linked to positive health outcomes (Gómez et al., 2016; Kil et al., 2015; Walden-Schreiner et al., 2014).

This study expanded on the work of Goldenberg et al. (2002), Freidt et al. (2010), Gómez et al. (2010), and E. Hill et al. (2014) by incorporating benefits, attributes, consequences, and values into an analysis that included multiple situational influences (duration of hike and location of trails). The primary limitation of the study was the smaller sample of thru-hikers from the PCT and CDT. Additional respondents from these two trails would allow for direct comparisons rather than aggregation of data into categories (e.g., thru-hikers of other long-distance trails). It is noteworthy that PREV and CONSEQ seem to measure similar concepts. Future studies may want to incorporate different items from the REP scales (Gómez et al., 2016). It would also be advisable for researchers to ask hikers how they benefit from long-distance trails, as opposed to why they hike, to gain a better understanding of the outcomes realized through such experiences. Alternatively, a pre–post design would allow researchers to assess changes over time. Finally, future studies should include different trails to better understand the benefits, attributes, consequences, and values experienced by hikers of other long-distance trails. This includes international trails such as the Camino De Santiago in Spain and Te Araroa in New Zealand (Davidson, 2015). Similarly, future studies may want to include other activities such as extended cycling and paddling trips to determine any variation based on the type of outdoor pursuit.

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