

## **Abstract**

ELLISON, MARK. An Exploratory Study of the Restorative Benefits of Hiking in Wilderness Solitude and its Relationship to Job Satisfaction. (Under the direction of Timothy Gary Hatcher.)

The purpose of this exploratory research was to examine the relationship between the restorative benefits of hiking in wilderness solitude (RBHWS) and job satisfaction. This research is a jumping off point, intended to guide future research on the RBHWS, and the practical utilization of this in human resource development. This research sought to identify if there was an association between the independent and dependent variables, not to determine if there was causality. The opportunity to leave a work environment that causes stress and fatigue to experience solitude and restoration may have an impact on an employee's attitudes toward the job and the workplace. Theoretical support for this research is found in the work of: 1) Westin (1967) and his theory on privacy, which is extended by Hammitt & Brown (1984); and 2) Fishbein (1963, 1967, 1973, 1980); Ajzen & Fishbein (1977, 2008); and Fishbein and Ajzen (1975) and their theory and research on attitudes. The survey instrument used for this research was adapted from research instruments related to: 1) functions of wilderness privacy (Hammitt & Brown, 1984); 2) recollected benefits of wilderness solitude (Walker, Hull & Roggenbuck, 1998); and 3) the Minnesota Satisfaction Questionnaire Short Form (Weiss, Dawis, England, & Lofquist, 1967). This is the first known empirical research on this topic. Three research questions guided the research: 1) Is there a relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting? 2) Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have

recently been employed in an occupational setting impacted by age, gender, income or education level? 3) Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by selected moderating variables?

A convenience sample was utilized for this research. Hikers had access to the survey via the internet at [www.hikingresearch.com](http://www.hikingresearch.com). Information about the survey was made available on the Facebook pages of hiking related groups such as the Appalachian Trail Conservancy (ATC). The ATC also sent a message to its Facebook “fans” to promote the survey.

Preliminary data analysis included addressing missing data, detecting outliers, and testing for linearity, independence, and normality. Cronbach’s alpha was used to examine internal consistency. Exploratory factor analysis was done to ensure each of the instruments factored into the appropriate constructs for this population.

A Pearson’s correlation was used to answer question one. Stepwise multiple regression was used to answer questions two and three.

Findings indicated that there was a slight negative relationship between the RBHWS and job satisfaction, which was significant. A negligible relationship was identified between the recollected benefits of wilderness solitude factor related to work. A stepwise regression showed attending graduate school (step 1), graduating from high school (step 2), age (step 3), living in an urban environment (step 4), noise level at work (step 5), job inside or outside (step 6), income \$10,000 - \$14,999 (step 7), income \$25,000 - \$34,999 (step 8), income \$20,000 - \$24,999 (step 9), recollected benefits factor two and hours worked (step 10),

recollected benefits two and high school graduation (step 11), recollected benefits two and income \$10,000 - \$14,999 (step 12), and wilderness sum and income \$25,000 - \$34,999 (step 13) could be used to explain 18.5% of the variance of job satisfaction.

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An Exploratory Study of the Restorative Benefits of Hiking in  
Wilderness Solitude and its Relationship to Job Satisfaction

by  
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North Carolina State University  
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## **Dedication**

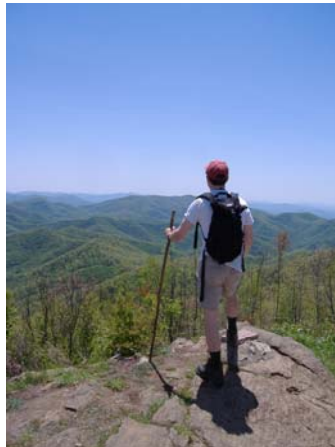
I dedicate this dissertation to my wife Tori, who is a constant source of encouragement, support, and love. Tori planted the seed that I consider focusing my research on hiking; she was right again. Only she fully understands the time, energy, and attention this dissertation required. Thank you for believing in me. I love you.

I also dedicate this dissertation to my parents, Jim and Kay, who have been a foundation of strength and love through my life. Thank you for encouraging me to pursue my dreams as a child, and continuing to do so now. You, more than anyone, understand how meaningful this degree is to me.

Lastly, this dissertation is dedicated to all my friends who have taken the time to hike with me. It is always a special experience, and some of the best times of my life have been on a hiking trail.

## Biography

I spent considerable time outside as a child growing up in North Carolina. Playing in our backyard, in the woods, or spending time at my grandparents, I enjoyed the wide open spaces that are a perk of living in rural America. It was an environment that fostered creativity. I started hiking as an undergraduate at Western Carolina University, spending most of my free time on trails in the Great Smoky Mountains National Park, or on sections of the Appalachian Trail. Nature, for me, is most certainly restorative, and at times, it is a spiritual experience. The opportunity to focus my dissertation research on the restorative benefits of hiking in wilderness solitude has helped me better understand an experience that has shaped me over the past two decades. This research has helped me grasp the breadth of benefits associated with spending time in nature, and has given me a desire to better understand these benefits through continued research. I will provide ongoing updates at [www.hikingresearch.com](http://www.hikingresearch.com).



**Experiencing Wilderness Solitude Hiking on the Appalachian Trail  
Siler Bald (North Carolina)**

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I am fortunate to have many supportive people who have guided and encouraged me through my doctoral education journey: North Carolina State University faculty and staff, my employer, friends, fellow doctoral students, and family have all played an important role.

I would like to thank my dissertation committee chair, Dr. Timothy Hatcher, who has encouraged me, and helped me chart the course for my doctoral education since my initial course at NC State. It was in that course I shared my “off the wall” concept for a research paper on individual change focused on people who hiked the Appalachian Trail. He enthusiastically endorsed it, and has helped me identify an area of scholarly research I find fascinating. Thank you for everything.

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## **List of Abbreviations**

RBHWS	Restorative benefits of hiking in wilderness solitude
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## **Chapter I**

### **Introduction**

This chapter introduces exploratory research seeking to learn more about the restorative benefits of hiking in wilderness solitude (RBHWS) and the relationship this experience may have to the job satisfaction of individuals who are employed, or who have recently been employed. Fatigue and stress related to the modern work environment are discussed in this chapter, as well as the human experience in wilderness and its restorative aspects. The impact of wilderness solitude on self reflection is also reviewed. To provide a foundation for the research, job satisfaction is defined, and the literature linking nature and job satisfaction is discussed. The research problem is identified and the purpose for this research is discussed, including an explanation of the five functions of wilderness solitude identified by Hammitt & Brown (1984).

Conceptual and theoretical frameworks are presented, which include models to assist with explaining each framework. This information is used as a starting point for developing questions to guide the research. Chapter one concludes with a discussion of the significance of the proposed research, as well as identifying its limitations.

This exploratory research focuses on the restorative benefits of hiking in wilderness solitude (RBHWS) and the relationship this experience may have to the job satisfaction of individuals who are employed, or who have recently been employed. This is intended to be a jumping off point for future research on the RBHWS and job satisfaction. The goal of this research was to determine if there was an association between the RBHWS and job satisfaction, not to show causality. The term wilderness was used to describe hiking

experiences in backcountry areas, officially designated Wilderness areas, and areas not officially designated as wilderness, but are managed as such. The Wilderness Act of 1964 describes wilderness as contrasting from areas dominated by human development, where the earth is untrammeled, and humans are visitors. A Wilderness area is one that is officially designated as such by the federal government, and receives special protections. Other areas, such as Great Smoky Mountains National Park, are not officially designated Wilderness areas, but are managed as such. It is in these environments that the term “backcountry” can be used to describe the area. The terms wilderness and backcountry often overlap. Many of the areas designated as wilderness are backcountry, and many backcountry areas are wilderness (Bauholz, 2010). Wilderness is often used as a biological description of large tracts of land where nature is unhindered by humans (Bauholz, 2010). The United States Forest Service described backcountry as an area where the management objectives stress off-road recreation activities that are dispersed, such as hiking (Maine Department of Conservation, n.d., “Flagstaff Management Plan”). In backcountry, recreation opportunities can be enhanced or created, which is not the case in wilderness (Maine Department of Conservation, n.d., “Flagstaff Management Plan”). A backcountry area is in some cases one that is similar to a wilderness area, but lacks any official designation (Schomaker & Glassford, 1982). Many of the people who spend time in backcountry are looking for the same kinds of experiences as those spending time in wilderness (Schomaker & Glassford, 1982). The restorative benefits of hiking in wilderness solitude researched in this study includes those areas that are considered backcountry or wilderness. This research will include people who have hiked in backcountry areas, in national parks, in wilderness areas and on the



Appalachian Trail. The term wilderness is used for this research to describe all of these environments because much of the literature related to hiking, solitude and privacy uses the term wilderness as a descriptor.

Research on the impact of having nature near the workplace, plants in the office and views of nature have indicated positive correlations with job satisfaction, however, empirical research was not found utilizing the variables of job satisfaction and the RBHWS. The increasing demands of the modern workplace make the present study a timely and important research topic, especially for the field of Human Resource Development (HRD); a discipline that focuses on theories, processes and practices that impact human resources. The academic discipline of HRD is closely linked to adult education, the degree program in which the researcher is enrolled.

### **Fatigue and Stress in the Modern Work Environment**

Individuals who work and live in modern environments, which are in many instances now urban, are often faced with a continuing cascade of noise, distractions and stress from every direction. Office noises including beeping computers, chirping cell phones, and radios blaring are combined with the daily onslaught of emails, faxes, Twitter updates, Facebook posts, and voice messages. Outside, constant distractions from freeways and the demands of commuting, along with attention seeking billboards are relentless. Advances in technology have also fundamentally altered work routines (Bechtel, MacCallum & Poynter, 1997). Technology has allowed for a proliferation of media, with over 50 million websites available and 1.8 million books in print to distract attention (Palmer, 2007). The concept of work being a place one goes has also changed through technology (Stokols, Misra, Runnerstrom & Hipp,

2009). Behavioral settings were at one time organized around distinct types of activities with work activities taking place within workplaces and family activities within residential settings (Stokols et al., 2009). Boundaries between residential, work and recreational functions have eroded, becoming more polyfunctional, with work, family and recreational activities often taking place in the same environment (Stokols et al. 2009). This polyfunctional use of environments is made possible by continued accessibility via cell phones, fax machines and computers (Stokols et al. 2009). Such hybridization of the workplace allows employees to take work away from the workplace and bring it to public places such as restaurants (Stokols et al. 2009).

Technology has also changed when work activities are performed, no longer being confined to the traditional work day; and facilitated the development of virtual teams that are separated geographically with communication via the internet and digital technology (Stokols et al, 2009). Technologies that help one stay connected with the workplace, also take away privacy, concentration and the ability to be alone (Deresiewicz, 2009). Constant demands for attention and focus wear down directed attention capabilities (Kaplan & Kaplan, 1989). In the workplace this can fatigue directed attention, impacting satisfaction with work, the work environment, and the quality of work completed. Just as other tools have shaped human existence throughout history, technology is now defining how humans experience their environment (Jackson, 2008).

The work environment often requires directed attention or a focus on things that are important, but not necessarily that interesting, which causes attention overload or fatigue. Workers are faced with higher quantities and faster rates of information than they can process

(Jackson, 2008; Stokols, 1999; Stokols, Misra, Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002). Cognitive and affective problems have been associated with the demands of multi-tasking, frequent interruptions and management of large volumes of electronic communication (Stokols, Misra, Runnerstrom & Hipp, 2009). Attention fatigue impacts the capacity to think, making it difficult to maintain thought and limits the ability to analyze or plan (Kaplan, S., 1995).

An increased number of hours worked per week and the amount of work needed to be completed during this time also impacts workplace fatigue. Work related activities consume more time than any other activity aside from sleeping (United States Bureau of Labor Statistics, 2008). In the United States, Australia and New Zealand, more than 20% of the workforce completes more than 50 hours of work a week (International Labour Conference, 2005). The complexity and pace of jobs has also increased (Jacobs & Medalia, 2008; Maume & Purcell, 2007). A recent study revealed only 45% of Americans were satisfied with their jobs, the lowest level in two decades (Tortorici, 2010). With a world population approaching 7 billion, opportunities for escape and experiencing silence in urban environments can be difficult to find. The World Health Organization (1999) released a report showing noise related to the community, which includes traffic, construction, airplanes, and other outdoor activities can impact work productivity as well as reduce sleep, elevate blood pressure and inhibit learning by school children.

More than 79% of the United States population lives in urban areas (United States Department of Transportation, 2000), and for the first time, more than 50% of people worldwide live in urban settings (Lee, 2008). Stress has been associated with urban life for

centuries. Citizens of ancient Rome indicated the value of contact with nature as a contrast to stressors such as noise and congestion in the city (Glacken, 1967). Olmstead (1865) described stresses associated with cities and job demands and how viewing nature was effective in producing recovery and restoration from these stresses. Many people are now disconnected from nature by the psychological, philosophical and technological constructions of civilization (Glendinning, 1994; Louv, 2005). This is accelerated in the 21<sup>st</sup> century by demographic trends that impact the types of people (e.g., aging population, more ethnic diversity) who visit wilderness and the meaning wilderness has in society (Roggenbuck, 2000). This disconnection with nature has weakened the understanding humans have of their symbiotic relationship with the natural world. Also impacting employee well being are the rapid changes in the structure of work and living due to technological developments such as the Internet and wireless communications (Jackson, 2008; Stokols, 1999; Stokols, Misra, Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002). Global conditions, including workplace environments, impact psychological functioning such as information processing, environmental cognition, stress and coping, affecting psyche and behavior in the daily lives of individuals (Baum & Fleming, 1993; Kaplan, S., 1972; Silver, Holman, McIntosh, Poulin & Gil-Rivas, 2002; Stokols, Misra, Runnerstrom & Hipp, 2009).

If the RBHWS can be identified as positively impacting the negative consequences of workplace distractions and information overload, and have a significant correlation with job satisfaction, the use of this for organizational concerns regarding job satisfaction can be more fully realized. Stokols (1997) identifies the need for future research to address ways to help people deal with an overabundance of distractions.

The opportunity to leave a stressful environment (e.g., work) and spend time in a wilderness environment that offers privacy and restoration, may impact attitudes toward people, organizations, experiences and events (R. Kaplan, 1993; Kaplan & Kaplan, 1989). People do not know how to experience solitude in the connected age of the 21<sup>st</sup> century (Deresiewicz, 2009). Many examples of human excellence (e.g., personal, social, artistic, philosophical, scientific and moral) have been achieved as a result of experiences in solitude (Deresiewicz, 2009). Time spent in wilderness solitude may hold benefits for unleashing employee potential and enhancing satisfaction. In solitude one can experience the quiet to hear the voice inside that can inspire new levels of achievement (Deresiewicz, 2009).

Wilderness has been described as a restorative environment (Kaplan & Kaplan, 1989). Hammitt (1982) defines wilderness solitude as an environmental situation in which users have some control over the information they must process and the attention required of them to process it, or cognitive freedom. Hammitt & Rutlin (1995) state “In wilderness privacy, perhaps the opportunity exists to trade the seemingly disconnected and restrictive worlds of work and home for the natural, harmonious, and broader worlds of extent common to wilderness” (p. 250). Kaplan and Talbot (1983) describe wilderness as the “dominance of the natural, absence of civilized resources, where nature is dealt with on its own terms and there is an absence of demands on one’s behavior that are artificially generated or human imposed” (p. 199). One primary value of wilderness is the solitude that is often available. Solitude is a form of privacy offering escape, or a temporary release from the rules and pressures of everyday life, such as social structures and certain environments (Kaplan & Talbot, 1983).

According to Kaplan and Kaplan (1989) escaping a stressful environment such as work, noise or stimulus overload is not by itself enough to experience a restorative state. “What one is being away to is perhaps more important than what one is being away from when considering the restorative aspects of wilderness privacy” (p. 177). Hammitt & Rutlin (1995) believed the psychological aspects of being away in a restorative environment as likely the underlying factor in achieving a level of desired wilderness privacy.

Stephen Kaplan (1978) described solitude as being sought, in terms of privacy, for freedom from situations that demand voluntary (or directed) attention. Wilderness solitude allows voluntary attention to be rested, which when fatigued, can cause individuals to have increased irritability, become more easily distracted, more impulsive, and have an impaired capacity to make and follow plans (Kaplan & Kaplan, 2003).

William James’ (1983) concept of voluntary and involuntary attention is a primary component of Kaplan’s restorative environment theory. Attention that demands effort, or is forced because it lacks interest is called voluntary or directed. It takes considerable effort to resist focusing on things that are more stimulating (James, 1983). Involuntary attention is passive, reflexive and requires no effort or will when in an attentive state (Kaplan, 1978). When involuntary attention is aroused, soft fascination environments such as waterfalls, rushing creeks, wildlife, bird songs, sunrises and sunsets, diversity in landscape and vegetation patterns, capture attention and leave room for reflection (Hammitt, 1982). In contrast, voluntary attention is active, requiring concentration and effort (Hammitt, 1982). Wilderness users are selecting (either consciously or unconsciously) an environment that

engages them in ways not possible in an urban environment, which is dominated by human created structures and technology that are constantly demanding attention.

Wilderness solitude offers a setting for individuals to experience restoration, reflection and renewal. The benefits derived from wilderness solitude experiences may also be able to benefit the workplace, impacting attitudes and influencing job satisfaction. Wilderness solitude provides a setting to rest directed attention (Kaplan & Kaplan, 1989). The solitude found in wilderness is also an ideal environment for reflection (Bobilya, 2004; Horwood, 1989; Knapp, 1992).

The Appalachian Trail, a 2,176 mile foot path in the eastern United States is an example of people seeking to bring “a natural alternative to modern life”(Foresta, 1987, p.82). Those who built and hike the Appalachian Trail use nature for the psychological, physical, and spiritual benefits that it offers (Foresta, 1987). The ability to enjoy the material benefits of the city, while having access to experience wilderness are why this trail exists (Foresta, 1987).

People have sought refuge in wilderness from the modern world and work for decades. The impact on job satisfaction; however, is not clear. Research has identified the benefits of nearby nature and plants to job satisfaction. If this limited exposure to nature yields positive results, extended time in a natural environment may provide even greater benefits.

### **Job Satisfaction**

The importance of work in modern life is revealed by the amount of time most adults spend on the job. A United States Bureau of Labor Statistics (2008) study of time use by

Americans showed work-related activities consumed more time than any other activity besides sleeping. Katzell & Yankelovich (1975) concluded much of satisfaction in life is derived from work. Blauner (1964) stated work was the single most important life activity based on time and money invested and the quality of work life impacts the quality of leisure, family relations and feelings about one's self.

Growing interest in the relationship between job satisfaction and time spent in leisure activities, particularly nature, has been fueled by the recognition that environmental stress mostly experienced in the workplace and in modern environments (e.g., Cohen, Evans, Stokols, & Krantz, 1986; Evans, Cohen, & Brennan, 1986; Jackson, 2008; Stokols, 1999; Stokols, Misra, Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002) have negative impacts on various aspects of life.

Job satisfaction has been defined as “an attitudinal variable that reflects how people feel about their jobs overall as well as various aspects of them. In simple terms, job satisfaction is the extent to which people like their jobs; job dissatisfaction is the extent to which people dislike them” (Spector, 2006, p. 217). Locke (1983) defined job satisfaction as “a pleasurable positive emotional state resulting from an appraisal of one's jobs or job experiences” (p. 130). Two primary approaches have been used to study job satisfaction: the global approach and the facet approach. When using the global approach job satisfaction is treated as a single, overall feeling toward a job. Another approach is to identify job satisfaction facets, or various aspects of the job, which can include rewards, other people on the job and conditions. Commonly used job satisfaction facets in research include: pay, promotion opportunities, fringe benefits, supervision, co-workers, job conditions, nature of



the work itself, communication and security. Some researchers have questioned if general satisfaction scales are just the sum of all the job facets (Spector, 2006). The study of job satisfaction is often considered a study of attitudes (Spector, 1997).

A frequently utilized attitude theory is Fishbein (1963, 1967, 1973, 1980); Fishbein & Ajzen (1975); and Ajzen & Fishbein (1977, 2008). Fishbein's (1963) attitude theory states, "an individual's attitude toward any object is a function of his beliefs about the object and the implicit evaluative responses associated with those beliefs" (p. 29). A person's attitude toward an object often develops which causes them to have a predisposition resulting in either positive or negative responses toward that object (Allport, 1935).

Stress from work and living in modern environments, sitting at a desk constantly working at a computer, noise, and pollution may contribute to dissatisfaction at the workplace. An example of the demands on attention that people face in urban environments is driving a car. A recent study found drivers engage in a distracting activity an average of once every six minutes, frequently resulting in driving errors and road crashes (Stevenson, 2009). Seventy-two percent of drivers demonstrate a lack of concentration; and 58% are distracted by outside events, objects or people (Stevenson, 2009). Spending time in restorative environments like wilderness solitude offers the opportunity to restore attention capacities, provide a break from usual responsibilities, and replenish mental and physical energy (Hartig, 2004; R. Kaplan & Kaplan, 1989; Stokols, Misra, Runnerstrom & Hipp, 2009; Ulrich, 1983).

Job satisfaction has been researched for more than a century. Knowing the variables impacting employee job satisfaction and how this relates to job performance and

organizational commitment have numerous benefits to organizations. Organizations may be focused on employee job satisfaction in a belief that it can positively impact productivity, and reduce turnover. “Heavy psychological strain leads to decreasing organizational productivity with frequent turnover, absenteeism and accidents” (Shinn, 2008, p. 249). When economic instability occurs this can enhance these issues, which can further impact job satisfaction (Shinn, 2008). This strain can impact employee attitudes which are connected to job satisfaction. Research in this area has included studies of employee exercise programs and nearby nature for their impact on job satisfaction. Research on employees and nature includes: Dravigne, Waliczek, Lineberger, and Zajicek (2008); Kaplan (2007); Kaplan (1993); Leather, Pyrgas, Beale and Lawrence (1998); Shin (2007); and Shin, Kwon, Hammitt and Kim (2005).

Studies researching the relationship between work and nature have focused on the impact of a view through a window, or presence of plants. Using search engines including JSTAR, PsychInfo, LexisNexis, SPORTDiscus, and CABAbstracts, research linking time spent hiking in the restorative benefits of wilderness solitude and the impact on job satisfaction was not found.

### **Problem Statement**

The modern workplace can be full of noise and distractions brought on by advances in technology including computers, email, phones, fax machines and pagers. Technology has also fundamentally altered work routines providing constant connectivity to the workplace (Bechtel, MacCallum & Poynter, 1997). Workers are faced with higher quantities and faster rates of information than can be processed (Jackson, 2008; Stokols, 1999; Stokols, Misra,

Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002). Cognitive and affective problems have been associated with the demands of multi-tasking, frequent interruptions and management of large volumes of electronic communication (Stokols, Misra, Runnerstrom & Hipp, 2009). Advances in the use of cyber communication in recent years (Lyman & Varian, 2003) has increased the frequency that distraction and information overload are experienced in the workplace (Gleick, 2000; Jackson, 2008). When combined with the demands of living in modern environments and commuting (including the bombardment of advertising via radio and billboards), the ability for individuals to focus attention is depleted. Often attention must be forced to focus on things that may not be interesting, causing stress and fatigue. Constant competing demands for attention and focus wear down directed (or voluntary) attention abilities (Kaplan & Kaplan, 1989). Multiplying the affects of this problem, work related activities now consume more time than any other activity besides sleeping (United States Bureau of Labor Statistics, 2008). More than 20% of the population in the United States, Australia, and New Zealand work more than 50 hours a week (“International Labour Conference, 2005). The fatigue and stress caused by demands on attention and increased workload may impact satisfaction with work, the work environment, and the quality of work completed.

These increased demands may also have an impact on job satisfaction. Job satisfaction is defined by Spector (1997) as how people feel about their job and the many aspects of the job. “It (job satisfaction) is the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs” (p. 3). Employee job satisfaction is of importance to organizations because of the impact satisfaction can have on work-related variables such as

job performance, turnover, absence, health and well-being, as well as over-all life satisfaction (Spector, 2006). The study of job satisfaction is often considered a study of attitudes (Spector, 1997). Fishbein's (1963) attitude theory describes an individual's attitudes toward an object as a function of their beliefs about the object, and the responses associated with those beliefs. Cognitive and affective problems are caused by fatigue (Stokols, Shalini, Runnerstrom & Hipp, 2009); and attention fatigue impacts the capacity to think, limiting the ability to maintain thought, to analyze and to plan (Kaplan, S., 1995). This may impact an employee's attitude toward their job, and subsequently, job satisfaction.

The opportunity to leave a work environment that causes fatigue to spend time in the RBHWS, may impact attitudes toward people, organizations and experiences. An increasing world population makes finding opportunities for escape and experiencing silence in urban environments difficult. The RBHWS offer a unique opportunity to leave the stressful environment of work and spend time in a setting that is restorative.

Researchers have studied the relationship between the workplace and nature (Dravigne, Waliczek, Linerger & Zajicek, 2008; Kaplan, 1993; Leather, Pyrgas, Beale & Lawrence, 1998; Shin, 2007; and Shin, Kwon, Hammitt & Kim, 2005). Despite the increasing interest in the benefits for humans of wilderness experience and access to nature, no empirical research was located that examined the relationship between the RBHWS, and job satisfaction of adults, who are employed, or who have recently been employed.

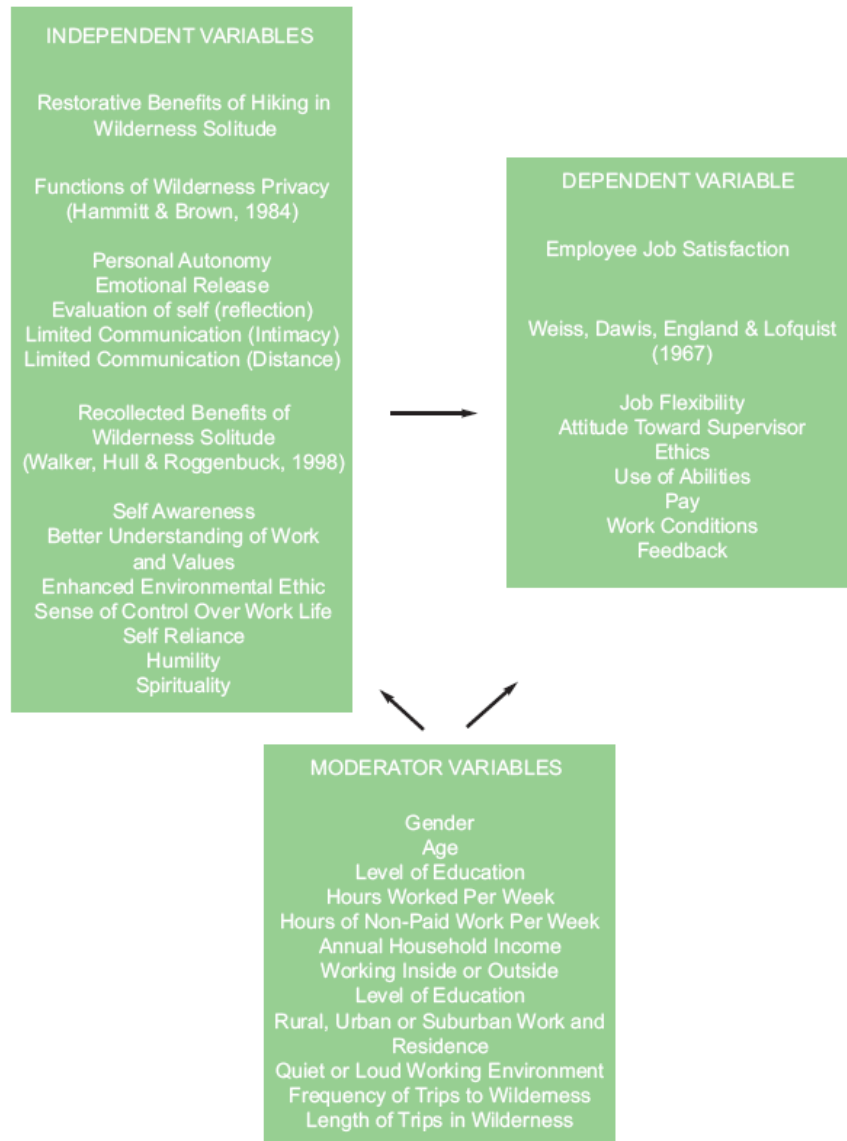
## **Purpose**

The purpose of this research was to better understand the relationship between the RBHWS experiences of adults who were employed, or who had recently been employed, the

context of their work environment (e.g., working in a rural, urban or suburban environment, working inside or outside and quiet versus loud work environment), and their job satisfaction. Participants in the present study self-identified the context of their work environment. This included understanding the RBHWS experiences of people who work utilizing five functions of wilderness privacy as a framework: personal autonomy, emotional release, evaluation of self, limited communication (intimacy), and limited communication (distance) (Hammitt & Brown, 1984). The recollected benefits of wilderness solitude were studied using a scale developed by Walker, Hull & Roggenbuck (1998). The present study focused on the job satisfaction of employees who experience the RBHWS, and understanding how the RBHWS are utilized as a variable that impacts attitudes toward the workplace, specifically job satisfaction. Job satisfaction is an attitudinal variable defined as how people like or dislike their jobs (Spector, 1997). More specifically, Fishbein (1963, 1967, 1973, 1980) and Ajzen & Fishbein (1977, 2008), and Fishbein & Ajzen's (1975) attitude theory, is used which describes attitudes as an object being a result of the beliefs about the object. Understanding the relationship between employees experiencing the RBHWS and employee attitudes toward their jobs, can aid in further discovering how wilderness impacts job satisfaction. This will also provide insight for HRD practitioners on how the RBHWS can be used to impact the quality of the workplace.

### **Conceptual Framework**

The conceptual framework identifies the variables used in this research of the relationship between the RBHWS and job satisfaction. See Figure 1.



*Figure 1.* Conceptual Framework for the relationship between the restorative benefits of hiking in wilderness solitude and job satisfaction.

The independent variables were adapted from scales used in prior research on wilderness experience. Hammitt and Brown's (1984) five functions of wilderness privacy were used as a framework for studying the human experience in wilderness. The functions

identified by Hammitt et al. include: personal autonomy, emotional release, evaluation of self, limited communication (intimacy), and limited communication (distance). Hammitt et al.'s. functions of wilderness privacy are based on the dimensions and functions of privacy developed by Westin (1967). Additional independent variables related to self awareness and understanding; better understanding work and values; improving sense of control over work life; self reliance; humility; spirituality; and environmental ethic were also adapted from prior research conducted by Walker, Hull, & Roggenbuck (1998). These variables are used because they identify the primary benefits that wilderness offers related to solitude and privacy. These variables have particular relevance to how the RBHWS may impact job satisfaction. The opportunity to experience autonomy, emotional release and self evaluation may be less available in settings other than wilderness. It may also be difficult to limit communication in places other than wilderness. Better understanding the connection people have with nature will help identify a level of compatibility with the wilderness environment. Learning more about participant confidence levels and reduction of stress are important variables that could impact job satisfaction.

Job satisfaction is used as a dependent variable in this research because variables used to measure RBHWS may impact variables directly related to job satisfaction. Job satisfaction is defined as how people feel about their job(s) (Spector, 1997). The Minnesota Satisfaction Questionnaire (MSQ) Short Form, is the survey instrument selected to measure job satisfaction in this study. It was used because of its emphasis on job satisfaction. Constructs measured with the MSQ Short Form include attitudes toward job flexibility, one's supervisor, ethical decision making, use of abilities, pay, work conditions, and feedback on

work performed. An employee's attitude toward job flexibility may be impacted by the opportunity to compensate for this by experiencing autonomy in wilderness. If work conditions are loud (noise levels), the opportunity to escape to a quiet environment could impact job satisfaction. These variables are used because they are important indicators of job satisfaction and reveal attitudes employees have toward their job. Weiss, Dawis, England, & Lofquist (1967) report reliability coefficients for each of the five administrations of this scale were all greater than .70.

Moderator variables are used in this research to determine how they impact the relationship between the independent and dependent variables. The moderator variables implemented include: gender; age; hours of paid work per week; hours of non-paid work per week; annual household income; level of education; rural, urban or suburban residence; rural, urban or suburban work environment; working inside or outside; quiet or loud work environment; and frequency and duration of trips in wilderness. Many of these variables have been used in prior research and have been found to be related to how wilderness is experienced. Walker, Hull & Roggenbuck (1998) used the variables age, gender, level of education, income, and frequency/ duration of trips to wilderness, in research related to the benefits of time spent in wilderness solitude. Cole (2001) used variables related to living in rural or urban environments in a study of wilderness experience, but they were not found to be significant. Working inside or outside, and noise levels of work environment have not been used in previous studies, but were included based on personal experience, because they may have a relationship to job satisfaction. Hours of non-paid work per week is included since many hours of work are needed in the home setting. Much of the responsibility for this

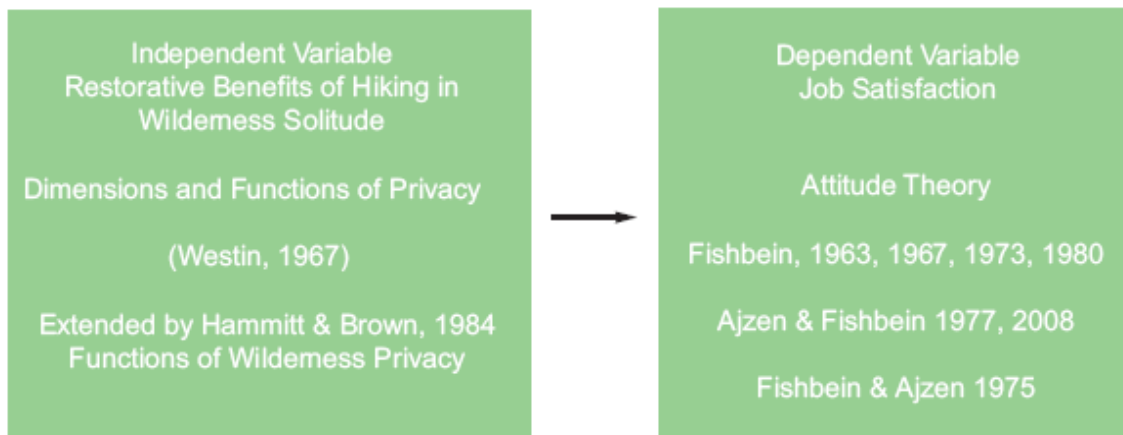


has been taken on by women. Non-paid work hours in addition to paid work may impact job satisfaction.

Psychological and attention restoration, as well as reflection that is experienced in wilderness solitude, may influence attitudes impacting job satisfaction. Two studies were found linking time spent in wilderness solitude and attitudes (Daniel, 2005 and Quinn, 2005).

### **Theoretical Framework**

Many people who live and work in urban environments, and experience the information overload caused by advances in technology may seek environments where they can experience privacy. The theories supporting this study are Westin's (1967) theory of privacy, extended by Hammitt & Brown (1984); and Fishbein (1963, 1967, 1973, 1980), Ajzen & Fishbein (1977, 2008), and Fishbein & Ajzen (1975) Theory on Attitudes. (See Figure 2).



*Figure 2.* Theoretical framework for the restorative benefits of hiking in wilderness solitude and attitude theory.

Westin (1967), described privacy as having four basic dimensions or states: Solitude or complete isolation; intimacy; anonymity; and reserve. Solitude is defined as being separated from other persons. There may still be other psychological and physical intrusions when one is in solitude, for example the presence of others, noise from nearby construction or an airplane overhead. Despite these intrusions, solitude is the most complete state of privacy that can be achieved. The attributes of solitude vary, depending on personal preferences. Hiking on a trail and encountering others may be considered solitude for some, but others may feel this is crowded. The second dimension, intimacy, is acting as part of a small unit (e.g., family) to achieve close, relaxed relationships between two or more people. Intimacy provides a basic need of human contact. The pace and noise of modern society can make intimacy difficult to experience. The third dimension, anonymity, is freedom from identification and surveillance. This can be achieved in public places such as a subway, where one is observed, but not personally identified. This anonymity allows for a release from full rules of behavior, allowing more free expression. Another type of anonymity is the ability to publish ideas without being identified. Reserve, the fourth dimension, is described as the most subtle state of privacy, where an individual creates a “psychological barrier against unwanted intrusions” (p. 32). This is also identified as establishing a mental distance. Privacy is also described as determining when, how, and to what extent information is communicated to others. Privacy is not a permanent state according to Westin, but voluntarily and temporarily withdrawing from society for physical or psychological reasons. Obtaining privacy helps information processing mechanisms counter the large amounts of stimuli encountered in daily life (Westin, 1967). Hammitt and Brown (1984) used Westin’s

theory to develop their functions of wilderness solitude. Westin's theory supports the research for this study since the benefits described relate to variables that may impact job satisfaction, and offer opportunities and experiences not typically available in daily life. Experiencing solitude and privacy is increasingly difficult in urban environments, and in the modern workplace. The privacy and quiet often experienced in the wilderness environment is in direct contrast to what many people now encounter on a typical day. It has become increasingly difficult to establish intimacy with others because of the pace of modern life. Spending time in wilderness solitude removes individuals from many of the technological and urban distractions that inhibit relationship building (e.g., television, the internet). Anonymity in modern society has also been reduced. Digital communication has enabled quick posting of personal images and information online without an individuals' consent. The access to information provided by the internet has made learning about people easier. Large cities may offer some degree of anonymity based on the pure volume of people, but cities do not offer the other benefits of privacy that can be found in wilderness.

The four dimensions of privacy identified by Westin (1967) perform four functions for individuals in Western democratic nations: personal autonomy, emotional release, self evaluation and limited and protected communication. Personal autonomy is derived from the belief in democratic societies of the uniqueness of the individual or sacred individuality. Autonomy is seeking to avoid manipulation or domination by others. Westin describes the need for autonomy as a series of zones or regions leading to the core self. The innermost circle represents the core self and most secret things about the individual, things not usually shared with others. The next circle contains intimate secrets that are shared with those who

are close to the individual. The subsequent circle is the friendship group. The outermost circle includes conversation and expression that is open to all observers. Wilderness solitude provides a level of autonomy that many people do not have in their daily routine, especially at work. The level of autonomy is enhanced because there are fewer human imposed restrictions on behavior; very few others are present. This is in direct contrast to modern work environments where individuals have one or more supervisors, and others that dictate their actions. Westin also cites the essential role privacy plays in the development of individuality and consciousness of an individual in choice. The second function, emotional release, is needed because the physical and psychological tensions built up from life in modern society need release. A release is the opportunity to be away from the everyday situations and environments typically experienced. One type of release that is needed is from social roles, or to be free of the expectations placed on individuals by society based on age, gender, economic status or race. Also needed is a release from the emotional stimuli of everyday life. Without this type of release, Westin believes people would experience serious emotional pressure. This is central to the concept of the RBHWS; that people need to escape from the physical and psychological pressure of their lives to an environment free of those pressures. Spending time in wilderness solitude is returning to a more simple way of life. The third function of privacy is self evaluation. Westin describes this as “Individuals needing to process the information that is constantly bombarding them” (p. 36). Technology has increased the speed in which information is communicated, and the volume of that communication, which can cause information overload. Information overload and attention fatigue may impact attitudes toward job satisfaction. The fourth function, limited and

protected communication, provides the opportunity for sharing confidences with trusted associates. Limited communication provides boundaries of mental distance in interpersonal situations. Privacy is in essence, according to Westin, “an instrument for achieving individual goals of self realization” (p. 39).

Hammitt & Brown, 1984; Hammitt & Rutlin, 1997; Pederson, 1979; Pederson, 1987 have used Westin’s theory for the basis of their research. Hammitt & Brown, 1984 extended Westin’s theory to focus on functions of privacy and solitude in wilderness environments. The fourth function identified by Westin (limited communication) was separated by Hammitt & Brown as a result of their research, into two functions (personal distance and intimacy), for a total of five functions. The reflective thought aspects of privacy were also revealed more in Hammitt & Brown’s research.

Wilderness offers a unique environment to experience solitude and privacy. What makes privacy and solitude in wilderness possible is the perceived vastness, wildness and freedom available. Solitude has been commonly defined as complete isolation from other people (Hammitt, 1982). One primary value of wilderness solitude is escape, or a temporary release from the rules and pressures of everyday life, including social structures and certain environments. This could include work environments and workplace rules that dictate expectations, as well as pressures to act in a certain manner, causing individuals to conform to meet the “corporate image.” The psychological freedom of choice offered by privacy and solitude is a component of the wilderness experience, meeting a primary need of humans (Hammitt, 1982). People may seek the wilderness experience for freedom of choice in relation to the information that must be processed and the behavior that is demanded. The

psychological “freedom of choice” offered by solitude is a primary component, and according to Cantril (1966) is a major psychological need of humans. Building on this, Hammitt & Rutlin (1995) described the psychological aspects of being away in a restorative environment as likely the underlying factor in achieving a level of desired wilderness privacy. The variables this theory supports can also be related to benefits that impact attitudes and job satisfaction.

The unique aspects of wilderness solitude, which separate it from modern urban society, can also make it challenging to access. Hiking was selected as the method for experiencing wilderness solitude, because it offers some of the only access to wilderness environments. Hiking is also a very popular recreational activity, particularly in the United States (e.g., The Appalachian Trail Conservancy has over 35,000 members).

Many of the RBHWS impact variables that appeared to be related to employee attitudes and job satisfaction. Job satisfaction is the most widely studied attitudinal variable in organizational research, with over 10,000 studies published (Spector, 1997). Research on job satisfaction remains significant into 2010, with studies conducted by Hunjra, Chani & Aslam (2010) and Kwak, Chung, & Xu (2010), in addition to 92 others according to the World of Science search engine. In 2010, a search for scholarly research articles focused on "job satisfaction" yields nearly 6,000 records in the major business research database Business Source Premier, nearly 7,600 in key psychology database PsycINFO, and 550,000 results in Google Scholar. An attitude has been described as being representative of an individual's evaluation of an entity (Ajzen & Fishbein, 1977). Increased levels of psychological strain leads to a decrease in organizational productivity; increased turnover;

absenteeism, and accidents (Shinn, 2008). The strains (which impact attitudes) can become more serious during times of economic change, which can also impact job satisfaction (Shinn, 2008).

Job satisfaction is defined by Spector (1997) as how people feel about their job and the many aspects of the job. “It (job satisfaction) is the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs” (p. 3). The study of job satisfaction is often considered a study of attitudes (Spector, 1997).

The study of attitudes related to work began in the early 1920’s (Kornhauser, 1944). Allport (1935) first proposed the study of attitudes in the late 19<sup>th</sup> century (Wright, 2006). Taylor’s Scientific Management studies in the early twentieth century inspired additional research such as Munsterberg (1913), who focused on fatigue. A definition developed by Thurstone (1928) suggested an understanding of attitudes that incorporated the positive or negative intensity of affect against a psychological object (Wright, 2006). However, the work of Fishbein (1963, 1967, 1973, 1980) has been the theoretical foundation of many studies especially in the workplace. Fishbein’s (1963) attitude theory states, “an individual’s attitude toward any object is a function of his beliefs about the object and the implicit evaluative responses associated with those beliefs” (p.29). A person’s attitudes toward an object often cause them to develop a predisposition resulting in either positive or negative responses/behaviors toward that object (Allport, 1935). Attitudes are considered to be multidimensional, having cognitive and affective components (Ajzen & Fishbein, 2008). Attitude is considered to be one of several variables that influence behavior including social norms, habits, and personality characteristics (Ajzen & Fishbein, 2008). A commonly

accepted understanding of attitude is that a person's attitude is representative of his or her evaluation of the entity in question (Ajzen & Fishbein, 1977). If an employee's attitude toward the workplace improves, this may impact the overall level of satisfaction with the job. A behavioral criteria is one or more actions observed or performed by the individual. Predicting behavior from attitudes relies on the concept of consistency: "It is usually considered to be logical or consistent for a person who holds a favorable attitude toward one object to perform favorable behaviors, and not perform unfavorable behaviors with respect to the object" (Ajzen & Fishbein, 1977, p.89).

Fishbein's (1963) theory of attitude is concerned with the relationship of beliefs to attitudes. The theory states that: "1) An individual holds many beliefs about an object; i.e., the object may be seen as related to various attributes such as other objects, characteristics, goals, etc. 2) Associated with each of the attributes is an implicit evaluative response, i.e., an attitude. 3) Through conditioning, the evaluative responses are associated with the attitude object. 4) The conditioned evaluative responses summate, and thus 5) On future occasions the attitude object will elicit this summated evaluative response, i.e., the overall attitude" (Fishbein & Ajzen, 1975, p. 29).

Fishbein's (1980) model for attitudes assumes what determines a given behavior is the individual's intention to perform the behavior. Research on attitudes by Fishbein and Ajzen evolved into a "theory of reasoned action". This theory hypothesizes a person who believes performing a given behavior will lead to primarily positive outcomes will have a favorable attitude toward performing said behavior. A person who believes performing a behavior will lead to primarily negative outcomes will have an unfavorable attitude.



Behavioral beliefs are identified as the beliefs that underlie an individual's attitude toward a behavior (Fishbein, 1980). According to this model, the intention to perform or not perform a behavior is determined by the attitude toward the behavior and the perception others believe they should or should not perform the behavior. Based on this model, if an employee's attitude toward his/her job, or satisfaction with the job is positive, his/her behavior and performance may be positive as well (Fishbein, 1980). Behavioral intentions mediate the effect of the other components (affective evaluation and cognition) and also the impact of subjective norms on behavior (Liska, 1984). Subjective norms are also identified as a function of beliefs. Normative beliefs underlie subjective norms and are represented when a person believes the people he/she is motivated to comply with think they should perform a specific behavior; social pressure will be felt to do so (Fishbein, 1980).

Four different elements make up attitudinal and behavioral entities: the action, the target at which the action is directed, the context in which the action is performed, and the time at which it is performed (Ajzen & Fishbein, 1977). An action is always performed with respect to a given target, in a given context, and at a given point in time. There is sufficient evidence to suggest attitude is a strong predictor of behavioral intention (Ajzen and Fishbein, 1977; Trafimow, 1996).

If the workplace is stressful and noisy, which may impact an employee's attitude toward the job, time in wilderness privacy may offer benefits. Westin (1967) identified four functions of wilderness privacy: personal autonomy, emotional release, self evaluation, and limited and protected communication. These functions of wilderness privacy offer opportunities for restoration and escape from the fast-paced environment of modern society.

Escaping a stressful and fatiguing environment typically experienced on a daily basis to enjoy a place that offers restoration, may have an impact on an individual's attitudes, particularly toward work. If a person's attitudes toward his or her job are positively impacted, this could in turn improve satisfaction with the job.

A number of studies have used Ajzen & Fishbein's theory and collected data using the MSQ: (Doran, Stone, Brief & George, 1991; Fulford, 2005; Khatri, Tern, & Budhwar, 2001; Kuruvilla & Sverke, 1993; and Schriesheim, 1978).

### **Research Questions and Hypotheses**

In order to carry out the research on the relationship between RBHWS and job satisfaction the following research questions and hypotheses were developed:

1. Is there a relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting?

Hypothesis: There will be no relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting.

2. Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by age, gender, income or education level?

Hypothesis: The relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting is not impacted by age, gender, income or education level.

3. Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by selected moderating variables?

Hypothesis: The relationship between the RBHWS and the job satisfaction of individuals who are employed, or who have recently been employed is not impacted by selected moderating variables.

In this study the RBHWS was referred to as the restorative benefits of backcountry hiking on the survey instrument. The term backcountry was used on the survey so participants would not think participation in the study was limited to having hiked in official “Wilderness” areas.

The RBHWS were linked with job satisfaction and attitude theory in the present study because of the unique benefits of wilderness that appear to offer restoration from problems encountered in the modern workplace. Technology, increasing work load and constant demands on attention experienced frequently in the work environment are noticeably absent in wilderness solitude. Spending time in wilderness solitude has been found to rest attention capacities, provide opportunities for reflection, and for psychological restoration (Hammitt & Brown, 1984; Hartig, Mang, & Evans, 1991; Kaplan & Kaplan 1989).

## **Significance of the Study**

An exploratory study of the relationship between employees experiencing the RBHWS and the impact this has on job satisfaction was significant for several reasons. First, exploring the relationship between individuals experiencing the RBHWS and the impact on job satisfaction provided the initial known empirical research examining the relationship between these variables. This research contributes to future understanding of the topic. This is an important first step that sheds light on how the benefits of hiking in wilderness solitude may offer unrealized benefits to organizations. This research also provides insight for future research on how the RBHWS can be utilized to impact job satisfaction. If the benefits of the RBHWS can be transferred to the workplace, organizations will have evidence to support employee participation in these types of activities. With job satisfaction levels in the United States at their lowest levels in two decades (Tortorici, 2010), organizations need to identify ways to help improve employee attitudes toward the workplace, and avoid reduced employee engagement and productivity. This research builds on the limited empirical research on the relationship between nature, plants and the workplace. This research also supports the corporate “green” sustainability initiatives that are rapidly evolving. Research needs to more clearly demonstrate to individuals and organizations the benefits derived from time spent in wilderness solitude or nature, and having it near the workplace. Also, as corporations strive to have more sustainable practices, it is important to have employees who understand the significance nature plays in human well being. This research will connect empirical research from the disciplines of parks, recreation and tourism management, environmental psychology

and human resources development. These disciplines can be enhanced by understanding how the psychological benefits of nature may impact employee attitudes and performance.

This study also provides important information impacting work/life balance initiatives for Human Resource Development (HRD) practitioners and corporate green initiatives. Many employees are experiencing the negative consequences of stress and fatigue which impacts their performance and satisfaction with their job. The importance of nature in human well-being receives considerable attention, but no connection has been made in HRD literature regarding the beneficial role nature may have in addressing work related issues. If spending time in the RBHWS has a positive impact on employee job satisfaction, HRD practitioners should consider developing employee programs that provide opportunities to experience the RBHWS, and consider utilizing flex time to accommodate employees seeking such an experience. The RBHWS could also be used as part of a health and wellness initiative targeted to improve employee health and reduce healthcare costs. This could result in healthier employees who may have better attendance and performance. Second, organizations wanting to improve employee satisfaction could use this research to justify providing opportunities for nature experiences near the workplace (e.g., nature areas, quiet zones, etc.). Research indicates the availability of nearby nature and plants in the workplace are beneficial to employee satisfaction (Kaplan, 1993; Leather, Pyrgas, Beale & Lawrence, 1998; Shin, 2007). Third, this research could be linked with Leadership in Energy and Environmental Design (LEED) green building rating systems. LEED certification provides independent, third party verification that a building is environmentally responsible. This rating system includes a focus on indoor environmental quality. A growing awareness of the

importance of the human connection to nature is increasing the demand to have daylight, natural views and other aspects of nature incorporated into the workplace to improve worker productivity, health and well being (Herman Miller, Inc, 2004, “Evolutionary Psychology and Workplace Design: Doing What Comes Naturally”).

This research was also beneficial for the general public. Demonstrating a link between the RBHWS and improved job satisfaction may inspire individuals who have not experienced the RBHWS to try it, and encourage those who have to spend more time in it. The psychological and physical health benefits individuals obtain from this experience may positively impact the workplace, the home, and society in general. Encouraging recreation in a society that has become increasingly sedentary and overweight could provide numerous health benefits. This could also have significant public health benefits impacting the overall health of the population, helping to reduce healthcare costs.

Environmental preservation organizations can use this research as further justification for setting aside wilderness and nature areas for human benefit. As the United States and world population continue to increase, more land will need to be protected to allow people to continue to have wilderness solitude experiences.

The results of this research may also hold meaning for the National Park Service and the United States Forest Service. Participant feedback may provide these agencies information that could be used to anticipate the type of experiences people are looking for when visiting a forest or park, and how management of these environments may be able to enhance the experience.

It is also important to note again that very little empirical research on this topic has been completed. Linking research from the fields of parks, recreation, and tourism, environmental psychology, and human resources development will provide new opportunities for cross disciplinary scholarly discussion.

### **Limitations**

This study had a number of limitations. They included: 1) The data used for this research was self-reported by the participants. 2) A low response rate was anticipated, but not experienced due to utilization of the internet for online distribution of the survey. 3) Participants in this study had to be contemporary citizens of modern society. This was defined as individuals who live in developed nations who have access to education, and the many technological advances of the past century. Contemporary citizens have the financial means to travel and spend time in wilderness solitude. 4) A random sample of the population was not used due to an anticipated difficulty accessing this population, as well as time constraints. Also limiting this study was the ability for those who were not currently employed, but who had recently been employed to accurately recall job satisfaction. It does not appear any of these limitations impacted the study.

There were also threats to internal validity that had to be addressed to ensure the findings were valid. Internal validity was defined as the ability to conclude the independent variable created changes in the dependent variable, or how well a research instrument measures what it is supposed to measure (Sproull, 1995). Threats to internal validity are procedures, treatments or experiences that participants have which threaten the ability of the researcher to draw correct inferences about a population from the data (Creswell, 2009).

Internal validity threats included those involving participant history, maturation, regression, selection and mortality (Creswell, 2009). The survey was completed by participants at a specific moment in time, eliminating issues related to participant change. For this research it was important to ensure the MSQ scale accurately measured job satisfaction, and that the scales measuring the experiences of wilderness solitude were valid. The variables from these scales needed to have adequate correlation. The only issue regarding the survey scales was the functions of wilderness solitude scale did not factor as anticipated. This means the variability of the scale items during the factor analysis was not what was observed in prior use of the scales.

This research also had a number of delimitations which bound the survey.

External validity indicates the ability to generalize the results of research to populations, settings, treatment and measurement variables (Sproull, 1995). Threats to external validity occur when researchers make incorrect inferences about the sample data to other settings, other persons, or situations in the past or future (Creswell, 2009). These types of threats occur because of the characteristics of individuals selected for the sample, the unique aspects of the setting, or the timing of the experiment.

The results of the study are not generalizable, because a random sample was not used. This study did not include individuals who were not employed, or who had not recently been employed, or who had not hiked, backpacked or in some other way experienced the RBHWS. The decision to include only people who were employed, or who had recently been employed was required to obtain survey results that measure participant job satisfaction. This did not have any unanticipated impact on the research.



## **Summary**

The noise, distractions, stress, complexity, pace and constant changes experienced in the modern workplace can cause fatigue, information overload and cognitive and affective problems (Gleick, 2000; Jackson, 2008; Lyman & Varian, 2003; Rosen, 2008; Stokols, 1999; Stokols, Misra, Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002). Over 79% of the United States population lives in urban settings (United States Department of Transportation, 2000) and now over 50% of the world's population lives and works in urban environments for the first time (Lee, 2008). Opportunities to escape the demands of work and life, rest directed attention, and experience the RBHWS are very limited. Wilderness offers a unique setting in which to escape these pressures and experience solitude and restoration (Hammitt, 1982; Hammitt & Brown, 1984; Kaplan, 1978; Kaplan & Kaplan, 1989).

Job satisfaction is an attitude (Spector, 1997). The opportunity to leave a work environment that causes stress and fatigue to experience solitude and restoration may have an impact on an employee's attitudes toward the job and the workplace. Fishbein's (1963) Attitude Theory describes an individual's attitudes toward an object being a function of the beliefs about an object. This research will link theories and research to study the relationship between the RBHWS and job satisfaction. This will be the first empirical research directly related to the topic.

## **Definitions of Key Terms**

Wilderness, wilderness solitude, hiking, and job satisfaction are the key terms that need to be defined for this research. The use of the term wilderness for this research is not

limited to officially designated wilderness areas. For the purposes of this research, the terms “backcountry” and “wilderness” are interchangeable.

Wilderness: A backcountry environment that is in contrast to landscapes dominated by human development. It is an area where nature is the dominate feature, and humans are visitors. It is a natural environment typically offering opportunities for privacy and solitude.

Wilderness solitude: An environmental situation in which users have some control over the information they must process and the attention required of them to process it, or cognitive freedom (Hammitt, 1982).

Hiking: An outdoor recreation activity that involves walking in wilderness or natural areas. Someone who is hiking is considered a hiker.

Job satisfaction: “An attitudinal variable that reflects how people feel about their jobs overall as well as various aspects of them. In simple terms, job satisfaction is the extent to which people like their jobs; job dissatisfaction is the extent to which people dislike them” (Spector, 2006, p. 217).

## **Chapter II**

### **Literature Review**

#### **Introduction**

This chapter begins with a brief discussion of several concepts that have helped to advance the wilderness idea in the United States. Various definitions for wilderness, solitude, privacy, and job satisfaction are also offered. The definitions used for this research are identified in chapter one. Theories reviewed have been used in the literature related to the RBHWS, as well as job satisfaction. Literature that is related to the concept of the RBHWS is reviewed. The chapter concludes with a review of job satisfaction literature.

#### **Concepts and Definitions of Wilderness**

Much of the research into the wilderness experience was inspired by concerns about development; understanding how wilderness offers an opportunity to escape a complex world, as well as social roles; understanding a need for a more natural way of life; and concerns about human domination of nature. The advancement of these concepts has been a result of several individuals who helped build support. Advocates for these concepts included Aldo Leopold, John Muir, Frederick Olmsted, Sigurd Olson and Henry David Thoreau, each of whom provided inspiration for preservation of wilderness, and eventually creation of an act to protect wilderness in the United States.

Concerns about rapid development led to efforts to protect wilderness areas. The National Park Service Act of 1916, the Wilderness Act of 1964 and the National Wild and Scenic Rivers Act of 1968 are all examples. Muir and Olmsted in the early 20<sup>th</sup> century

warned of flagrant commercialism and ecological destruction on American public lands (Hartig, Kaiser, & Bowler, 2001) and developed support for these causes. Wilderness was described as inspiring and refreshing: “Climb the mountains and get their good tidings. Nature’s peace will flow into you as the sunshine into the trees. The winds will blow their freshness into you, and the storms their energy, while cares will drop off like autumn leaves” (Muir, 1911, p. 250). Muir believed living in cities, Americans had lost the fulfillment found by enjoying the “freedom and glory of God’s wilderness” (Muir, 1911, p. 250). “Only by going alone in silence without baggage, can one truly get into the heart of wilderness” (Muir, 1954, p.314).

Wilderness became valued as a place to escape a world that was becoming increasingly complex. One of the proponents of this point of view was Thoreau (2004), who believed losing contact with wilderness caused individuals or cultures to become weak and dull. Solitude found in nature began to be valued as an escape from urban stresses (Thoreau, 2004). Thoreau thought in nature, individuals often became aware of a world that is vast and complex, larger than their sense of self, and time spent in wilderness solitude played a central role in the development of personality (Oelschlaeger, 1992).

The value of wilderness for escaping social roles was also a concept that was explored. Wilderness has been described as a place to escape society (Thoreau, 2004). Experiencing wilderness has also been described as a deliberate way of living: “I went to the woods because I wanted to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived. I did not wish to live what was not life, living is so dear, nor did I wish to practice

resignation, unless it was quite necessary. I wanted to live deep and suck out all the marrow of life, to live it sturdily and Spartan-like as to put to route all that was not life, to cut a broad swath and shave close, to drive life into a corner, and reduce it to its lowest terms, and if it proved to be mean, why then to get the whole and genuine meanness of it” (Thoreau, 2004, p. 88). Wilderness provided a place for finding meaning, living purposefully and simply. Thoreau believed the preservation of the world was found in the wild.

The value of wilderness for experiencing a natural way of life was also explored. Wilderness was described as “in some men, the need of unbroken country, primitive conditions and intimate contact with the earth is a deep rooted concern gnawing forever at the illusion of contentment with things as they are” (Olson, 1976, p.49). Also, “in wilderness harmony is the natural way of life as it has always been, but we must not destroy it by overcrowding or by any exploitive use that might change it. The most important function of the wilderness for modern man is the opportunity of glimpsing for a moment what harmony really means” (Olson, 1976, p. 62). Olson also described timelessness as an attribute of wilderness. Olson was involved in creation of the Wilderness Act of 1964.

Both mental and physical criteria have been used to define wilderness. Does wilderness need to be of a certain size, or a specific distance from civilization? Wilderness has been thought of as a place that is free, as well as a place in which to be free (an experience) (Aplet, Thomson & Wilbert, 1999). Some have described wilderness as a metaphor (Dustin, 2006).

A number of the definitions of wilderness discussed here are interpretations describing wilderness for its value to biodiversity and for its anthropocentric value to

humans. There are many other values to wilderness that do not necessarily benefit humans. Wilderness is often perceived as a place for humans to view wildlife, when in fact, it is the only place many species can survive because of human impact on the Earth. Wilderness is invaluable to the survival of organisms and non-human life. Exploding population growth, urbanization, and demands for natural resources have taken many of the natural places away from these species. However, it is the value that humans perceive they can obtain from wilderness that may help in protecting wilderness as a safe haven for species. The problems associated with the human dominance of nature became increasingly important: “why should man value himself as more than a small part of the one great union of creation” (Muir, 1916, p. xxvii).

Muir (1988) stated “when we try to pick out anything by itself, we find it is hitched to everything else in the universe” (p.110). Wilderness is central to the overall health of ecosystems. Wilderness is the beginning place for many water sources that supply urban areas. The trees and plants in wilderness produce oxygen and counter the “greenhouse effect.” The United States Wilderness Act of 1964 describes setting aside areas for geological significance and other purposes. The ability to compare our present ecological systems to past periods in history aids in predicting future changes. Having wilderness helps in scientific studies to determine natural rates of landslides, earthquakes, sea level change, fire, flooding, and rates of change in air and water quality.

Wilderness defined in dictionaries is referred to as uncultivated or undeveloped land with the absence of humans being assumed (Nash, 2001). Places making people feel they have no guidance, and are lost or perplexed are thought of as wilderness (Nash, 2001). A new

perspective on wilderness is the concept of a wilderness in cities, where modern humans experience feelings of insecurity and confusion as were once experienced in wild nature (Gottmann, 1961). Urban theorist Mike Davis sees a new dialectic between wild and urban, describing metropolitan Los Angeles bordered by mountains and desert, having a support group for mountain lion victims (Louv, 2005).

The educational benefits of wilderness include teaching ecosystem stewardship, science, literature, art, history, civics and outdoor skills (Wilderness.net). Wilderness has been used for the development of self-reliance and self-esteem. Wilderness also serves an educational purpose by helping people learn how their actions, behaviors and choices impact nature. The scenic and aesthetic values of wilderness include the magnificent natural landscapes which serve to inspire and provide spiritual renewal. Another aesthetic aspect of wilderness includes what is not experienced there. Natural darkness, quiet, solitude and privacy allow for heightened awareness of self. Wilderness also holds many historical aspects of the United States. Cave paintings, burial grounds, cultural and archeological sites provide a glimpse of the path inhabitants of this land have taken (Wilderness.net). Recognizing the unique benefits offered by wilderness, a movement to preserve wilderness areas in the United States took hold in the 1960's. The Wilderness Act (1964) was a reaction to rapid urbanization and population growth, and an attempt to preserve the opportunity for wilderness solitude for future generations. This act remains the most important piece of legislation guiding the management of wilderness areas in the United States. In this act, wilderness is recognized "as an area where the earth and its community of life are

untrammeled by man, and where man himself is a visitor who does not remain” (p. 891).

Untrammeled refers to something free or unconstrained (Scott, 2001).

The purpose of the Wilderness Act of 1964 was, “to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness” ( p. 890).

The Wilderness Act defines wilderness as:

“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 undeveloped Federal land retaining its primeval character and influence, without permanent improvements or 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; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value” (p. 891).

The Eastern Wilderness Act (1975) extended wilderness designation to federal government land in the Eastern United States and clarified how these lands would be managed. The Act states “additional areas of wilderness in the more populous eastern half of the United States are increasingly threatened by the pressure of a growing and more mobile population, large-scale industrial and economic growth, and development and uses



inconsistent with the protection, maintenance, and enhancement of the areas' wilderness character” (p. 2096). The Act served “to preserve such areas as an enduring resource of wilderness which shall be managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation for the benefit of all the American people of present and future generations” (p. 2096). The significance of this Act is that it allowed for areas with previous human activity to be classified as wilderness and countered the argument wilderness was a strictly pure environment free of human intervention. With this act, the degree of naturalness is what is perceived and interpreted by the individual.

The Wild Foundation described wilderness as being a place that is mostly biologically intact or a place that is legally protected so it remains wild, free of industrial infrastructure, and open to traditional indigenous use or low impact recreation. The Wild Foundation defined wilderness as an:

“area not necessarily a place that is biologically pristine. Very few places on earth are not in some way impacted by humans. Rather, the key is that a wilderness area be mainly biologically intact: evidence of minor human impact, or indications of historical human activity does not disqualify an area from being considered wilderness. Nor must a wilderness area be free of human habitation: many indigenous populations live in wild areas around the world, often playing a key role in keeping wilderness intact and free of development. The essence of a wilderness area is that it is a place where humans can maintain a relationship with wild nature. Whether that relationship is characterized by recreational use or traditional, indigenous use does not matter, so long as the relationship is predicated on a fundamental respect for – and appreciation of – wild nature (Wild Foundation, n.d., “What is a Wilderness Area”, para. 4).

The Wild Foundation’s emphasis on wilderness not being biologically pristine and home to indigenous peoples is important. Very few places are not touched by humans, and to

limit wilderness to such a small area would not be practical. Indigenous people lived very closely with nature and have not seen it as “wilderness.” An interpretation of wilderness should include an understanding that humans have not always been separated from nature. Recognizing that humans can live in close contact with nature, not destroying it, as indigenous peoples have, serves as an example to model behaviors in the 21<sup>st</sup> century.

Several cognitive definitions of wilderness have been proposed. Kaplan & Talbot (1983) proposed a psychologically oriented definition of wilderness. They described wilderness as having: 1) A dominance of the natural: There are few humans and human made elements to deal with; 2) A relative absence of civilized resources to help with being in nature. Nature is dealt with on its own terms; 3) An absence of demands on behavior that are human developed or artificially made, where meeting one’s own needs is the primary activity (Kaplan & Talbot, 1983). Kaplan & Kaplan (1989) described wilderness as a restorative environment. Restorative environments have four primary components: escape, extent, fascination, and compatibility (Kaplan & Kaplan, 1989).

Hammit (1982) defined wilderness as “the environmental situation in which users have some control over the information they must process and the attention required of them to process it, or “cognitive freedom” (p. 488). One primary value of wilderness solitude is escape, or a temporary release from the rules and pressures of everyday life, including social structures and certain environments.

Ecologically based definitions of wilderness have been developed also. Devall and Sessions (1985) described wilderness as “a landscape or ecosystem that has been minimally disrupted by the intervention of humans, especially the destructive technology of modern

societies” (p. 65). Snyder (1989) defined wilderness as “a place where the original and potential vegetation and fauna are intact and in full interaction, and the landforms are entirely the result of nonhuman forces” (p. 76).

Other variations of wilderness definitions have emerged as well. Nash (2001) described wilderness as a state of mind; wilderness being what people think it is. This leaves open for interpretation what exactly wilderness is or represents. Hendee, Stankey and Lucas (1990) provided another definition of wilderness describing naturalness and solitude as the distinguishing characteristics of wilderness that should guide management of these areas.

Aplet, Thomson & Wilbert (1999) described freedom and naturalness as two independent qualities of wilderness. Wilderness is the part of the land that is most wild, and wildness is a function of naturalness and freedom from human control. Aplet et al. described the attributes of land that contribute to freedom and naturalness. The attributes contributing to freedom are: “1) the degree to which land provides opportunities for solitude; 2) the remoteness of the land from mechanical devices, and 3) the degree to which ecological processes remain uncontrolled by human agency” (p. 4). The attributes contributing to the naturalness of the land are: “1) the degree to which it maintains natural composition; 2) the degree to which it remains unaltered by artificial human structure, and 3) the degree to which it is unpolluted” (p. 4).

Roggenbuck (2000) described a commodified 21<sup>st</sup> century wilderness experience. Roggenbuck believes the meaning of wilderness is constantly changing in cultures and it is being shaped now by television, malls, Disney and the web. Describing the mall of America in Minneapolis, Roggenbuck points out it receives more visitors than the Grand Canyon and

Disneyland combined and has a Nature Company store; a woodland theme park; a wilderness hut and rainforest café with waterfalls, live animals, fog and stars in the sky. Nature is now watched on television or purchased at the bookstore. It is becoming “convenient, comfortable and exciting” (p. 15).

### **Definitions of Job Satisfaction**

The definition of job satisfaction used for this research describes it as “an attitudinal variable that reflects how people feel about their jobs overall, as well as various aspects of them. In simple terms, job satisfaction is the extent to which people like their jobs; job dissatisfaction is the extent to which people dislike them” (Spector, 2006, p. 217). Other definitions include Locke (1983), who defined job satisfaction as “a pleasurable positive emotional state resulting from an appraisal of one’s jobs or job experiences” (p. 130). Two primary approaches have been used to study job satisfaction: the global approach and the facet approach. When using the global approach job satisfaction is treated as a single, overall feeling toward a job. Another approach is to identify job satisfaction facets, or various aspects of the job, which includes rewards, co-workers, and conditions. Spector (2006) identified common job satisfaction facets used in research as: pay; promotion opportunities; fringe benefits; supervision; co-workers; job conditions; nature of the work itself; communication and security. Some researchers have questioned if general satisfaction scales are just the sum of all the job facets (Spector, 2006).

### **Theories Related to the Present Study**

Theories focused on wilderness and job satisfaction as they relate to the present study are discussed in this section. The first part of this section discusses theories that focused on

privacy and solitude, involuntary and voluntary attention, and restorative environments. The second part of the section reviews theories important in the study of job satisfaction, including the Hawthorne Studies, Herzberg's Motivation Hygiene Theory, Taylor's Theory of Scientific Management, Dispositional Theory, and theories related to job satisfaction as an attitudinal variable.

Westin (1967) defined privacy as individuals, groups, or institutions determining when, how and to what extent information is communicated to others about themselves. Westin identified four basic dimensions of privacy: 1) Solitude or complete isolation; 2) Intimacy which is acting as part of a small unit, seeking to achieve a close, personal relationship between two or more select members; 3) Anonymity which is being in a public setting, but free from identification, surveillance and social roles; 4) Reserve or when an individual keeps a mental distance, creates psychological barriers against unwanted intrusion, and reserves the right not to reveal certain aspects of self. Privacy is a temporary withdrawal from society for psychological or physical reasons. Experiencing privacy allows information processing mechanisms to adjust to the barrage of personal and social stimuli encountered in daily living.

Hammitt & Brown (1984) theorized when wilderness users are seeking solitude they may mean seeking privacy in regards to withdrawing from social environments over which they have little control, and also in relation to the communication and interaction required with others. The privacy being sought, according to Hammitt, is not complete withdrawal from other people. Privacy functions to provide a greater range of options that individuals have allowing them to act in ways appropriate for their purpose. Proshansky, Ittleson, &

Rivlin (1976) describe this in the context that the psychological need for privacy is a way to maximize freedom of choice, and to remove constraints and limitations on behavior.

Using this definition, privacy is considered a social phenomenon (Hammitt & Rutlin, 1995). Freedom of choice is an important aspect of this definition of privacy. Having freedom of choice is reliant on the ability to control what happens in spaces that are important for the behavior of the individual (Altman, 1975). In a wilderness setting, areas of space might include the trailhead, trail, and the campsite (Hammitt, et al., 1995).

Altman (1975) defined privacy as an “interpersonal boundary-control process,” regulating interaction socially with others, providing privacy at the desired levels for individuals. Privacy then is considered an optimizing process striving for an optimal number of contacts with others (Altman, 1975). If the amount of interaction is too much, or too little, the privacy achieved would be considered unacceptable. To achieve the desired levels of privacy would require limiting contact with others at times, and seeking contact at others. Altman described this as a dialectic process, a continuous interplay of opposing forces, to be shut off from others at one time and to open oneself up to interpersonal contacts at others. Thus, the desired privacy level is not constant, but fluctuating, changing with the circumstances of the environment and time. This is defined and determined individually, as much as socially.

Hammitt & Rutlin (1995) adapted Altman’s ecological analysis of privacy and defined wilderness privacy as “a geographic, social, and mental boundary control process that regulates, paces and controls accessibility at various information processing levels to give coherence and restoration to peoples being” (p. 250).

Solitude is considered one of the components of privacy (Hammitt & Brown, 1984). The psychological “freedom of choice” offered by solitude is a primary component of the experience, and according to Cantril (1966) is a major psychological need of humans. Solitude has been commonly defined as complete isolation from other people (Hammitt, 1982). Kaplan and Kaplan (1989) stated escaping from a stressful environment such as work, noise or stimulus overload is not by itself enough to experience a restorative state. “What one is being away to is perhaps more important than what one is being away from, when considering the restorative aspects of wilderness privacy” (p. 177). Hammitt & Rutlin (1995) described the psychological aspects of being away in a restorative environment as likely the underlying factor in achieving a level of desired wilderness privacy.

Stephen Kaplan (1978) described solitude as being sought, in terms of privacy, for freedom from situations that demand voluntary (or directed) attention. William James’ (1983) concept of voluntary and involuntary attention is a primary component of Kaplan’s restorative environment theory. When voluntary attention (directed attention) becomes depleted, individuals display increased irritability, are more easily distracted, are more impulsive and have an impaired capacity to make and follow plans (Kaplan & Kaplan, 2003). Attention that demands effort or is forced because it lacks interest is called voluntary or directed. It takes considerable effort to resist focusing on things that are more stimulating (James, 1983). Involuntary attention is passive and reflexive and requires no effort or will when in an attentive state (Kaplan, 1978). When involuntary attention is aroused, soft fascination environments such as waterfalls, rushing creeks, wildlife, bird songs, sunrises and sunsets, along with diversity in landscape and vegetation patterns capture attention and leave

room for reflection (Hammit, 1982). In contrast, voluntary attention is active, requiring concentration, and effort (Hammit, 1982). Wilderness users are selecting an environment that engages them in ways not possible in an urban environment, which is dominated by human created structures and where technology is constantly demanding attention.

Certain occupations require constant directed attention. Jobs involving driving, reading, or multiple demands for attention are examples. When directed attention is depleted, the ability to regulate behavior is impaired which can lead to rash decision making, reduced competence, and uncooperativeness (Kaplan & Kaplan, 1989). Four major aspects of restorative environments have been identified: escape, extent, fascination, and compatibility (Kaplan & Kaplan, 1989). When an aspect of life that is normally present is absent, this is referred to as escape. The escape can be from distractions, large numbers of people, noisy environments, or a constantly ringing telephone. One can also escape from activities, goals, or even using mental effort (Kaplan et al., 1989). Kaplan et al. describe escape related to restorative settings as being “in a whole other world” (p. 184). So many people now live in urban environments, and are not in contact with nature on a daily basis, spending time in nature meets the criteria of being in another world for them. This leads to the concept of extent, which is defined as having properties of “connectedness and scope” (p.184). Extent is defined as perceiving you are physically or perceptually, in another world, (Kaplan et al., 1989). Wilderness areas give a feeling of extent because of the perceived vastness. “There must be sufficient connectedness to make it possible to build a mental map and sufficient scope to make building the map worthwhile” (p.184).



In the experience of escape, fascination also plays a central role. Things that are fascinating utilize involuntary attention. Two aspects of fascination are critical to the restorative experience: fascination attracts people, keeps their interest, and enables functioning without using directed attention. Natural settings such as a sunrise or sunset, birds, or a mountain vista can be thought of as fascinating. What makes natural settings fascinating in a restorative way is “they are not engaged merely by random sequences of interesting objects. “An occasional fascinating element may challenge one’s capacity for recognition, but if unconnected to a larger framework it will be only a momentary diversion or distraction” (Kaplan & Kaplan, 1989, p. 185). The fascinating elements of nature have been characterized as soft fascination, in that they can hold attention, but in a non-dramatic way. In contrast to fascinating events which make it impossible to think of anything else simultaneously, soft fascination enables opportunities for reflection.

Also needed to create a restorative environment is “the degree of compatibility among environmental patterns, the individuals’ inclinations, and the actions required by the environment” (Kaplan & Kaplan, 1989, p. 185). Purposes or inclinations influence a person’s decisions and actions, as do environmental limitations or demands. Environmental patterns also help cognitive clarity guide action. When purpose fits the demands of the environment and the fascinating environmental patterns provide needed information, compatibility is the result (Kaplan et al. 1989). The underlying concept of compatibility is that being in an incompatible environment takes effort mentally. For some people nature is an environment that requires less effort than when in more urban or developed settings. Another component of compatibility is the close relationship between actions and their resulting significance.

When in nature, activities such as building a fire or preparing the camp, have very clear meanings--survival (Kaplan et al. 1989).

Figuratively tying all of this together is the role of context in the concept of restorative environments. The dimensions of restoration can be experienced in any number of environments.

These theories demonstrate there are benefits to experiencing solitude and privacy, particularly in the context of wilderness and nature. One primary benefit that supports this study is the opportunity to rest voluntary (directed attention). The description of wilderness and nature as restorative environments help identify the attributes of wilderness that make it a beneficial environment in which to be.

#### **Job satisfaction theories.**

A number of the job satisfaction theories important in the evolution of research in this field are highlighted in this section. Included in each description is a brief explanation of how they relate to the present study, specifically the study of attitudes. Key theories important in the evolution of job satisfaction as a research topic and that are applicable to the present study include: The Hawthorne Studies; Herzberg's Motivation Hygiene Theory; Taylor's Scientific Management; Vroom's Expectancy Theory; the Dispositional Theory of Job Satisfaction; and Attitude Theory. The Hawthorne Studies, Herzberg's Motivation Hygiene Theory, and Dispositional Theory can all be viewed through the lense of job satisfaction being impacted by employee attitudes. The role of attitudes is less obvious in Scientific Management and Expectancy Theory, but is still a variable.

Job satisfaction is a topic that has generated considerable interest over the past century with standardized job satisfaction scales dating back to the 1930's. Job satisfaction research is often traced back to the Hawthorne Studies of the early 20<sup>th</sup> century. This research was the start of the study of human attitudes on the job. The Hawthorne Studies investigated the effects on productivity of lighting changes and are viewed as significant contributors to the fields of sociology and psychology. From 1924-1933 Western Electric Corporation sponsored experiments at the Hawthorne Works in Chicago. The purpose of the research was to determine how working conditions impacted productivity and morale. Increased lighting resulted in increased productivity, but when lighting was decreased, productivity did not decrease. This led researchers to believe that the attitude of the workers was a major factor. The second test focused on six women who were involved in assembling a telephone. Using the variables of shorter working periods, incentive pay, personal health and supervision, the women were studied for two and a half years. The results revealed the primary contributing factors to their productivity were: more freedom on the job; having no boss; the opportunity to set their own pace; working in a smaller group; and the way they were treated. Burke (2002) identifies the Hawthorne Studies as significant because "they demonstrated the importance of psychological or human factors on worker productivity and morale" (p. 26). The studies also have significance because they signaled the criticality of certain variables for worker satisfaction: autonomy on the job; workers being able to set their own pace; the relative lack of a need for close supervision for people who know their jobs; the importance of feedback; the relationship between performance and reward, and having influence regarding change. This research led to more humanistic on-the-job treatment of workers. This

research is important because it establishes the foundation for research on attitudes in the workplace setting.

Herzberg's Motivation Hygiene Theory is built on the results of this study, indicating there is not a cause-effect relationship between an individual's productivity and working conditions. Much of the knowledge about group dynamics is also a result of this research. Important research related to work design, and satisfaction was directed by Herzberg's two-factor theory of satisfaction and motivation, which makes the hypothesis that employee satisfaction is determined by intrinsic variables related to work including: recognition, achievement, responsibility, advancement, and personal growth. Identified as motivators, these factors are believed to be instrumental in encouraging employees to give superior effort and high performance. Dissatisfaction is caused by hygiene factors that are extrinsic to work which include company policies, practices of supervisors, payment methods, and conditions at the work place (Hackman & Oldham, 1976). Herzberg's theory indicates a job will enhance work motivation and satisfaction only to the degree motivators are designed into the work itself. Changes dealing solely with hygiene factors should not lead to increases in employee motivation. Considerable research has been generated based on Herzberg's work. The intrinsic motivators are variables that can impact attitudes. As with the Hawthorne studies, psychological variables are impacted. This theory helped to further develop research related to attitudes and how they impact work.

Fredrick Taylor is another key contributor to the early work relating to job satisfaction. His book *Scientific Management* depicted organizations as machines. Scientific Management is based on four principles (Burke, 2002):

- 1) Data gathering or collecting knowledge about how work has been done, and reducing it to rules, laws and possibly math formulas;
- 2) Matching the skills of the employee with the requirements for the job to maximize effectiveness;
- 3) Bringing science and the trained worker together, meaning that even with the best trained workers, if they could not apply the new work methods, the entire effort would fail;
- 4) A re-division of work where the workers did the labor and management, monitored the work, and collected and analyzed data.

The Theory of Scientific Management can relate to employee attitudes, particularly when attempting to match the skills of an employee with the requirements for a job. Though this is not implicitly stated, finding a job that properly utilizes the skills of an employee could have some positive psychological benefits for the employee, impacting his or her attitude toward the job. In contrast, if the employee's skills are not matched, it might cause frustration for the employee and decrease satisfaction. This could negatively impact an employee's attitude toward his or her job.

Another important area of job satisfaction research involves motivation. Vroom (1964) described Expectancy Theory as the process an employee undergoes to make choices. Expectancy Theory predicts employees will be motivated when they believe: 1) putting in effort will yield better results; 2) better job performance will lead to organizational rewards (e.g., increased salary or benefits); 3) the employee values the predicted organizational rewards. Expectancy Theory is based on the premise that behavior is a result of conscious

choices with the primary intent of minimizing pain and maximizing pleasure (Vroom, 1964). This theory is based on three beliefs: valence, expectancy and instrumentality. Valence is the emotional hold people have in respect to outcomes and rewards such as money, promotions and time off. Expectancy is the different levels of confidence and expectation employees have about the job they are doing. Instrumentality is the level to which employees believe that promised benefits will actually be realized. An employees' expectancy or confidence about a job could be a reflection of their attitude toward the job.

An additional theory related to job satisfaction is dispositional theory. Judges, Locke, Durham and Kluger (1998) built on the Dispositional Theory of job satisfaction, which implies people have innate dispositions toward a certain level of satisfaction, regardless of the job. They developed a four dimensional core self evaluation model which proposed four dispositions impact job satisfaction: self-esteem, general self-efficacy, locus of control and neuroticism. Higher levels of self-esteem and self-efficacy lead to higher work satisfaction. Having control over one's life (internal locus of control) also leads to higher job satisfaction, and lower neuroticism translates to higher job satisfaction.

Job satisfaction has been defined as “an attitudinal variable that reflects how people feel about their jobs overall, as well as various aspects of them. In simple terms, job satisfaction is the extent to which people like their jobs; job dissatisfaction is the extent to which people dislike them” (Spector, 2006, p. 217). Two primary approaches have been used to study job satisfaction: the global approach and the facet approach. When using the global approach, job satisfaction is treated as a single, overall feeling toward a job. Another approach is to identify job satisfaction facets, or various aspects of the job, which can include

rewards, other people on the job and conditions. Spector identifies a number of common job satisfaction facets used in research: pay, promotion opportunities, fringe benefits, supervision, co-workers, job conditions, nature of the work itself, communication, and security. Some researchers have questioned if general satisfaction scales are just the sum of all the job facets (Spector, 2006).

One of the most utilized theories on attitudes is by Fishbein (1963, 1967, 1973, 1980); Fisbein & Ajzen (1975); and Ajzen & Fishbein (1977, 2008). Fishbein's (1963) attitude theory states, "that an individual's attitude toward any object is a function of his beliefs about the object and the implicit evaluative responses associated with those beliefs (p.29). A person's attitude toward an object often causes them to develop a predisposition resulting in either positive or negative responses toward that object (Allport, 1935). Attitudes are considered to be multidimensional, having cognitive, affective and conative components (Ajzen & Fishbein, 2008). Attitude is considered to be one of several variables that influence behavior including social norms, habits, and personality characteristics (Ajzen & Fishbein, 2008).

A commonly accepted definition of attitude is that a person's attitude is representative of his or her evaluation of the entity in question (Fishbein, 1977). A behavioral criteria is one or more actions observed or performed by the individual. Predicting behavior from attitudes relies on the concept of consistency. "It is usually considered to be logical or consistent for a person who holds a favorable attitude towards one object to perform favorable behaviors, and not perform unfavorable behaviors with respect to the object" (p.889).

Fishbein's (1963) Theory of Attitude is concerned with the relationship of beliefs to attitudes. The theory states: "1) An individual holds many beliefs about an object; i.e., the object may be seen as related to various attributes such as other objects, characteristics, goals, etc. 2) Associated with each of the attributes is an implicit evaluative response, i.e., an attitude. 3) Through conditioning, the evaluative responses are associated with the attitude object. 4) The conditioned evaluative responses summate, and thus 5) on future occasions the attitude object will elicit this summated evaluative response, i.e., the overall attitude" (Fishbein & Ajzen, 1975, p. 29).

Fishbein's (1980) model for attitudes assumes what determines a given behavior is the individual's intention to perform the behavior. Research on attitudes by Fishbein and Ajzen evolved into a Theory of Reasoned Action. This theory hypothesizes that a person who believes performing a given behavior will lead to primarily positive outcomes will have a favorable attitude toward performing said behavior. A person who believes performing a behavior will lead to primarily negative outcomes will have an unfavorable attitude. Behavioral beliefs are identified as the beliefs that underlie an individual's attitude toward a behavior (Fishbein, 1980). According to this model, the intention to perform or not perform a behavior is determined by the attitude toward the behavior and; the perception that others believe they should or should not perform the behavior. Behavioral intentions mediate the effect of the other components (affective evaluation and cognition) and also the impact of subjective norms on behavior (Liska, 1984). Subjective norms are also identified as a function of beliefs. Normative beliefs underlie subjective norms and are represented when a



person believes the people he/she is motivated to comply with think they should perform a specific behavior. Social pressure will be felt to do so (Fishbein, 1980).

Four different elements make up attitudinal and behavioral entities: the action, the target at which the action is directed, the context in which the action is performed, and the time at which it is performed (Ajzen & Fishbein, 1977). An action is always performed with respect to a given target, in a given context, and at a given point in time.

There is sufficient evidence to suggest attitude is a strong predictor of behavioral intention (e.g., Ajzen and Fishbein, 1977; Trafimow, 1996).

Job satisfaction is primarily an attitudinal variable (Spector, 1997). A person's attitudes toward an object often develop, causing them to have a predisposition, resulting in either positive or negative responses toward that object (Allport, 1935). If the RBHWS can positively impact an employee's attitudes toward their job, it may influence their satisfaction with the job.

### ***Conclusion.***

In this section job satisfaction theories were reviewed as they relate to employee attitudes. The concept of job satisfaction primarily being an attitude variable was also discussed. This review helped to frame the idea that the psychological benefits of wilderness solitude may have some relationship to job satisfaction. Each of these studies reveals attitudes are central to job satisfaction. Fishbein and Ajzen's research clearly supports the idea that the RBHWS offers opportunities to impact workplace attitudes.

## **Review of Literature Related to the RBHWS**

Research related to wilderness experience has focused on a number of areas: leadership development as a result of group experiences in wilderness; the restorative impact of time spent in nature; how solitude and privacy are experienced in nature; and how satisfied wilderness users are with the environmental experience. Research has approached the wilderness experience using qualitative and quantitative measures. The literature related to this topic is reviewed first by looking at larger ideas related to the restorative benefits of wilderness solitude, then narrowing the focus to research more directly related to this research topic.

### **Privacy.**

The dimensions of privacy were the focus of a factor analytic study by Pedersen (1979). The purpose of this research was to demonstrate there was not one type of privacy. This two phase study first collected data on 96 items from 166 people. In the second phase items were condensed to 30 and administered to an additional 188 people. The privacy factors identified were: reserve, isolation, solitude, intimacy with family, intimacy with friends and anonymity. Four of the six factors were determined to be confirmatory of Westin's (1967) privacy categories. A key finding was isolation emerged as a factor separate from solitude. Someone who likes to be alone in a bedroom, may not enjoy being alone in a remote natural area. Pedersen concludes privacy is a multifaceted human behavior aspect, not a single characteristic. This research broadened the concept of privacy identified by Westin (1967).

Moore & Arch (1982) researched the importance of privacy for prisoners by monitoring inmate attendance at a sick call clinic. The study compares contrasting cell block characteristics and designs resulting in significant differences in demands for healthcare services coming from those areas. Moore & Arch used the work of Kaplan (1978) to describe the importance of individuals having a level of familiarity and comfort with their environment. The percentage of prisoners visiting the sick call clinic was much higher for prisoners who were in cell blocks lacking privacy. The authors reference the inability for prisoners to obtain visual or auditory privacy, as well as having to maintain attention on what one is doing, which caused stress and impacted health. This research is important because it highlights the importance of privacy for attention restoration and stress reduction. Although the participants in this research were prisoners, the results of this theory were shown to be valid.

Pedersen (1997) studied the psychological needs met by each of the six types of privacy identified empirically: solitude, isolation, anonymity, reserve, intimacy with friends, and intimacy with family. Privacy was described as a boundary control process; not removing oneself from others, but controlling contact with others. Seventy-four participants rated the level to which the 20 privacy needs were achieved. A Privacy Function Rating Scale (PFRS) was developed to obtain ratings on the needs served by each type of privacy. Each of the six types of privacy identified by Pedersen (1979) was described at the top of each page. The privacy factors of solitude and isolation appeared to be highly similar, as were anonymity and reserve. Intimacy with family and intimacy with friends were also found to be similar. Pedersen asserts the findings of this study demonstrate the functions of privacy

are much more complex than the four functions identified by Westin (1967): personal autonomy, emotional release, self-evaluation and limited and protected communication. The privacy function in this study according to Pedersen identified salient and slightly independent functions of privacy. The generalizability of the results was a concern since study participants were all students. Pedersen (1999) researched types of privacy by privacy functions. Pedersen uses six types of privacy, which have been empirically identified in his previous research: solitude, isolation, anonymity, reserve, intimacy with friends, and intimacy with family. The five privacy functions were autonomy, confiding, rejuvenation, contemplation and creativity. Using responses from 123 participants this research described the level to which the five privacy needs were met through the six types of privacy. The results of this research can be used to determine how types of privacy may satisfy certain privacy needs. For example, autonomy may be served by any of the types of privacy. Confiding may be best met by intimacy with friends or family. Rejuvenation may be best met by utilizing isolation and intimacy with friends. The study results indicated most any of the types of privacy would be useful for rejuvenation. Creativity and contemplation were best addressed by the alone factors of isolation and solitude. This research is important because it continues to build on the concept of privacy offering rejuvenation.

### ***Summary.***

Research has provided clear evidence there are health benefits associated with experiencing privacy. Many people now live in urban environments making privacy virtually impossible, but the RBHWS can provide such opportunities.

### **Views of nature.**

Research on views of nature is included because it builds on the concept that natural environments are restorative. Talbot and Kaplan (1991) studied the impact of nearby nature for elderly adults. Elderly residents of two senior citizen apartment complexes located on different sites were interviewed about the importance and availability of having nearby nature. Residents were also asked about their involvement level with indoor nature activities such as growing plants or watching nature television shows. Satisfaction levels were significantly higher for residents whose apartments had a view of natural settings, and for those who lived closer to certain types of outdoor settings. A residential satisfaction scale was used measuring: how well people liked living there, satisfaction with general maintenance, satisfaction with the quantity of trees and shrubs, and how they felt about the apartment really being a home. A general life satisfaction scale was also used. The impact of nature on both residential and general life satisfaction was found to be significant. The research provides evidence of the impact of nature on life satisfaction. Research on views of nature is important because it provides the foundation for research on the restorative aspects of nature. Research on this topic evolved to include studies on nearby nature and the workplace.

### **Wilderness experience.**

Shin's (1993) study examined whether or not the self-actualization of wilderness campers is related to their attitudes toward wilderness after wilderness experiences. The study sampled 540 people in three Canadian parks. They were sampled randomly from a total of over 138,000 campers who had camped in the study area over an eleven month period.

The age range for the sample was 15-75. A majority of the sample resided in urban/suburban areas. The Short Index of Self-Actualization (Young, 1978; Young & Crandall, 1984) was used for this study. The index consisted of 15 items. A wilderness attitude purism scale developed by Stankey (1973) was used to identify different wilderness user groups and the intensity of certain value systems they hold in how they define wilderness. The results indicated a significant positive correlation between self-actualization and purism scores. Low purism scores correlated with low self-actualization. High purism scores correlated with high self-actualization. Chi square tests were used to determine the relationship between socioeconomic variables and self-actualization and purism scores. No significant relationships were found between campers' personal variables and purism and self-actualization scores. Self-actualization is an important benefit of the RBHWS. This research provided a foundation for additional research in this area.

Stoltz (1998) described The Wilderness Enhanced Narrative Program designed by Michael White that combines the use of personal narrative and wilderness experiences to produce change. Students participating in this program were referred by their school because of long term negative behavior problems. The wilderness enhanced model provided 10 days of extreme wilderness experiences producing stressful challenges to the student. This was designed to attempt to begin the process of deconstructing the narrative or story which the participant held about his or her self (Stolz, p. 151). Through the use of reward scenarios, students were allowed to enjoy or suffer the consequences of their decisions (e.g., if they decided not to carry water, they were allowed to experience the consequences). This process allowed students to reflect on their decisions. The reflection process could often be triggered

later, by use of vocabulary related to that wilderness experience (p. 5). At least one death has occurred during these programs. The importance of this study is based on its identification of reflection as an important component of the RBHWS.

In Fredrickson and Anderson's (1999) study of an all women's wilderness experience, participants described the wilderness experience as helping them feel uninhibited, peaceful, whole, refreshed, joyful, in tune, and enraptured. Twelve study participants were asked to keep journals during six to seven day wilderness experiences either at the Grand Canyon or in the Boundary Waters Canoe Area Wilderness in Minnesota. Journaling was identified as an important tool in the reflection process. Lukinsky (1990) described journal use as "a tool that works from the inside out and from the outside in" (p. 214). Journaling he believed caused reflection and action to be seen in a new way. Participants described they rarely were in touch with the natural world in their daily lives and that direct contact with nature made possible the introspection and deep contemplation they described in their journals (Fredrickson & Anderson, 1999). Comments from participant journals included statements like "getting back in touch with the really important stuff in life" and "sounds of the forest, snapping of twigs, hearing the sigh of tree tops in the wind at night" (p. 31). Many participants reported asking themselves during the periods of solitude questions like: "What is the purpose of my life now that I am older? What really matters in life? Where has my life gone? What shall I do with the rest of my life? Another participant stated, "I was able to see my life as simple and holy again" (p. 32). A participant in the Grand Canyon wilderness experience described the experience: "I looked over the lip of the canyon and looked down...I thought to myself there's no way I can do that...five days later my body

incredibly tired, I felt more alive than I had in all my life. I can now face what is waiting for me back home” (p. 32). Other participants described a loss of the passage of time and “becoming more re-familiarized with myself and how I fit with the rest of the world” (p. 34). This research provided good qualitative data describing the RBHWS and supports the present study.

Breejen (2005) studied the dynamics of the long distance walking experience in Scotland. Research was collected using a self-completion questionnaire. Each individual’s daily experience of walking the West Highland Way, a 95 mile path from Scotland’s largest city to the foot of the highest mountain in the country, was tracked using a real-time diary questionnaire. A sub-sample of 25 respondents participated in the diary questionnaire research. Using the diary questionnaires allowed for the possibility of collecting information on the emergent aspect of the walking experience. The study found walkers experienced a climatic high at the end of the hike, which is in contrast to Borrie & Roggenbuck (2001) who described the outdoors experience as reaching an immersion stage and then leveling off toward the end. Breejen believed the findings indicate a strong relationship is created between walkers and their surroundings, in addition to a sense of achievement attained from completing a multi-day, challenging walk. This research linked the importance of environment to individual experience.

Daniel (2005) researched how significant life events can impact perspective, behavior, attitudes or beliefs. Solitude experiences of students participating in the Discovery Wilderness Program at Montreat College were analyzed. The solitude experience in this program was rated by many participants as being a significant life experience. No direct



relationship to attitudes was provided in the results, which instead focused on change in perspective brought about by the experience.

Quinn (2005) studied the impact of solitude on attitudes as part of research conducted at the Boundary Waters Canoe Area Wilderness with a group from the Outward Bound School. The solo experience was part of a group exercise that separated individuals to determine the impact solitude had on participant attitudes and moods. The experience of solitude positively impacted the attitudes of participants and improved group cohesion upon return to the group, creating an attitude of being able to do anything. The importance of this research is it described how the solo experience can help the individual when returning to work in a group environment.

### **Research More Closely Linked to the RBHWS and Job Satisfaction**

#### **Psychological benefits of wilderness experience.**

Kaplan (1974) examined the psychological benefits of an outdoor challenge program. This research was some of the earliest addressing the individual benefits of wilderness experiences. The purpose was to evaluate the benefits of survival oriented wilderness programs. The Outdoor Challenge Program sponsored by the Marquette, Michigan Community Mental Health Center included 15-17 year old males. Ten people completed the entire two week program and were included in this research. A control group of 31 high school students of the same age and sex was used for comparison. Of the 31 completing the first questionnaire, 25 completed the follow up questionnaire. All participants in the study were in the 10<sup>th</sup> grade, and the majority lived in a village or rural setting. Data was collected related to self esteem and confidence at four points in time. Phase I of the study included

items related to skills needed in the program. Phase II asked questions related to a variety of dimensions of the camping experience. Phase III of the study had open-ended questions related to good and bad aspects of the program, challenging aspects of the program, how this differed from expectations, and information a friend might want to know if considering the program the next year. Differences between the program group and the comparison group that might be attributable to completion of the program included: having a greater concern for others; helping activities; and working with people. Self-esteem and self-acceptance also seemed to improve for program participants. This research provided the early foundation for the study of the impact of wilderness experience.

Kaplan and Talbot (1983) conducted a study of participants in an outdoor challenge program. They discussed the role of being away, fascination and coherence in the wilderness experience. In order to understand the restorative environment and the way it functions, they looked at fascination and the circumstances that determine its effectiveness. Fascination is experienced when attention is effortless, and is similar to what James (1983) described as involuntary attention. Fascination is important for a restorative environment because it attracts people and keeps them from getting bored which allows them to function without having to call on their capacities for voluntary attention. Distance coherence in relation to variety and physical scale relate to fascination. Wilderness contrasts with many other environments according to Kaplan, in that it facilitates compatibility. What is done in wilderness is closely related to what is needed to survive. Food, shelter and fire building skills are needed for survival (Kaplan et al., 1983). This research helped in the development of Kaplan & Kaplan's (1989) attention restoration theory.

Kaplan and Talbot (1983) analyzed data from the 1974 Outdoor Challenge Program identified above to better understand the psychological benefits of wilderness experiences. The outdoor challenge program was a two week backpacking experience in a wilderness area in Michigan's Upper Peninsula. This research analyzed participant journals from two previous studies (Kaplan, R. 1974; Kaplan, S.1977). In the first study ten boys between the ages of 15 and 17 participated in the program, and 25 boys in high school were part of the control group (Kaplan, 1974). The control groups pre-program and post program measures of self-perception and interests were stable. The participants in the outdoor challenge program; however, displayed a greater sense of concern for others, a more realistic view of their strengths and weaknesses, a greater sense of self-sufficiency, and a more positive view of self. The subsequent year, 267 high school students were studied, and the control sample was enlarged as well. Wilderness participants were involved in one of three types of outdoor trips: the outdoor challenge program; a backpacking trip in a less isolated area; and a camp near Lake Michigan. Results of this research demonstrated changes in self-esteem resulting from time spent in nature. The participants in each of the three nature experiences were more likely to have positive changes related to self image. Kaplan and Talbot's concept of progression of response in wilderness as interpreted from use journals revealed consistent findings for duration in wilderness. The psychological benefits they found indicated on days three and four in the wilderness, participants experienced an intense awareness of the relationship between the individual and physical environments, and less voluntary attention was required. On day five participants had increased levels of self-confidence and a sense of tranquility and coherence. On the seventh day, participants consistently experienced a strong

inclination toward contemplation. Kaplan et al., described person – environment interactions in which the person’s capabilities and purposes are well-balanced with the pattern of opportunities and constraints found in the physical environment. Their research also showed a connection between individuals’ perceptions of their physical surroundings, and their evolving perceptions of themselves, as well as their own purpose. Kaplan and Talbot described compatibility between the demands of the environment and internal inclinations, allowing predictability of the environment. Because of this, more time is allowed for the cognitive dimensions of reflection, and self-insight. The self-integration and reflective benefits of wilderness privacy are closely associated with the tranquility and peacefulness offered by wilderness. Another finding indicated integration leads to a feeling of tranquility, which made reflection and contemplation possible.

This research is of particular importance to the present study due to the emphasis placed on the psychological benefits of wilderness experiences. A psychologically oriented definition of wilderness was proposed: “There is a dominance of the natural. There are relatively few human and human-constructed elements with which to contend. There is a relative absence of civilized resources for coping with nature. Nature must be dealt with on its own terms. There is a relative absence of demands on one’s behavior that are artificially generated or human imposed. A primary activity is the meeting of one’s vital needs (Kaplan & Talbot, 1983, p.199).” The importance of fascination and the role it plays in allowing effortless or involuntary attention is discussed as a primary benefit of the wilderness experience.

Talbot and Kaplan (1986) interviewed participants in the wilderness challenge program and asked if their wilderness experience changed them. Participants responded they wanted to live life more simply and slowly; to look more closely; to consume less and simplify; to develop a deeper interest in the world of nature; to be more considerate of family and friends; to be careful to make decisions about their lives that reflected their own priorities, rather than the values of others; and finally, they wanted to feel more a part of the environment. These benefits are central to the present study on the RBHWS and mirror items included on the survey, specifically related to reflection and the environment. Participants experienced an emotional response to the wilderness environment, which gradually generalized to include their feelings about themselves. “Those feelings and rhythms transfer themselves to us without our ever being aware of the process” (p. 184). Others described feeling more self-awareness, more like themselves, and developing a new sensitivity to the environment (p. 184). Talbot and Kaplan concluded wilderness solitude experiences often lead to deeper levels of personal understanding, and to convictions that the way individuals conduct their lives in their ordinary surroundings should also change. They described how commonplace experiences can lead to unanticipated psychological effects. Using the wilderness challenge program, this research continued to build on that program model demonstrating the benefits of wilderness experiences. The benefits identified in this study supported the idea proposed for the present study. Spending time in wilderness offers psychological benefits that may impact attitudes toward the workplace.

Walker, Hull and Roggenbuck (1998) researched the quantity of benefits obtained during the on-site phase of recreation; the quantity of benefits gotten off-site when

recollecting about the outdoor recreation experience, and the relationship between the two. In this study, 169 participants were asked questions focused on spending time in wilderness as an optimal experience. Optimal or peak experiences were defined as a type of psychological state that people experience and describe as special, out of the ordinary, and/or meaningful (Mannell, 1996). Peak, flow and absorbing experiences were the primary constructs of their research. One component of peak experiences is what Csikszentmihalyi, (1990) described as flow, or “the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” (p. 4). Absorption was the third construct, which related to the state of being when sense of self and time fade, and the individual merges with a fascinating stimuli. The research found three possible relationships between optimal experiences and off site benefits: 1) No significant relationship between the quantity of optimal experiences on site and the quantity of the activity focused benefit category off site. 2) Over exposure to optimal experience can have a negative impact; 3) Optimal experiences and concentrated learning are disparate. This research is important because it provided insight on how experiences in wilderness can impact off-site benefits.

Borrie and Roggenbuck (2001) described the human experience in wilderness as dynamic, emergent and multiphasic. The dynamic experience is described as mood variations across stages of a visit. Negative moods, such as anxiety, decreased during a short visit to a park, but returned to the levels experienced at the starting point. Participants who were traveling to a destination retained high positive emotions and fewer negative emotions once they reached their goal. The experience in nature is multiphasic in that perceptual changes

occur in wilderness, and the changes in perception impact the benefits received from the experience. Borrie et al. describe an entry phase, where wilderness users become more focused on various aspects of the wilderness environment, and experience a greater connection to wilderness values. These changes were found to build throughout a wilderness experience, and did not decline upon exiting. The first phase, usually occurring in the first few days included greater realization of the person-environment relationship and increased fascination with nature. The second phase, beginning about a third of the way through the trip, involved an increased self-confidence, fewer distractions and more coherence. The third phase, happening toward the middle of the trip included feelings of compatibility, relatedness to the surrounding environment and increased contemplation. The importance of this research is the focus on the emergent aspects of wilderness experience and the person-environment relationship.

### ***Summary.***

Research on wilderness experience programs has demonstrated that benefits of wilderness can include attention restoration, increased opportunities for reflection, and feeling more closely connected to the environment. Research from outdoor programs provided the foundation for much of the early knowledge on wilderness experience, which evolved to also include research in less structured settings. The experiences described in these studies support the belief that the RBHWS may impact job satisfaction.

### **Nature views in various settings.**

Kaplan, Kaplan & Wendt (1972) conducted research comparing the rated preference and complexity of natural and urban visual material. Citing the emerging discipline of

environmental psychology, Kaplan et al. asked 88 female college freshman to rate 56 slides of the physical environment, testing the hypothesis that the content of slides (nature or urban) would influence preference. The slides were categorized four ways: entirely natural scenes; predominance of nature; predominance of man made; and scenes with little to no natural setting. The results of the study found nature scenes were preferred significantly more than urban scenes. The complexity of the environment on a slide predicted preference in both the urban and natural domains; however, complexity did not account for the preference of nature over urban slides. Nature slides were found to be less complex than the urban slides. This research continued to build on the concept of the human preference for natural environments by showing natural environments were preferred in comparison to urban environments.

Ulrich (1984) researched to determine if patients in a suburban Pennsylvania hospital were impacted by having a room with a view of a natural setting. Twenty-three patients who were assigned to rooms with a view of nature, had shorter postoperative stays in the hospital, had fewer negative evaluation comments by nurses, and took less potent analgesics than the 23 patients who were in a room of a similar type, but facing a brick wall. The results of this study were useful for hospital design, highlighting the need to consider the quality of view patients have from their room. The concept that views of nature offer benefits was expanded in this study, and provided direct application to the present study.

Hartig, Mang, & Evans (1991) compared wilderness vacationers, urban vacationers, and a control group of non-vacationers in relation to directed attention. Participants in the wilderness group had significant improvement in proof reading performance, which is heavily reliant on directed attention. Participants in the other two groups had a decline in



directed attention from pre-test to post-test. The research focused on directed attention, making it of particular importance to the present study.

McDonald and Schreyer (1991) found the wilderness experience created a state of consciousness that caused increased sensory acuity, leading to more meaningful outdoor experiences. They also stated visual, gustatory, olfactory, auditory, and kinesthetic senses were enhanced when in a wilderness setting. This supports the belief that nature offers unique opportunities for restoration.

Ulrich, Simons, Losito, Fiorito, Miles & Zelson (1991) researched the emotional, attentional, and physiological stress reducing aspects of nature. The research included 120 participants who viewed a stressful movie, and were then exposed to color or sound videotapes of one of six natural or urban settings. Data collected included self-reported stress recovery ratings and physiological measures such as: heart rate, muscle tension, skin conductance and pulse transit time. The findings of this study indicated stress recovery was quicker and more complete when participants were exposed to natural settings in comparison to urban settings. Ulrich et al. also noted a significant parasympathetic nervous system component to the response to natural settings. No such response was noted for the response to urban settings. Directional difference in cardiac responses to the natural and urban environments seemed to indicate nature settings encouraged higher levels of involuntary attention. Ulrich et al. concluded this indicates there was not a relationship between the restorative benefits of nature and increased use of involuntary attention. This research provided a point of view counter to that of nature as primarily restorative.

Tennessen & Cimprich (1995) conducted a study to determine whether dormitory residents at a university were impacted by having more natural views when tested for directed attention. Seventy-two undergraduates were placed into four groups, each having views which ranged from all natural, to all built views. The views were categorized by taking pictures from each of the participant's windows. The findings indicated better performance on attentional measures for students with views of nature. The ability to direct attention was measured by speed and the ability to sustain activity when given tasks requiring inhibition of competing or distracting stimuli. This research strengthened the argument that views of nature were beneficial and improved attention capacities.

Kaplan (2001) researched the psychological impact of the view of nature from home. Focusing on the view from windows, Kaplan described this as a micro-restorative experience, occurring more frequently, but for briefer periods of time. Residents of six apartment complexes in Ann Arbor, Michigan were surveyed. Her findings indicated having a view of natural settings from a window made substantial contributions to an individual's satisfaction with a neighborhood and sense of well-being. In contrast, the view of built elements did not impact well-being, but did affect satisfaction. Views of the sky or weather did not impact satisfaction or well-being. Using pictures of 40 views from the apartment complexes, residents responded on a five point Likert scale to identify their preferences. This research continued to build on the concept that views of nature are preferred to those of built environments.

Kaplan (2007) examined the nearby natural setting preferences of employees working along a major business corridor. The findings indicated a desire for more prairie like settings,

less groomed areas, large trees, more flowers, and denser vegetation. Human preference for views of natural settings in the workplace is important for linking job satisfaction and the RBHWS.

### ***Summary.***

Views of nature from home, the hospital, work, or while on vacation are consistently preferred to other settings. Unique opportunities for restoration provided by nature, even when viewed through a window, provide support to the hypothesis that more extensive immersion in wilderness or nature, such as the RBHWS, could possibly enhance these benefits.

### **Solitude and privacy.**

The concept of solitude and privacy were central to the research for the present study. The idea that solitude and privacy experienced in wilderness provide opportunities to control information processing (Hammitt, 1982) is directly related to the present study and the belief that escaping the demands of the workplace may impact job satisfaction. Hammitt's research related to the benefits of wilderness solitude and the development of a scale for identifying these benefits was important in the development of literature and research related to the psychological benefits of wilderness experience. Research on the topic of solitude and privacy has relied heavily on Westin's (1967) theory on privacy, which was used as the theoretical foundation for the present study. The studies reviewed in this section revealed users of wilderness areas find these settings to be restorative, and they value opportunities for solitude and privacy.

Hammitt's (1982) quantitative study involved 109 university students. The questionnaire administered included 20 items related to various aspects of wilderness solitude. Four dimensions of solitude were produced from a factor analysis: natural environment; cognitive freedom; intimacy; and individualism. Hammitt offered a definition of wilderness solitude from the perspective of information processing. By describing wilderness solitude not as individual isolation, but as a "specific environmental setting where individuals experience an acceptable degree of control and choice over the type and amount of information they must process" (p. 492). Hammitt's research provided an important starting point for further understanding of wilderness solitude utilizing Westin's Theory of Privacy. The definition of wilderness solitude developed by Hammitt was central to the present research study.

Hammitt and Brown's (1984) study analyzed Westin's (1967) theoretical model of privacy using quantitative methods. The model was examined for its use in better understanding the functions of privacy in a wilderness environment. The study included 106 wilderness users who responded to the 28 item scale. The factor analysis revealed 5 functions of wilderness privacy compared to the four identified by Westin. A new functional domain emphasizing the reflective thought elements of privacy emerged; and limited and protected communication functions factored as separate factors. The most important function identified was "emotional release" with "resting the mind from anxiety and mental fatigue" the highest rated individual item. The scale developed by Hammitt and Brown was modified for use in the present study.

Personality and privacy preference was the focus of Pedersen's (1987) study of 75 psychology students at Brigham Young University. The California Psychological Inventory and Pedersen's (1979) Privacy Questionnaire were administered. The California Psychological Inventory included scales measuring: dominance, capacity for status, sociability, social preference, self acceptance, sense of well being, responsibility, socialization, self control, tolerance, good impression, communality achievement via conformance, achievement via independence, intellectual efficiency, psychological-mindedness, flexibility and femininity. The pattern of personality characteristics and preferences for privacy tended to be quite different for the individual factors. For example, anonymity and reserve were preferred by similar people. Isolation was not associated with any traits measured. There were differences in trait profiles for men and women as well as preference for various types of privacy. Pedersen explained this might be attributed to the greater social orientation for women. An example of this from his data was women who sought reserve, solitude and intimacy with friends had more inadequacies socially and more adverse social traits than men. This research continued to build upon previous work revealing the importance of and preference for privacy.

Hammit and Madden (1989) conducted a field test of backpackers at shelters along the Appalachian Trail in the Great Smoky Mountains National Park using a psychological scale developed in 1981 and 1982, they explored the different meanings of privacy and solitude. Utilizing Westin's (1967) definition of privacy, a factor analysis of 20 items that characterize wilderness privacy produced five factors: tranquility and natural environment, individual cognitive freedom, social cognitive freedom, intimacy, and individualism.

Tranquility and peacefulness offered by a remote environment and being in an environment free of noises generated by humans were determined to be the two most important dimensions of privacy. A new factor identified as social cognitive freedom appeared. In this field test, as with other studies Hammitt conducted, being in a natural, remote environment, that offers freedom of choice in relation to the information processing demands and behavioral demands by others, provided restorative experiences for participants. This research built on Hammitt's view that wilderness solitude is restorative.

Regional and sex differences in privacy preferences was researched by Pedersen and Frances (1990). There were 225 male and female college students who participated in the study. The students were selected from colleges and universities in states representing five distinct geographical regions of the United States. Pedersen's (1979) 30 item self-report questionnaire was used measuring six privacy factors: reserve, isolation, solitude, intimacy with family, intimacy with friends, and anonymity. Six univariate two-way analyses of variance were used and revealed significant differences between the genders for the functions of isolation, intimacy with family, and intimacy with friends. Significant effects for region were found for isolation, anonymity, and solitude. The results related to gender differences were similar to previous research findings that indicated women use privacy regulating mechanisms instead of escaping as men do. Differences in regional preferences for privacy were attributed to population density, sociability and lifestyle. This research provided support for the concept of the beneficial aspects of solitude and that preferences for it vary based on population density.

Priest and Bugg's (1991) study replicated Hammitt and Brown's (1984) research. This research focused on an Australian wilderness experience of privacy. Fifty-five experienced privacy users rated 24 wilderness privacy items. A confirmatory factor analysis did not support Hammitt and Brown's original five factor model or Westin's four function theory. Emotional release was found to be the most important function of wilderness privacy.

Friedrich, Hatton, Naismith, Wensink and Priest's (1992) study utilized Hammitt and Brown's (1984) research, which was based on Westin's (1967) theory of privacy, and highlighted the importance of privacy to wilderness users in the United States. It was also an extension of Priest and Bugg's (1991) research. Focusing on Canadian wilderness users, 98 participants rated 24 functions of wilderness privacy. Confirmatory factor analysis did not support Hammitt and Brown's five factor model or Priest and Bugg's six factor model. Exploratory analysis revealed seven factors that were meaningful: emotional release, physical release, limited and protected communication, self-reliance, self-evaluation and reflective thought, personal autonomy, and self reliance. This study revealed a new factor (physical release) not identified in previous studies.

Hammitt and Rutlin (1995) investigated the relationship between user encounters in wilderness and the degree of privacy achieved in wilderness at three locations. This study was the first to utilize privacy as a dependent variable, making the argument that privacy is not the opposite of perceived crowding. Westin's (1967) definition of privacy and Kaplan & Kaplan's (1989) attention restoration theory were used to guide the study. The results of this study found the number of encounters of groups of people was inversely related to the level of desired privacy achieved. The study also concluded the degree of privacy achieved was

negatively affected when the ideal level and higher levels of encounters were surpassed by the number of actual encounters.

Utilizing the Wilderness Act of 1964, Shafer and Hammitt (1995) identified five conceptual descriptors of wilderness: natural, solitude, primitive, unconfined and remote. These were used to develop measures for experience, condition, and behavior. Wilderness users in the southern United States were sampled and invited to participate in a mail survey. The results of the study indicated experience dimensions in wilderness were congruent with constructs representing perceived conditions and coping behaviors. The most significant aspects of the recreation experience were the natural and solitude components. The findings of the study indicated that those who spend time in wilderness utilize behaviors to control and manage conditions and their experience in wilderness. Thus, the recreational users of wilderness, according to the findings of this research, appear to hold different levels of importance for the dimensions of the recreation experience that are aligned with descriptors of wilderness designated areas. This research reinforced the view that solitude was an important component of the wilderness experience.

Dawson and Hammitt (1996) measured the dimensions of privacy in wilderness environments. Their test was conducted with 375 hikers in the Adirondack Forest Preserve of New York State in 1993. A 16 item factor analysis was designed to measure aspects of wilderness privacy and solitude. Four factors were produced: natural environment, cognitive freedom, intimacy, and individualism. The results of this test revealed solitude and privacy may be important new dimensions that should be incorporated into wilderness planning and management. Privacy may be a better measure of user experience than factors such as



satisfaction and density in some situations. This research also supports the view that solitude and privacy are important components of the wilderness experience.

Hammitt's (2000) study surveyed 422 visitors to four metroparks in Cleveland, Ohio. The purpose of the research was to look at the construct of being away and how it is associated with the desire for, achievement of, and functions of privacy. Hammitt utilized Westin's (1967) interpretation of privacy in development of a functions of privacy scale used in the study. Being away in this context involved what was happening in the head, as well as the environment. The experience in wilderness was distinct and separate from the work environment, which may be as important an aspect as distance (Kaplan & Kaplan, 1989). The results of this study demonstrated the concepts of being away-from and being away-to were distinct concepts to visitors. The research also found the concept of being away-to was more important to visitors than being away-from. This research provided an opportunity to link the benefits of wilderness more closely with work related constructs.

Hammitt, Backman, and Davis (2001) replicated a study initially completed in 1981, which researched the cognitive states of privacy with 20 items, using a 7-point Likert scale. Factor analysis comparisons between the 1981 and more recent studies were completed. Twelve of the 20 items on the scale were found to be significantly different from each other. Eleven of the 12 items rated higher in the most recent study. Cognitive aspects including freedom of choice concerning interactions, use of time and actions, rules/constraints of society and everyday pressure and tensions were more important to participants in the 1999 study than in 1981. The factor differences changing the most between the two studies were

related to intimacy and individualism. This research is important because it identifies how preferences for privacy have evolved since 1981.

***Summary.***

Research on solitude and privacy has clearly shown a preference for solitude and privacy among wilderness users. The research of William Hammitt has been central to the advancement of the concept of wilderness solitude and the cognitive benefits associated with it. His exploration of this topic as well as his creation of the functions of wilderness solitude scale provided significant contributions to the conceptual framework of the present study.

**Restorative environments.**

Cimprich (1992, 1993) studied the impact of nature as a restorative environment for recovering cancer patients and their self-care following hospital discharge. Patients frequently have had difficulty remembering the information needed for self-care, which limits the effectiveness of their treatment. A three month study of recovering breast cancer patients collected data at four points during the research. Participants were randomly assigned to a usual care group (no intervention) or the experimental intervention group. Participants in the experimental group signed a contract to participate in three twenty minute restorative activities per week. Most participants selected nature-based activities. Participants in both groups had attention deficits considered severe before the intervention. The experimental group showed significant improvement in attention performance during the study; the control group did not show improvement. Participants in the experimental group were also more likely to return to work, and to also work full-time. The experimental group was also more likely to initiate new projects, while no new projects were reported by the

control group. This is important research that demonstrates how interaction with nature can restore attention capacities and have beneficial outcomes in other areas of life.

Swatton and Potter (1998) studied four outstanding North American canoeists to determine if solo extended solitude experiences helped encourage personal growth. A qualitative study using semi-standardized interviews was conducted on four male canoeists between 45 and 68 years of age. Their findings indicated that solo canoe expeditions offered an environment for self actualization, enjoyment and personal growth. The solo aspect kept the trip simple, liberated them from the demands for group consensus, and allowed for greater freedom of expression. Also of importance was that wilderness solitude creates an opportunity where the paddlers had the freedom to choose the types of information that must be processed through voluntary attention. The physical, mental and emotional demands of the canoeing trip allowed the paddlers to become more aware of themselves in the natural surroundings. For the canoeist who went on excursions of two or more weeks, the solitary wilderness experience provided the tranquility, peace, and time necessary for reflection that was difficult to obtain in normal daily living. The environment provided the opportunity for being alone with one's own thoughts in silence, having no disturbances or sense of rush by other humans, and the opportunity for unscheduled time creating an ideal environment for reflection. They found that the serenity offered by wilderness solitude provided a "powerful environment for individuals to become aware of their own capabilities and talents. In addition, self actualization that occurred during solitude encourages individuals to explore, discover and change, increasing their potential" (p. 15). This was some of the earlier research found that addressed the importance of voluntary attention.

Korpela, Hartig, Kaiser and Fuhrer (2001) researched the restorative experiences of places where people express preference for spending time. A group of 101 university students were asked to describe their favorite places. Another group of 98 students was asked to describe unpleasant places. The findings indicated natural settings were overrepresented in the favorite places, while underrepresented in the unpleasant ones. Participants described important aspects of their favorite places as relaxed, being away, being able to forget worries, and providing opportunities for reflection. The researchers concluded this indicated a link between favorite places and restorative experience. The restorative aspect was more frequent for natural favorite settings than others. Settings included residential, geographic, leisure time, school, healthcare, transportation, transitional, retail, food service, community and governmental. This research was important because it demonstrated a preference for natural settings.

Herzog, Chen, and Primeau (2002) used Attention Restoration Theory as a theoretical framework for a study of the restorative potential of nature and other settings. A sample of 630 undergraduate students rated 40 activities for their restorative potential. The activities were categorized into seven areas: nature, entertainment, chores, alcohol, drugs, exercise and grooming/appearance. Immediately prior to the list of activities a paragraph was included that induced attentional fatigue, and the identity of the person (either you or your best friend) that would be fatigued. Participants rated nature activities higher than drugs and chores, but lower than exercise and entertainment. Interestingly, ratings for nature were higher for the best friend than for participants. The best friend effect was not apparent when the friend was described as being very similar to the participant. One of the key findings of this study was

that when choosing a restorative activity for oneself, nature activities were underappreciated in comparison to entertainment. Herzog et al. identified the only real way to improve this was by helping individuals personally experience the restorative benefits of nature, which is critical for getting more people to understand the benefits of wilderness solitude.

Berto (2005) examined how exposure to restorative environments improves attention capacity. Participants in the study were asked to complete a sustained attention test to create mental fatigue. The next phase of the test required participants to view either photographs of restorative environments, non-restorative environments or geometrical patterns. The final phase of the test was to take the sustained attention test a second time. The participants exposed to photographic scenes of restorative environments improved their scores on the final attention test, all other participants did not. This research provided further support that nature offers attention restoration benefits.

Shin, Kwon, Hammitt and Kim (2005) evaluated the psychosocial outcome of urban forest park use in South Korea. Studying 2,292 urban park visitors in six cities across South Korea, the results revealed three types of outcomes: learning and self/other relations; social and self-development; and enjoying nature. Another outcome indicated younger and less educated visitors to the parks were less likely to rate the outcomes as important, compared to those who were older and more highly educated.

Chang, Hammitt, Chen, Machnik and Su (2008) used scenes of wildlands as stimuli to study subjects' psychological and physiological responses. The purpose of this study was to demonstrate the benefits of wildland-wilderness environments and their potential impact on restoration of human well-being. Attention restoration theory (Kaplan & Kaplan, 1989)

was used as a guide in selecting the images. The study was conducted in Taiwan and studied the psychophysiological responses of 110 participants who viewed 12 images. The images selected represented the restorative environment components of being away, extent or coherence, fascination and compatibility. A scale measuring perceived restorativeness was used and physiological responses were measured using electromyography (EMG), electroencephalography (EEG), and blood volume pulse (BVP). The results of this study found congruency between the three physiological responses and the psychological measures of restorativeness. As scores improved on the perceived restorativeness scale, EMG and EEG readings increased, and BVP decreased. This research provided support for the importance of having opportunities to experience nature near home or work.

Ryan, Weinstein, Bernstein, Brown, Mistretta & Gagne (2010) conducted five studies utilizing survey, experimental, and diary methods to assess the effects of being outdoors on subjective vitality. Being outdoors was associated with greater vitality, which was mediated by the presence of natural elements.

### ***Summary.***

Research has consistently revealed natural settings are rated highly as restorative environments. Wilderness and nature offer opportunities for reflection, attention restoration and physical health benefits whether nearby in an urban environment or in a more isolated setting. This research provided clear support that the RBHWS is a concept offering unique opportunities for restoration.

### **Job Satisfaction Research.**

In this section, the development of job satisfaction research as it relates to the present study is discussed, followed by a review of research more directly related to the present study.

Miller & Terborg (1979) studied the job attitudes of full-time and part-time employees. Data was collected from a general retail merchandise organization located in the Midwest of the United States. Responses from 1,064 employees from 55 stores was available. An internally developed scale was completed anonymously and voluntarily by employees. Survey items focused on satisfaction with pay, advancement, work, supervision and benefits. Attitudes toward the job varied significantly for part-time and full-time employees. Part-time employees indicated lower satisfaction with work, benefits, and the job overall compared to full-time employees. No differences were found in satisfaction with supervision, pay or advancement. This research was significant because it focused on job attitudes as a primary component of job satisfaction.

The Job Satisfaction Survey (JSS) (Spector, 1985) was designed for use in the human service sector. Spector has been recognized by many as having developed reliable and valid scales for measuring job satisfaction. A six point Likert scale was used, ranging from disagree very much (1) to agree very much (6). The 36-item JSS scale had nine subscales: salary, promotion, supervision, fringe benefits, contingent rewards, operating procedures, co-workers, work and communication. The strongest correlations were found with the perception of the job and supervisor, the intention of quitting, and organizational commitment. The JSS was developed on the theoretical grounding that job satisfaction is “an

affective or attitudinal reaction to a job” (p. 695). The JSS was designed to measure the evaluative feelings about jobs individually. The scale was found to be reliable with internal consistency being verified with a Cronbach's alpha of 0.91.

Zeitz (1990) researched the relationship between age and work satisfaction in a government agency. A sample of 434 federal government employees participated in the study by completing a questionnaire. Factor analysis was used to reveal significant factors. Attitudes toward management, work-related values, perceived influence and fairness, and job enrichment characteristics were measured. Interviews were also conducted. The findings indicated employees developed views of their organization based on their degree of access to elite networks interacting with factors such as age and education. This research provided further support for attitudes as a primary component of job satisfaction.

Judge (1993) researched at a medical clinic in the Midwest United States to determine if affective disposition moderated the relationship between job satisfaction and voluntary turnover. A data questionnaire was distributed to 320 employees. The results of the study demonstrated affective disposition was an important factor to include when trying to predict turnover. The results of this study also indicated the affects of job satisfaction on turnover was dependent on the ability to be satisfied in general. This research was important because it discussed one of the most important outcomes of job satisfaction from an employer perspective, reduced turnover.

Traynor and Wade (1993) developed the Measure of Job Satisfaction (MJS), which was a 38-item multidimensional instrument designed to be used in the monitoring of morale of community nurses in four trusts. The purpose of this research was to develop and initiate a



study that was user-friendly, quick, simple to complete, and produced reliable and valid results. This longitudinal study primarily focused on the question: How satisfied are you with this aspect of your job? The rating scale was a five-point Likert scale, with a range from 'very satisfied' to 'very dissatisfied.' The MJS was used to measure five work factors: personal satisfaction; workload; professional support; salary; and prospects and training. The motivation for developing these scales was a belief that "general scales may be appropriate for comparing the job satisfaction of workers in different types of organizations that lack specificity and may be insensitive to differences between various workers in the same or similar settings, or between the same type of worker in different settings" (Traynor & Wade, 1993, p. 128). The job title categories of respondents included district nurse, practice nurse, and clinical nurse specialists among others. Participants were asked to respond to the following statements: the feeling of worthwhile accomplishment I get from my work; the extent to which my job is varied and interesting; my workload; the degree to which I feel a part of the team; and the extent to which I have adequate training for what I do. The scale was found to be reliable with internal consistency verified with a Cronbach's alpha of 0.93. Construct validity for the scale was 0.83. This research is significant because it discussed how effective job satisfaction scales may be based on type and the setting in which they are used.

Clark, Oswald & Warr (1996) researched job satisfaction to determine if it is "U" shaped in age (declining from a moderate level in the early years of employment, then increasing slowly until retirement). They found strong evidence that a "U" shaped relationship between age and job satisfaction exists. The "U" shape was strong particularly

for full-time employees and men. This research was important because it demonstrated that job satisfaction was impacted by age.

Jamal (1997) examined the differences between the work and non-work experiences of full-time, self-employed, and organizationally employed Canadians in a large metropolitan city on the East coast. Data was collected by a structured mail back questionnaire. Jamal identified one of the primary attractions to self-employment was often the high degree of independence it allowed in comparison to working in an organization. Other benefits were highlighted, as well as disadvantages. One of the primary disadvantages of self-employment identified was the absence of a clean separation between work and non-work life. This study was undertaken because of the lack of empirical research comparing the self-employed with the organizationally employed. Three hypotheses were formulated and tested in this study: 1) The self employed will experience higher job stress, better job satisfaction, and more psychosomatic health problems than the non-self employed; 2) Because of the greater independence available when self employed, those who are self employed will demonstrate higher non-work satisfaction and be more active in voluntary organizations than the non-self-employed; 3) Because of longer and unconventional working hours combined with business uncertainty, the self employed will exhibit poorer mental health than the non-self-employed. This study's importance to the present study relates to its identification of self employment as impacting work/life balance.

A number of different measures were adopted for use in the study. To measure job stress a 15-item Likert type scale developed by Rizzo, House, and Lirtzman (1970) was used. It was stated the scale had good psychometric properties, but no examples or references were

provided. Job satisfaction was measured using the 18-item global index developed by Brayfield and Rothe (1981). It used a Likert type scale. The scale had good psychometric properties and it was appropriately referenced. Non-work satisfaction was measured using a scale developed by Rousseau (1978). No psychometric information was provided.

Psychosomatic health problems were measured using scales from Michigan studies of workers' health. The scale was identified as having good psychometric properties and was referenced. To measure mental health a 22-item scale developed by Kornhauser (1965) was used. No psychometric information was provided.

The Cronbach's alphas for all the dependent variables ranged from .78 to .92, which was acceptable. None of the intercorrelations between the variables were overly high, so all the variables were kept for additional analysis. One-way ANOVA and MANOVA were used to examine the relationship between employment status and the dependent variables. The self-employed experienced job stress that was significantly higher, and had more psychosomatic health problems than the non-self-employed. No significant differences were found between the non-self employed and the self-employed in relation to job satisfaction and mental health. The study also found the self-employed spent more time in voluntary organizations. This study did not find that the self-employed had higher job satisfaction. The author suggests future research should focus on, among other things, leisure satisfaction. This research was important because it looked at work and non-work satisfaction.

Mark, Gudith & Klocke (2008) researched the impact of interruptions on stress, frustration, pressure and effort of employees. This study sought to better understand how interruptions impacted work in relation to work patterns, strategies for dealing with

interruptions, and the cost of disruptions. The study consisted of 48 German university students, and was conducted at a university lab where the students were required to respond to 12 emails. The results of the research did not indicate significant differences in the impact of different types of interruption. The results indicated work that was interrupted was completed faster, which is a result of writing less. The students in the group that were interrupted experienced higher stress, frustration, elevated time pressure, and effort levels. This could have importance for job satisfaction, because this research found the interruptions impacted mental states.

Meissner (2008) researched the link between work and leisure and how industrial work impacted the development of social skills. A sub-sample of 206 industrial workers at a large wood products manufacturing company were surveyed. Only men wage earners, who were union members, and below the level of foreman were included. The decision to have a limited sample was based on the desire to reduce the potential effects of characteristics of the industry including: sex, prestige of the occupation, and authority. The study focused on tasks required in industrial production related to speed of machines or a production line. Three constraints are identified: time, space and function related to the individual's job. Levels of social interaction at work were also measured and compared with the constraints of the job. The results of the research indicated technical constraints and social isolation at work were related. Results also indicated job constraints affected spare time activities. It was found that when work is socially isolating, workers spent less time in organized activities. Not having the opportunity to talk on the job resulted in more time spent in activities such as fishing and reduced rates of participation in community associations. The focus of this study on a

particular work environment and the impact on social skills and leisure time are why it was important to the present study.

***Summary.***

Research on job satisfaction reveals many factors can impact satisfaction levels. Work environments, job type, age and other variables can influence job satisfaction levels. This was important for the present study because these variables may impact the relationship between the RBHWS and job satisfaction.

**Research more closely linked to the present study.**

Grubb (1975) examined relationships between job boredom and recreation participation patterns among three groups of auto assembly line workers. Three randomly sampled groups of 100 hourly production workers were selected from four plants. One limitation of this study was that all participants were men. This was probably representative of autoworkers at the time, but limits the application of the research results. The questionnaire was self-administered (a limitation) and was selected because it allowed convenient contact with a large number of workers. Most questions were measured on a five-point, Likert type scale. The author acknowledged prior work that contributed to the scales and developed them specifically for this study. Two hundred and thirty seven of the 300 subjects selected returned usable questionnaires, a strong return rate. The study had two hypotheses: 1) Assembly line tasks involving completion of a production unit were perceived as shorter in duration, and less boring than those that involved partial fabrication only; 2) Differing perceptions of boredom resulting from the performance of repetitive production work reflects differences in worker levels of recreational activity. A significant positive

relationship was found between perception of task duration and job boredom within each of the work groups. Pearson correlation coefficients were 0.36, 0.55 and 0.47 ( $p < 0.01$ ).

Mean levels of participation in four of the nine favorite activities were related to job boredom. The activities included: camping and boating ( $p < 0.01$ ), handicrafts ( $p < 0.10$ ), and outdoor team games ( $p < 0.15$ ). Grubb concluded by stating the results suggested relationships between task repetitiveness, job boredom, and frequency of participation in recreation. An interesting follow up on the concept of boredom and recreation would be to study boredom in the concept of office jobs or service-related jobs. This would be of particular interest related to people who are in employment situations where they are underemployed, making boredom likely, and how that impacts recreation. This study was important because of its focus on job boredom and leisure activities.

London, Crandall & Seals (1977) examined the quality of job and leisure satisfaction and its relationship to perceptions of quality of life. The data was collected by interviews in 1972 using a national probability sample of 1,297 American adults. This research on quality of life suggested job satisfaction and work attitudes cannot be understood in isolation. London et al. (1977) focused their research on leisure, which was an area of research often overlooked at that time.

The data used in this research included seven demographic items and thirteen perceptual items measuring feelings about leisure, work, and life as a whole. A seven-point Likert scale was utilized for respondents to rate their feelings about each item. The question “how do you feel about your life as a whole” was asked twice, separated by about fifteen

minutes, and had an intercorrelation of .61. References supporting the reliability and validity of the scales were provided.

The analyses for this study on the variables related to job and leisure were examined to determine multicollinearity among items. Multiple regression was used to measure the contribution to life satisfaction made by job and leisure satisfaction. The unique contribution each made to quality of life was assessed. Analyses was also conducted to determine how the five job satisfaction items and six leisure items taken as a whole, contributed to quality of life. Analysis of the potential moderators of job, leisure and life satisfaction were performed for 19 demographically defined subgroups (e.g., age, race, marital status).

The results of the research showed intercorrelations among job satisfaction items ranging from .24 to .48, with a median of .40. For the leisure items, the intercorrelations ranged from .05 to .37, with a median of .20. The intercorrelations between job and leisure items ranged from .01 to .28., with a median of .14. The two variables were functionally independent because the maximum intercorrelation among job and leisure items accounted for only 8% of the variance. For the entire sample, job and leisure items accounted for 25% of the variance in quality of life. Significant unique variance was contributed by the satisfaction items: things done with family; things done with friends; the work itself; pay; fringe benefits; and security. Job satisfaction accounted for a unique variance of 4.3% in quality of life. Taken as a group, leisure items accounted for a unique variance of 13.6% in quality of life. Based on an average of the leisure items, leisure satisfaction was lowest for the mid socioeconomic group ( $M=2.71$ ) and highest for the oldest age group ( $M=2.46$ ). Job

items were lowest for blue-collar workers ( $M=2.77$ ) and highest for those with some college ( $M=2.60$ ) and those who were divorced, widowed or separated ( $M=2.60$ ).

Regression analysis revealed leisure items taken as a group contributed significant unique variance to: males, females, whites, ages 16-29, 30-49 and 50-65, married persons, those with high school education or some college, college graduates, those in the high or mid socioeconomic group, white-collar workers and blue-collar workers. Beta weights and proportions of unique variance from the regression were then examined.

The results of this study indicated participants tended to segment experiences so that feelings from work and leisure are unrelated. One of the limitations identified about the study was that the job and leisure items were limited to those listed in the survey. Noticeably absent from the list were any activities that involving nature (e.g., hiking, gardening); however, this research was important to the present study because of its comparison of job satisfaction and leisure satisfaction.

Cox, Shephard & Corey (1981) researched the influence of employee fitness programs on fitness, productivity and absenteeism. The general attitudes of the employees participating in fitness programs towards their employment improved. Employee turnover was lower for program participants over a 10 month period compared to those who did not participate. Absenteeism was also reduced. This research demonstrated the importance of exercise to job productivity.

Duvall-Early & Benedict (1992) studied the relationship between privacy and different components of job satisfaction. The Minnesota Satisfaction Questionnaire (MSQ) was used to measure how workplace architectural privacy related to overall job satisfaction.



A survey was distributed to 200 secretaries and 130 responded. The secretaries' evaluations of their perceived level of privacy were correlated with architectural privacy. Using stepwise multiple regression, the presence of a door was the best predictor of perception of privacy, followed by co-workers not visible, and co-workers not within 10 feet. The findings of this study indicated for professional secretaries, architectural privacy may have a unique set of functions that were related to job satisfaction in both the short and long term. The importance of this research is based on its focus on privacy and the use of the MSQ.

Haworth & Hill (1992) studied 20 white-collar workers between the ages of 20 and 30 measuring motivation, enjoyment and access to various experiences in work and leisure, and the relationship this had to psychological well-being. The primary aims of this research were to see if both intrinsic and extrinsic motivation were correlated with positive aspects of psychological well-being; to see if the experience categories thought to be provided by employment were important in leisure; to determine if flow was associated more with work than leisure; and to investigate the dynamics of person-situation interactions in work and leisure. Previous research (Jahoda, 1986) had indicated leisure was associated with one category of experience, and work with another. Haworth et al. (1992) believed there was some spillover, and that both work and leisure made contributions to psychological well-being.

To collect data for this research, a short questionnaire, psychological scales and the experience sampling method (ESM) were utilized. The questionnaire was developed by the authors. Goldberg's (1978) General Health Questionnaire was used to measure psychological well being. The experience sampling method required participants to carry a time diary in

which a series of questions were answered eight times a day for eight consecutive days. The respondents carried a beeper, which was activated each time they needed to indicate a response. The findings of the study related to leisure found enjoyment in work and leisure correlates with psychological well-being. Results of the study also revealed categories of experience thought to be important for psychological well-being and considered to come primarily from work, can be obtained in leisure. This research was of significance because it linked leisure activities to psychological well-being.

O'Driscoll, Ilgen & Hildreth (1992) surveyed 120 employed people to learn more about the demands on their time from work and non-work activities, and the degree of interrole conflict experienced. Changing values toward work and career orientations have also demonstrated the impact work and non-work experience have on each other (Collin & Young, 1986; Lindsay & Knox, 1984; Pryor, 1987). O'Driscoll et al. (1992) believed conflict between work and non-work roles caused strain, dissatisfaction with the job, and changes in attitudes toward work.

The survey was distributed to 560 residents of Lansing, Michigan who were randomly selected from the telephone directory. Recipients of the survey and cover letter were invited to complete the survey if they were employed and worked more than 20 hours per week. A 21% response rate was realized (63 men and 57 women). Respondents were asked how many hours per week they worked and how much was overtime. Off-job demands were differentiated into eight categories (household/family chores, family pursuits, sport, organized social activities, community activities, informal social engagements, hobbies and self-education). Respondents were asked to rate how many hours per week they spent on

each of the areas. The 15-item Organizational Commitment Questionnaire was used to measure organizational commitment and had reported internal consistencies of .82 to .92 (Mowdy, Porter, and Steers, 1982). To measure psychological strain the General Health Questionnaire 12 item version was used which had reported alphas of .82 to .90 (Goldberg, 1978). Both questionnaires had good internal consistency.

Correlations were computed between the major variables. O'Driscoll et al. (1992) took particular note of the links between time demands and perceptions of how much one area interfered with another. The variable (time invested in job-related activities) was significantly correlated with the degree of interference between job demands and life off the job ( $r=.47$ ,  $p<.001$ ). The demands of off-job requirements did not link substantially with off-job interference with work commitments ( $r= -.13$ ).

Path analysis was used to compare the appropriateness of the three theoretical models. The first model (A) predicted the relationship between job and off-job interference with satisfaction would be mediated by psychological strain. Of the eight path coefficients, five were significant. Significant linkages were found between time devoted to the job, the extent of job interference with life off the job, and psychological strain. Strain was associated with job satisfaction, off-job satisfaction and organizational commitment. The model did not support the prediction that off-job time commitment, off-job interference and psychological strain were related. The goodness of fit index for the model was low ( $Q= .60$ ). In the second model (B) the no-mediation model, only two of the ten regression coefficients were significant. In model C (satisfaction-mediation model), six of the eight path coefficients were statistically significant. This research confirmed satisfaction both on the job and off was a

predictor of individuals' reactions. Job satisfaction was found to be the most significant contributor to heightened organizational commitment and reduction of psychological strain. The interference of time demands from work with time demands off the job was significantly related to lower off-job satisfaction and higher levels of psychological strain. This research highlighted the importance of psychological strain on job satisfaction, and how work-life balance impacts satisfaction with the workplace.

Rice, Frone and McFarlin (1992) researched work-nonwork conflict and how that impacted perceived quality of life. The primary hypotheses for this study were the relationships between work-family conflict and global satisfaction, and between work-leisure conflict and global life satisfaction were fully mediated by measures of domain specific satisfaction. A sub sample of 823 respondents from the 1977 Quality of Employment survey was used for this research. The sub sample of 1,515 participants was selected based on the following criteria: 1) They were at least 18 years old; 2) They worked at least 35 hours a week; 3) They were married or parents of children under 18; and 4) They provided analyzable scores on all 166 variables included in the study. Measures for global life satisfaction, job satisfaction, family satisfaction and leisure satisfaction were used.

Path analysis was used to calculate four regression equations to estimate the path coefficients to test the hypotheses. The direct relationship between work/non-work conflict and global life satisfaction was non-significant. When the three domain satisfaction scores were controlled, work-leisure conflict and work-family conflict did not have significant effects on global life satisfaction (betas = -0.04 and 0.00). The indirect relationships between work non-work conflict and global life satisfaction were significant. Work-leisure conflict

was found to be a significant predictor of job and leisure satisfaction (betas = -0.15 and -0.23). Work-family conflict was found to be a significant predictor of both job and family satisfaction (betas = -0.11 and -0.11). Job satisfaction, leisure satisfaction, and family satisfaction were all significant predictors of global life satisfaction (betas = 0.34, 0.18 and 0.43). The results of this study suggested job satisfaction was influenced by non-work considerations, and also demonstrated quality of life variables such as global life satisfaction and non-work satisfaction were influenced by work.

Althiler and Motta (1994) researched the effects of aerobic and non-aerobic exercise on employee state and trait anxiety levels, absenteeism, job satisfaction, and resting heart rate in a workplace setting. Participants in the study were found to have reduced anxiety levels, but experienced no changes in job satisfaction, absenteeism or resting heart rate related to aerobic and non-aerobic exercise. This research was included because of its focus on exercise and anxiety.

Daley and Parfitt (1996) researched the mood states, physical well-being, job satisfaction and absenteeism in members of a British health and fitness club. Analysis indicated members of the health club were more satisfied with their jobs and had fewer days absent than non-members. Allowing and providing employees with the opportunity to exercise had important implications for how employees generally felt about their jobs. This research was included because it continues to demonstrate the link between leisure activities and job satisfaction.

Decker (1997) studied the occupational and non-occupational factors in job satisfaction and psychological distress of nurses. The Minnesota Satisfaction Questionnaire

(MSQ) was used as a guide for the survey section on occupational role relations. The study had an emphasis on the impact of job demands on non-job roles. Regression analysis revealed that job non-job conflict was the variable with the second highest impact on job satisfaction. This study was included because it utilized the MSQ and included analysis of non-job conflict issues.

Leather, Pyrgas, Beale and Lawrence (1998) studied the impact of windows in the workplace. This research focused on the direct and indirect effects of windows in the workplace on job satisfaction, intention to quit and general well-being. The impact of general illumination levels, penetration of sunlight and view were examined. How these factors moderated the negative consequences of job stress was analyzed. One hundred white-collar and blue-collar workers at a wine producing organization in the Mediterranean region of Southern Europe were sampled. The results indicated a significant direct impact for sunlight penetration on job satisfaction, intention to quit, and general well-being. Another important finding of the research was views of natural elements including trees, vegetation, plants and foliage were found to moderate the negative impact of job stress on the intention to quit. Views of nature also had similar impact on general well-being. This research linking nature and job satisfaction provided a jumping off point for research on the RBWS and job satisfaction.

Pearson (1998) studied job satisfaction, leisure satisfaction and psychological health. Pearson's discussion was helpful, because it referenced a number of studies that examine work and leisure variables (e.g., London, Crandall, & Seals, 1977; Haworth & Hill, 1992; Rice, Frone, & McFarlin, 1992; Winefield, Tiggemann, and Winefield, 1992). The study

provided very good detail related to the theoretical construct, methods, results and suggestions for future research. Pearson identified a weakness of prior research in this area, in that it had revealed that leisure can compensate for an unsatisfactory work experience, but had not addressed the relationship between job satisfaction, leisure satisfaction and psychological health. The research questions for this study were: 1) To what extent do job satisfaction and leisure satisfaction predict psychological health? 2) Are there differences in the relationship of job satisfaction and leisure satisfaction with psychological health for blue-collar and white-collar/professional workers? This study was conducted with 189 men who were employed full-time. Stepwise regression analysis revealed job satisfaction was the better predictor of psychological health. Leisure satisfaction; however, added considerably to that prediction. Job satisfaction was significantly higher for white-collar workers than for blue-collar workers. The prediction of psychological health was not impacted by occupational status. Quota sampling was used for the study meaning a convenience sample was used, and the results could not be generalized to the overall population. The racial diversity of the sample was limited with 157 of the participants being white. The Job Descriptive Index was used to measure job satisfaction. This scale has been used extensively, and has been found to be reliable and valid (Smith, Kendall & Hulin, 1969). The Leisure Satisfaction Measure (LSM) developed by Beard and Ragheb (1980) was used to measure leisure satisfaction. Pearson indicated that Beard and Ragheb reported an alpha reliability of .96. Riddick (1986) reported a Cronbach's alpha of .92, and 160 experts in the field had reviewed its content validity favorably. The Mental Health Inventory (Ware, Johnston, Davies-Avery, & Brook, 1979) was used to measure psychological health. Cronbach's alphas

on the total score for this scale were determined by Veit & Ware (1983) to be .96. All scales used for this study were valid and reliable giving credibility to the results. As mentioned earlier the findings of this study are limited because of the sample being from one area, and collected using a convenience sample. This research is important because it considers the type of employment as a variable.

The California Energy Commission (2003) conducted a study of the impact of windows in the office environment and worker performance. Having a better view out a window was the most consistent factor impacting worker performance. Size of view and vegetation content were important aspects of this variable. Research of call center employees found calls were processed 6% - 12% faster when employees had the best possible view. Tests of memory recall and mental function found employees performed 10% to 25% better in these areas if they had the best possible view. This research demonstrated the value of views of nature in the workplace setting.

Ozyurt, Hayran & Sur (2006) studied the predictors of burnout and job satisfaction for Turkish physicians. In addition, the relationship between demographic characteristics and job characteristics was used to better understand burnout and job satisfaction. One of the research instruments used for this study was the Minnesota Satisfaction Questionnaire (MSQ). A random sample of 598 physicians from healthcare institutions in Istanbul, Turkey was used. The results of the research indicated satisfaction was inversely correlated with emotional exhaustion and depersonalization, and positively correlated with personal accomplishment. Using multilevel regression, the number of vacations taken by physicians was the most significant predictor of job satisfaction. The number of shifts per month was a



predictor of burnout. At an organization level, public ownership of healthcare facilities was also a predictor of burnout. Restoration was a central component of the RBHWS and this research linked restoration with job satisfaction.

Pearson (2007) conducted a study to examine the relationship between role overload, job satisfaction, leisure satisfaction and psychological health for women employed in a number of different occupations. Three research questions were addressed: 1) What are the bivariate relationships between role overload, job satisfaction, leisure satisfaction, and psychological health; 2) What are the multivariate relationships between role overload, job satisfaction, leisure satisfaction, and psychological health; and 3) To what extent do role overload, job satisfaction, and leisure satisfaction predict psychological health?

The sample for this study consisted of 155 women who were employed full-time (30 hours or more a week) and lived in a small metropolitan area or surrounding rural community. The participants were obtained through convenience sampling utilizing volunteer recruiters. Two hundred and seventy one packets were distributed to the volunteer recruiters, and 199 were returned, resulting in a strong 73% response rate. Forty four surveys were not used due to insufficient responses or other factors.

The Role Overload Scale (ROS; Reilly 1982) was used to measure role overload. It had 13 items and measured with a five-point Likert type scale. Reilly reported a Cronbach's alpha of .88. The Cronbach's alpha in this study was .94. The Job Descriptive Index (JDI: Smith, Kendall, & Hulin, 1969) was used to measure job satisfaction. It had 72 items and measured job satisfaction in five areas: work, pay, promotions, supervision, and coworkers. The reliability and validity of the JDI has been well established with Cronbach's alphas of .86

and .72 in previous studies. The Cronbach's alpha for this sample was .90. The Leisure Satisfaction Measure (LSM: Beard & Ragheb, 1980) was utilized to assess leisure satisfaction. It consisted of 51 items and measured with a five-point Likert type scale. The content validity for this instrument has been established by positive reviews from over 160 experts. Beard and Ragheb reported a Cronbach's alpha of .92. The Cronbach's alpha for this study was .97.

The Mental Health Inventory (MHI) was used as a broad measure of psychological health. It consisted of 38 Likert scale items in which respondents were asked to report the frequency of intensity of a psychological symptom over the past month. Veit and Ware (1983) reported a Cronbach's alpha of .96 for the total score. The current study had a Cronbach's alpha of .96. Pearson correlations were used to determine the bivariate relationships between role overload, job satisfaction, leisure satisfaction and psychological health addressed in question one. All the key variables were significantly correlated ( $p < .0001$ ) to psychological health: Role overload ( $r = -.54$ ); job satisfaction ( $r = .44$ ); leisure satisfaction ( $r = .41$ ). Role overload was statistically related to job satisfaction ( $r = -.27$ ,  $p < .0008$ ) and leisure satisfaction ( $r = -.30$ ,  $p < .0001$ ). No significant correlation was found between job satisfaction and leisure satisfaction ( $r = .08$ ,  $p = .3166$ ).

A multiple regression model for predicting role overload was computed with role overload, job satisfaction, leisure satisfaction, and number of children residing in the home as predictor variables. All of the variables except number of children residing in the home significantly added to the regression equation. The standardized beta weights were  $-.35$  ( $p < .0001$ ) for role overload;  $.28$  ( $p < .0001$ ) for job satisfaction;  $.31$  ( $p < .0001$ ) for leisure

satisfaction; and  $-.01$  ( $p=.8652$ ) for number of children in the home. Stepwise regression was used to determine which variables in the regression equation contributed the most unique variance. The combination of role overload, job satisfaction, and leisure satisfaction was a stronger predictor of psychological health than the combination of job satisfaction and role overload, or role overload by itself.

Shin (2007) studied the influence of views of a forest through a window on job satisfaction and job stress. Shin described how windows have been found to be important features of the workplace based on employee preference, and also for the benefits they offer for health and well being. The view may offer opportunities for restoration depending on the type of view available. This study looked specifically at two primary influences: existence of forest views through windows in workplaces; and absence of forest views through windows in workplaces. Nine hundred and thirty one office workers were surveyed in Seoul, South Korea: Four hundred eighty one had forest views from their workplaces, and 450 did not have forest views from their workplaces. The results of the study indicated a significant direct affect of forest views from windows on job satisfaction and stress. Respondents' gender, age, and job category did not influence window view effects. If research can link view of forests with job satisfaction, it may be possible to link the RBHWS and job satisfaction.

Dravigne, Waliczek, Lineberger, and Zajicek (2008) surveyed employees in office settings in the Midwest. The questions on the survey related to job satisfaction, physical work environment, the presence/absence of live interior plants and/or windows, environmental preferences of the office workers, and demographic information. Significant differences in

satisfaction (and the related categories of nature of work, supervision, and co-workers) were found between employees who worked in office space with live interior plants or windows with a view. The results of the study indicated individuals who worked in offices with plants had higher perceptions of their jobs and the work they did. The research also indicated they had higher overall quality of life scores. If plants improved satisfaction levels, can escaping to more natural environments increase levels of satisfaction?

***Summary.***

Participation in leisure activities has been linked to increased job satisfaction. Having a window with a view of nature has also been found to positively impact job satisfaction in a number of studies. If these can impact job satisfaction, it supports the belief that leisure activities in nature can positively impact job satisfaction as well.

**Chapter Summary**

This chapter provided a review of several key individuals responsible for the advancement of the wilderness movement in the United States. A number of definitions from the related literature were given for wilderness, solitude, privacy, and job satisfaction. In addition, theories and literature relating to RBHWS and job satisfaction were reviewed. This literature review revealed considerable research has been conducted on wilderness solitude; restorative environments; and job satisfaction; however, no research has been identified focusing on the restorative benefits of hiking in wilderness solitude and job satisfaction.

## **Chapter III**

### **Methods**

This chapter includes information related to how this study was conducted. It includes: 1) research design; 2) sampling methods; 3) development of the survey instrument; and 4) approach used to analyze the data.

#### **Research Design**

The purpose of this exploratory research was to better understand the relationship between the restorative benefits of hiking in wilderness solitude and job satisfaction. This study serves as a jumping off point for future research on the topic. An ex post facto, one shot design was used, which is a non-experimental survey design (Sproull, 1988). An ex post facto design refers to the event of interest having already past. Non-experimental survey research design is one in which an experimental variable is not introduced (Sproull, 1988). To learn more about this relationship, a self administered online survey was utilized for this study. A survey is appropriate to use in research when participant self-reports are the best source of information (Sproull, 1988). The survey was cross sectional, with the data collected at one point in time.

#### **Sampling Plan**

A purposeful convenience sample was used for this research. “A convenience sample is a non-random sampling method in which the researcher uses some convenient group or individuals as the sample” (Sproull, 1995, p. 19). The advantages of using a convenience sample include: 1) easy access to a sample; and 2) it is quicker and more economical than other methods. The disadvantages are it is non-random and can potentially be biased. A

convenience sample was used for this research because of limited access to the desired population, as well as time constraints. To gather data from the sample an online survey was developed and available for participant completion. The sample had access to the survey on the Facebook pages of the Appalachian Trail Conservancy (ATC), and other outdoor related organizations such as the American Hiking Society, and the Triangle Outdoors and Hiking Group. These were utilized because of the access they provided to the sample, and the ability to provide quick distribution of the survey instrument. To allow additional access to the survey, a link was included in an email sent by the ATC to a sample of hikers who had registered with the organization as having hiked 2,000 miles on the Appalachian Trail. The mileage used to reach 2,000 miles could be cumulative, over an extended period of time on numerous trips, or from a thru hike of the entire Appalachian Trail on one trip.

Approximately 450 hikers who had submitted information to be included on this list since January 2007 were emailed information about the survey. Additional access to the sample was provided by word of mouth regarding the research study.

### **Data Collection**

This section identifies the data collection methods used for the present research. The survey was available online at [www.hikingresearch.com](http://www.hikingresearch.com). The survey was targeted to people who hike. Hiking is an outdoor recreation activity that involves walking in wilderness or natural areas. Someone who is hiking is considered to be a hiker. The online data collection method allowed hikers to complete the survey and reflect on prior experiences of hiking in wilderness solitude.

An online survey was developed using SurveyMonkey.com drawing upon prior scales developed by Hammitt & Brown, 1984; Walker, Hull & Roggenbuck, 1998; and the Minnesota Satisfaction Questionnaire (MSQ) short form. The survey was made available online from April 9, 2010 through May 3, 2010 at [www.hikingresearch.com](http://www.hikingresearch.com). To collect data, information was posted about the survey on the Facebook pages of hiking- related groups (e.g., The Appalachian Trail Conservancy (ATC) and its regional trail maintenance clubs, The American Hiking Society, The Pacific Coast Trail, *Backpacker Magazine*, The American Hiking Society, and The Triangle Hiking and Outdoors Group. The Information Services Manager at The Appalachian Trail Conservancy sent a message to the organizations Facebook fans on Saturday, April 10 to encourage participation. She also sent an email to 450 individuals who were added to their “2,000 miler” database from January 2007 until April 2010. Hikers submitted their information to the ATC for inclusion in this listing. The Southern Regional Office of The Appalachian Trail Conservancy (Georgia, North Carolina and Tennessee) included information on the survey in their April e-newsletter. The e-newsletter was distributed to leadership of the five southern clubs of the ATC, all Appalachian Trail Conservancy staff, and agency partners (including the United States Forest Service, National Park Service, non-profits, teachers and hikers). The ATC was utilized because of their extensive membership (over 35,000 members) and contacts in the hiking community. Information about the study was posted on Whiteblaze.net, a discussion board for people interested in hiking the Appalachian Trail. An email with a link to the survey was sent to over 100 people who expressed interest in the research. A poster was developed and placed in outdoor retail stores in Asheville, NC. The poster was also placed in several

locations at the Association for Experiential Education Southeast Region 2010 Conference, which was held April 9-11 in Montreat, NC. To help raise awareness of the study an article was published in the Concord-Kannapolis Independent Tribune (NC) on Sunday, April 18, 2010. The article was also available online. Strayzine.com, an online outdoor adventure magazine, posted a story about the research. A number of hiking blogs in the United States and Canada found information about the project on Facebook and from the article, and posted information about the survey. An email address was created ([hikingresearch@yahoo.com](mailto:hikingresearch@yahoo.com)) to facilitate communication if individuals had questions.

### **Instrumentation and Measurement**

This section includes a description of the survey instrument utilized for this research, and discusses the validity and reliability for the scales that were modified for this study.

#### **Instrumentation.**

The RBHWS and the relationship to job satisfaction survey instrument contained five sections. The first section, “Information about this research,” was an introduction to the research project, describing the purpose of the research; who was conducting it; contact information for questions related to appropriate use of the survey; and contact information for the survey administrator. The second section, “Functions of solitude when backcountry hiking”, was adapted from an item scale developed by Hammitt & Brown (1984) with instructions asking participants to indicate the level of importance placed on items related to their experience in wilderness. The scale was modified from the original format to adjust five questions so that the focus shifted to the work environment. This modification was made to help better reveal how the wilderness solitude experience impacted individuals related to



their work. The five items that were modified were: “For disengaging from everyday social roles” was updated to read “for disengaging from everyday work roles”; “An emotional release from everyday life” was updated to read “an emotional release from work”; “for exploring and thinking through personal matters and concerns” was updated to read “for exploring and thinking through work matters and concerns”; “for recovering from troubled or depressing moments in one’s life” was updated to read “for recovering from troubled or depressing moments at work”; and “for evaluating personal matters with intimate friends” was updated to read “for evaluating work matters with intimate friends.” The prompt: “How important for you are these general functions of solitude when backcountry hiking,” was followed by 23 items (See table 3.1). The level of importance for each item was recorded on a seven point scale with a range of one (extremely important); two (important); three (somewhat important); four (neutral); five (somewhat unimportant); six (unimportant); and seven (not at all important). When the term backcountry hiking was used, it was referencing what is identified in this research as the restorative benefits of hiking in wilderness solitude.

Table 3.1

*The 23 items used for the second section of the survey instrument. Participants were asked, “How important for you are the following functions of solitude when backcountry hiking?”*

1. For experiencing a period of personal autonomy.
2. Personal autonomy/self identity.
3. An emotional release from work.
4. For recovering from troubled or depressing moments at work.
5. For maintaining one’s sense of individuality.
6. For limiting visual and verbal interaction with strangers.
7. For resting the mind from anxiety and mental fatigue.
8. As a relaxed period for reflection upon past work experiences.
9. As an environment where you can maintain a desired “mental distance” from other individuals.
10. For disengaging from everyday work roles.
11. For releasing psychological stress.
12. For being alone with one’s individual thoughts and feelings.
13. For regrouping one’s thoughts.
14. For developing a sense of independence.
15. For the development of individuality concerning personal and spiritual concerns.
16. For exploring and thinking through work matters and concerns.
17. For self evaluation and re-directing one’s life-time goals.
18. For evaluating work matters with intimate friends.
19. As a private setting communicating with a few friends.
20. Self evaluation.
21. For identifying one’s inner self.
22. For releasing physical tension.
23. As an opportunity for sharing confidences and intimacies with those you trust.

The third section of the instrument was an item scale adapted from a survey developed by Walker, Hull, & Roggenbuck, 1998. The section was titled “Recollected Benefits of Backcountry Hiking” which instructed respondents to indicate the level to which each benefit had been experienced. The prompt: “to what extent did your time in wilderness solitude provide the following benefits?” was followed by seven items: 1) learn more about who I am); 2) better understand my work and values; 3) improve my sense of control over

my work life; 4) improve my self reliance; 5) gain humility; 6) grow spiritually; and 7) enhance my environmental ethic. Two items in this scale were adjusted to help gain an understanding of how spending time in wilderness solitude impacts work-related issues: “Better understand my life and values” was updated to read, “better understand my work and values”; “improve my sense of control over my life” was updated to read “improve my sense of control over my work life.” The level that each was experienced was recorded on a five point Likert scale with a range of 1 (not at all); 2; 3 (somewhat); 4; and 5 (a lot). When the term backcountry hiking was used it referenced what was identified in this research as hiking in wilderness solitude. Wilderness and backcountry environments are very similar, but wilderness is often an officially designated area. The term backcountry was used to help the survey participant understand participation in the survey was not limited to individuals who had spent time in officially designated wilderness areas.

The fourth section of the instrument, called job satisfaction, utilized the entire Minnesota Satisfaction Questionnaire (MSQ) Short Form. This included an item scale which instructed respondents to indicate their level of satisfactions with each of 20 job attributes. The prompt: “Rate how satisfied you are with the following aspects of your job” was used. How each item was experienced was measured on a scale from 1 (very dissatisfied); 2 (dissatisfied); 3 (neither satisfied or dissatisfied) 4 (satisfied); and 5 (very satisfied).

The fifth section of the instrument was titled “Demographic Information.” The primary purpose of this section was to learn more about participant age, gender, hours worked per week, income, working inside or outside, noise level of work environment, educational attainment level, living in rural, urban, or suburban areas, working in rural,

urban, or suburban areas, and frequency and duration of visits to wilderness. Participant age was measured using a drop down scale ranging from 18 to 100. Gender was measured with two items female or male. The number of hours worked per week was measured with a drop down scale ranging from 1 to 100. Hours of non-paid work per week was measured using a drop down scale ranging from 0 to 100. Income was measured with ten items: over \$100,000; \$75,000 - \$100,000; \$50,000 - \$74,999; \$35,000-\$49,999; \$25,000-\$34,999; \$20,000-\$24,999; \$15,000-\$19,999; \$10,000-\$14,999; \$5,000-\$9,999; and under \$5,000. Working inside or outside was measured using two selections: inside or outside. The noise level of the work environment was assessed using five selections: 1) Quiet; 2); 3) some noise; 4); and 5) loud. Level of education was measured using five options: Some high school, high school graduate; some college; college graduate; and graduate school. The living environment and work environment questions had three options: urban, suburban and rural. To determine the number of times participants had hiked in the past year, a drop down scale was used ranging from 0 to 365. To determine the number of nights spent on overnight backpacking trips in the past twelve months, a drop down scale was used ranging from 0 to 365. To determine the longest number of days spent on a backcountry hiking trip in the past five years a drop down scales was used with a range from 0 to 365. The variables age, gender, level of education, income, and frequency and duration of trips in wilderness were used by Walker, Hull & Roggenbuck (1998) in previous research. Shinn (1993) also used the variables gender, age, and level of education and found each to be significant. Cole (2001) used variables related to living in rural or urban environments in his study of wilderness experience, but they were not found significant. The variables working inside or outside, and noise level of work

environment were used because noise level in the work environment can impact the need for restorative environments (Hartig, Evans, Jamner, Davis & Garling 2003).

### **Validity.**

The validity of Hammitt & Brown's (1984) scale used in section two was determined by the authors of that research using factor analysis, principal factoring with iteration and orthogonal varimax rotation. Individual factor loadings ranged from .43 to .74. Only Eigen values of greater than 1.0 were extracted. The factor analysis revealed five factors: 1) Emotional release; 2) Personal autonomy; 3) Reflective thought; 4) Limited communication (personal distance); and 5) Limited communication (intimacy).

Validity for the third section of the survey, adapted from Walker, Hull, & Roggenbuck, (1998) was determined by the authors using factor analysis with a varimax rotation. This revealed factor loadings for the nine items on the original scale were greater than .70. The eigenvalue for the 9 items used in this survey was 7.49, explaining 41.6% of variance. The nine items factored together into one factor.

Construct validity was used as evidence for scale validity for the MSQ (Weiss, Dawis, England & Lofquist, 1967), used in the fourth section. Construct validity is obtained from a scale performing according to theoretical expectations. Evidence for support of the MSQ was indirectly obtained from construct validation studies of the Minnesota Importance Questionnaire and other studies based on the Theory of Work Adjustment. Weiss et al. found sufficient evidence to support the belief the MSQ measured satisfaction in a way that supports the Theory of Work Adjustment. The content validity of the MSQ was demonstrated

through the extensive use of the scale in research studies and the continued reliability of the scale.

### **Content Validity.**

Content validity of the restorative benefits of hiking in wilderness solitude and the relationship to job satisfaction survey was conducted by following the procedures as indicated by Lawshe (1975). These procedures involved: 1) identifying content experts in the subject area of the research; 2) asking each expert to respond to a question following each survey item. The question: Is the skill (or knowledge) measured by this item: A) essential; B) useful but not essential, or C) not necessary; 3) responses from each of the experts were pooled and the number indicating essential for each item was calculated. A content validity ratio (CVR) was calculated for each item. The minimum value required to keep an item corresponds to the number of experts participating. Fifteen subject matter experts (SMEs) reviewed the wilderness solitude and recollected benefits scales to subjectively assess the correspondence between the individual items on each scale and the concept of wilderness solitude. SMEs needed to have at least a master's degree in a field related to parks & recreation, environmental psychology, or other outdoor/nature-related field, or an equivalent combination of education and experience. For example, one of the subject matter experts had a master's degree and worked as wilderness manager in Tongass National Forest in Alaska. The evaluation instrument was available online for evaluators to complete beginning April 1, 2010, and was open through April 7, 2010. Fifteen SMEs completed the evaluation. Lawshe (1975) recommended the minimum CVR value for each item be .49 when using 15 expert reviewers. The evaluation of the SMEs identified six items on the two scales that were below

the .49 value, thus not essential. The six items were: 1) for developing a sense of independence; 2) for maintaining one's sense of individuality; 3) for exploring and thinking about work matters; 4) for limiting visual and verbal interaction with strangers; 5) for evaluating work matters with intimate friends; and 6) as an opportunity for sharing confidences and intimacies. It was determined to include these items in the survey anyway, because they had been used in previous survey research.

### **Usability.**

A pilot study was conducted as a trial run of the procedures and the instrument to be used. A pilot study is important to improve questions, format, and scales (Creswell, 2009). The survey was distributed to 25 individuals who hiked and were employed. They were instructed to complete the survey and provide feedback via email or telephone related to the usability of the survey. No usability issues were identified by pilot study participants.

### **Reliability.**

Internal consistency for section two, functions of wilderness solitude, was determined using Cronbach's alpha by Hammitt & Brown (1984). Values for four of the factors were above .70 as determined by Hammitt et al. The Cronbach's alpha for each of the five factors were: 1) Emotional release (.74); 2) Personal autonomy (.81); 3) Reflective thought (.81); 4) Limited communication: Personal distance (.74); and 5) Limited communication: Intimacy (.69). This provided evidence of acceptable scale reliability.

Reliability for section three, recollected benefits of wilderness solitude, was determined by Walker, Hull, & Roggenbuck using Cronbach's alpha. The nine items used in the original scale were found to be reliable with Cronbach's alphas of .93.

Weiss, Dawis, England & Lofquist (1967) reported reliability coefficients for each of five administrations of the MSQ (section four) were all greater than .70.

### **Data Analysis**

Analysis of the data for all procedures was conducted using the Statistical Package for the Social Sciences (SPSS).

### **Data Preparation**

Data preparation is important for identifying missing data, incorrect or inconsistent responses, or any unexpected findings (Sproull, 1988). Several methods were used to prepare the data. Before utilizing any statistical methods, the accuracy of the data was verified by examining it, scanning through the raw numbers, and making sure there were no errors in data entry. To determine errors in entry, the data was scanned for inconsistencies in responses (Sproull, 1988). According to Mertler and Vannatta (2005) it is important to address missing data, and it is appropriate to delete cases or variables that create problems. After the data was prepared, univariate outliers were tested for to ensure normality (a normal curve); and scatter plots were analyzed to determine linearity.

Univariate outliers were tested for by computing z scores to determine what was outside the acceptable cutoff. The standard scores, or Z scores, were used to analyze the number of standard deviations an observation fell above or below the mean, and which were outliers. Outliers needed to be identified because they can distort statistics. Also, results based on data that including outliers often cannot be easily generalized (Hair, Black, Babin, Anderson, Tatham, 2006).



To test for normality, a normal probability plot (or a histogram) was used to compare the goodness of fit of the cumulative distribution of data. The distribution was analyzed to determine kurtosis (peakedness or flatness) and skewness (balance of the distribution) (Hair, Black, Babin, Anderson, Tatham, 2006). A normal distribution is critical because it is the benchmark for statistical methods (Hair, Black, Babin, Anderson, Tatham, 2006).

The next assumption tested was linearity. Linearity is required for regression techniques. Linearity relates to the patterns of association between pairs of variables and the ability of the correlation coefficient to represent the relationship (Hair, Black, Babin, Anderson, Tatham, 2006). Linearity is used to describe the concept that the model has the properties of additivity and homogeneity (Hair, Black, Babin, Anderson, Tatham, 2006). Scatter plots were examined to determine linearity and multivariate outliers.

The descriptive statistics for this research were reviewed to gain a better understanding of the data. The descriptive statistics were illustrated in a table format.

To determine construct validity, the data was pre-screened by doing an exploratory factor analysis (Hair, Black, Babin, Anderson, Tatham, 2006). The principle components factor analysis technique was utilized so that the maximum variance was extracted. The orthogonal Varimax rotational method was used to simplify the interpretation of factors for the analysis. Only factors with eigenvalues, (which represent the amount of variance captured by a given component), of greater than 1.00 were extracted (Hair, Black, Babin, Anderson, Tatham, 2006).

Also, in the pre-screening stage, Cronbach's alphas were used to examine internal consistency. Internal consistency is needed to ensure scale reliability. Cronbach's alpha is a

reliability measure ranging from 0 to 1, with a value of .60 to .70 considered the lower limit of acceptability (Hair, Black, Babin, Anderson, Tatham, 2006). A Cronbach's alpha cut off of .70 was utilized (Nunnally, 1967).

The purpose of research question one was to examine the relationship between the RBHWS and the job satisfaction of individuals who were employed, or had recently been employed. To answer this question a Pearson's correlation (symbolized by the letter  $r$ ) was used to determine the relationship between the dependent variable job satisfaction and the independent variable RBHWS. Pearson's correlations are used to "assess the nature of the relationship between two variables when both are measured on an interval or ratio level of measurement" (O'Rourke, Hatcher & Stepanski, 2005, p. 125). When employing a Pearson's correlation it is assumed both variables should have a relatively large number of values (O'Rourke, Hatcher & Stepanski, 2005). It is also assumed when using a Pearson's correlation the values observed have been distributed normally (O'Rourke, Hatcher & Stepanski, 2005). Pearson correlation coefficients range in size from -1.00 through 0.00 to 1.00 (O'Rourke, Hatcher & Stepanski, 2005). A coefficient of 0.00 indicates no relationship exists between variables; correlations of -1.00 or +1.00 indicate a perfect relationship exists (O'Rourke, Hatcher & Stepanski, 2005). When utilizing a Pearson's correlation it is important to consider the magnitude of the correlation coefficients, not the statistical significance of the coefficients (O'Rourke, Hatcher & Stepanski, 2005). Two Likert scales were used to measure the RBHWS (one five-point, one seven-point); and a continuous scale was used to measure time spent in RBHWS. Job satisfaction was measured on a five-point Likert scale. During data analysis, the scales for the functions of wilderness solitude were

flipped (e.g., 7 is now extremely important) for reporting, using the edit, find, replace sequence. This was done to provide consistency with the other scales used for this research.

Stepwise multiple regression was used for questions two and three to determine how moderator variables impacted the relationship between the RBHWS and the dependent variable job satisfaction. Regression analysis is the most widely used dependency technique (Hair, Black, Babin, Anderson, Tatham, 2006). “Multiple regression analysis is a general statistical technique used to analyze the relationship between a single dependent variable and several independent variables” (Hair, Black, Babin, Anderson, Tatham, 2006, p. 169). Multiple regression involves six stages: identifying the research problem; addressing research design issues; reviewing assumptions in multiple regression; selecting an estimation technique; interpreting the regression variate; and validating the results (Hair, Black, Babin, Anderson, Tatham, 2006).

Concerns related to research design when using multiple regression include ensuring appropriate sample size. To maintain a power of .80 in multiple regression a minimum sample of 50 (>100 preferred) is needed (Hair, Black, Babin, Anderson, Tatham, 2006). A minimum ratio of observations to variables of 5:1 is needed, with a preferred ratio of 15:1 or 20:1 (Hair, Black, Babin, Anderson, Tatham, 2006). Ratios falling below 5:1 will lack the ability to be generalized (Hair, Black, Babin, Anderson, Tatham, 2006).

Assumptions for use of multiple regression analysis include: 1) determining the linearity of the phenomenon measured; 2) constant variance of the error terms; 3) independence of the error terms; and 4) normality of the error term distribution (Hair, Black, Babin, Anderson, Tatham, 2006).

The stepwise technique was used for this research. Stepwise estimation is one of the most common sequential approaches for variable selection (Hair, Black, Babin, Anderson, Tatham, 2006). This approach allows the examination of the contribution of each independent variable to the regression model (Hair, Black, Babin, Anderson, Tatham, 2006). The independent variable with the greatest contribution (or correlation with the dependent variables) is added first. Then, independent variables are selected for inclusion based on their contribution relative to the variable that is already included in the equation (Hair, Black, Babin, Anderson, Tatham, 2006). Partial F tests were computed for each variable in the regression model to determine if each made a significant contribution to variance (Hair, Black, Babin, Anderson, Tatham, 2006).

Multiple regression was used to answer question two: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by age, gender, income or education level. Multiple regression was also used to answer question three: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by selected moderating variables? The moderating variables included living or working in rural, urban or suburban environments, working inside or outside, working in quiet or loud environments, hours worked per week, non-paid hours worked per week, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years? Multiple regression was used because this procedure allows for analysis of moderating variables. A moderator

variable “occurs when the moderator variable, a second independent variable, changes the form of the relationship between another independent variable and the dependent variable” (Hair, Black, Babin, Anderson, Tatham, 2006, p. 201). A moderating variable identifies the conditions in which an independent variable influences a dependent variable. Demographic variables identified in the conceptual framework and listed above were used as moderating variables.

The order of factor loadings for the independent variable RBHWS and the moderator variables was determined by the software used for data analysis, SPSS. A convenience sample of 500 participants was surveyed, sufficient to conduct the stepwise multiple regression technique. The variables included were determined by SPSS.

### **An Overview of the Sample**

The sample for this study consisted of 500 participants who completed the survey online. An analysis of demographic information revealed the mean participant: was 40.8 years old; worked 40 hours per week; had 5.7 hours of non-paid work per week; hiked 19.6 times in wilderness over the past 12 months; spent 14.6 nights on overnight hiking trips in the wilderness over the past 12 months; and spent 34.3 consecutive days on the longest overnight hiking trip over the past five years. Sixty percent of participants were male; 42% were college graduates, and another 33% had attended graduate school; 80.8% lived in suburban or urban settings; 89% worked in suburban or urban settings; 88.4 % worked inside; 32.8% worked in an environment with some noise; and 24.9% earned over \$100,000 a year.

## **Summary**

This exploratory study investigated the relationship between the RBHWS and job satisfaction for people who are employed, or have recently been employed. Three research questions were utilized in this study. SPSS software was used to analyze the data. Pre-screening of the data included a factor analysis and determining Cronbach's alphas. To answer research question one a Pearson's Correlation was utilized. To answer questions two and three, multiple regression analysis was used. Stepwise regression allowed for the inclusion of moderator variables when examining the relationship between the independent and dependent variables.

## **Chapter IV**

### **Results**

#### **Introduction**

This chapter reviews the results of the survey on the restorative benefits of hiking in wilderness solitude and the relationship to job satisfaction. This review includes pre-data analysis, as well as: identifying univariate outliers; evaluating a probability plot to test for linearity; utilizing factor analysis to determine construct validity; testing for internal consistency using Cronbach's alpha; using a Pearson's correlation to evaluate the relationship between the restorative benefits of hiking in wilderness solitude and job satisfaction; and using stepwise multiple regression to determine how moderator variables impact the relationship between the restorative benefits of hiking in wilderness solitude and job satisfaction. Data was collected for this research using an online survey available at [www.hikingresearch.com](http://www.hikingresearch.com) from April 9, 2010 through May 3, 2010.

#### **Pre Data Analysis**

In the pre-data analysis stage the data was examined for accuracy by scanning through the numbers and making sure there were no data entry errors. Responses that were not complete were removed. A total of 803 participants started the survey. Of the 803 participants who started, 500 returned usable surveys (62%). If a response was missing a data point, it was discarded. A total of 303 cases were deleted due to missing values. The large size of the sample allowed individuals with missing data points or who answered questions with zero variability to be removed. According to Mertler and Vannatta (2005), it is

important to address missing data and it is appropriate to delete cases or variables that create problems.

During data analysis, the scales for the functions of wilderness solitude were flipped (e.g., 7 is now “extremely important”) for reporting, using the edit, find, replace sequence. This was done to provide consistency with the other scales used for this research.

Univariate outliers were tested for by computing z scores to determine what was outside the acceptable cutoff. Univariate outliers can be detected by standardizing all scores in the distribution (Mertler and Vannatta (2005). Since this was a large database (>100), the range +4.0 to -4.0 was used. Outlier detection was computed and converted to Z scores. In one instance, a participant answered all items the same; this case was deleted.

Table 4.1 contains data from the Kolmogorov-Smirnov test to assess normality. No issues of normality were identified.



Table 4.1

*Kolmogorov-Smirnov Test to Assess Normality of Wilderness Solitude and Job Satisfaction Scale Items*

	Kolmogorov Smirnov		
	Statistic	n	p
1. For experiencing a period of personal autonomy.	.295*	500	.000
2. Personal autonomy/self identity.	.282*	500	.000
3. An emotional release from work.	.242*	500	.000
4. For recovering from troubled or depressing moments of Work.	.228*	500	.000
5. For maintaining one's sense of individuality.	.235*	500	.000
6. For limiting visual and verbal interaction with strangers.	.227*	500	.000
7. For resting the mind from anxiety and mental fatigue.	.213*	500	.000
8. As a relaxed period for reflecting upon past work experiences.	.231*	500	.000
9. As an environment where you can maintain a desired mental distance from other individuals.	.240*	500	.000
10. For disengaging from everyday work roles.	.215*	500	.000
11. For releasing psychological stress.	.249*	500	.000
12. For being alone with one's individual thoughts and feelings.	.255*	500	.000
13. For regrouping one's thoughts.	.153*	500	.000
14. For developing a sense of independence.	.180*	500	.000
15. For the development of individuality concerning personal and spiritual concerns.	.225*	500	.000
16. For exploring and thinking through work matters and concerns.	.255*	500	.000
17. For self evaluation and re-directing one's life time goals.	.144*	500	.000
18. For evaluating work matters and intimate friends.	.208*	500	.000
19. As a private setting for communicating with a few friends.	.211*	500	.000
20. Self evaluation.	.154*	500	.000
21. For identifying one's inner self.	.185*	500	.000
22. For releasing physical tension.	.156*	500	.000
1. As an opportunity for sharing confidences and intimacies with those you trust.	.178*	500	.000
2. Better understand my work and values.	.176*	500	.000
3. Improve my sense of control over my work life.	.177*	500	.000
4. Improve my self reliance.	.246*	500	.000
5. Gain humility.	.206*	500	.000
6. Grow spiritually.	.217*	500	.000
7. Enhance my environmental ethic.	.261*	500	.000
1. Being able to keep busy all the time.	.291*	500	.000
2. The chance to work alone on the job	.254*	500	.000
3. The chance to do different things from time to time.	.302*	500	.000
4. The chance to be somebody in the community.	.210*	500	.000
5. The way my boss handles his/her workers.	.218*	500	.000
6. The competence of my supervisor in making decisions.	.243*	500	.000
7. Being able to do things that don't go against my conscience.	.286*	500	.000
8. The way my job provides for steady employment.	.268*	500	.000
9. The chance to do things for other people.	.234*	500	.000
10. The chance to tell people what I do.	.229*	500	.000
11. The chance to do something that makes use of my abilities.	.291*	500	.000
12. The way company policies are put into practice.	.203*	500	.000
13. My pay and the amount of work I do.	.257*	500	.000
14. The chances for advancement on this job.	.176*	500	.000
15. The freedom to use my own judgment.	.294*	500	.000
16. The chance to try my own methods of doing the job.	.271*	500	.000
17. The working conditions.	.284*	500	.000
18. The way my co-workers get along with each other.	.265*	500	.000
19. The praise I get for doing a good job.	.223*	500	.000
20. The feeling of accomplishment I get from this job.	.263*	500	.000

Note. Lilliefors Significance Correction. \* $p < .05$ .

Linearity was confirmed by examining scatter plots. Examining scatterplots is the most common way to test for linearity (Hair, Black, Babin, Anderson & Tatham, 2006).

Cronbach's alphas were computed to determine internal consistency for each scale. The Cronbach's alpha for the functions of wilderness solitude scale was .91; the recollected benefits of wilderness solitude scale Cronbach's alpha was .84; and the Cronbach's alpha for job satisfaction was .92, all above the suggested .70 level (Nunnally, 1967).

### **Demographic Results**

Demographic information was grouped by continuous items, and categorical items. The continuous variables included age, work hours per week, hours of non-paid work per week, time in wilderness, nights in wilderness, and longest time in wilderness. Categorical items included gender, level of education, setting of residence, setting of work, job being inside or outside, loud or quiet work environment, and income.

Table 4.2 shows the minimum, maximum, mean and standard deviation for the age, work hours per week, hours of non-paid work per week, time in wilderness, nights in wilderness, and longest time in wilderness.

Table 4.2

*Mean and Standard Deviation of Participant Age, Hours Worked Per Week, Hours of Non-Paid Work Per Week, Times in Wilderness, Nights in Wilderness, and Longest Time in Wilderness*

	Respondents			
	MIN	MAX	M	SD
Participants Demographics				
Age	18	71	40.8	11.9
Work hours per week	1	96	40.0	10.4
Hours of non paid work per week	0	60	5.7	7.9
Times in wilderness	0	365	19.6	40.2
Nights in wilderness	0	185	14.6	30.8
Longest time in wilderness	0	365	34.3	62.6

Of the total respondents ( $n = 500$ ), the youngest age was 18, and the oldest was 71. The mean age was 40.8 (SD = 11.9). The work hours per week ranged from 1 to 96. The mean hours worked per week was 40 (SD = 10.4). The hours of non-paid work per week ranged from 0 to 60, with a mean of 5.7 (SD = 7.9). The number of times in wilderness in the past 12 months ranged from 0 to 365, with a mean of 19.6 (SD = 40.2). The number of nights in wilderness in the past 12 months ranged from 0 to 185, with the mean being 14.6 (SD = 30.8). The longest period of time spent in wilderness in the past 12 months ranged from 0 to 365, with a mean of 34.3 (SD = 62.6).

Table 4.3 depicts the gender, level of education, work and residence setting, job being inside or outside, noise level of job, and income level of respondents.

Table 4.3

*Frequency and Percentage of Gender, Level of Education, Work and Residence Setting, Job Setting, Noise Level at Work, and Income*

	Respondents	
	<i>f</i>	%
Gender		
Female	198	39.6
Male	302	60.4
Level of Education		
Some high school	3	.6
High school graduate	19	3.8
Some college	102	20.4
College graduate	211	42.2
Graduate school	165	33.3
Residence		
Urban	201	40.2
Suburban	203	40.6
Rural	96	19.2
Work		
Urban	297	59.4
Suburban	146	29.2
Rural	57	11.4
Job		
Inside	442	88.4
Outside	58	11.6
Noise at work		
Quiet	100	20.0
2	114	22.8
Some noise	164	32.8
4	88	17.6
Loud	34	6.8
Income		
Over \$100,000	125	24.9
\$75,000-\$100,000	93	18.5
\$50,000-\$74,999	119	23.8
\$35,000-\$49,999	52	10.4
\$25,000-\$34,999	32	6.4
\$20,000-\$24,999	25	4.9
\$15,000-\$19,999	18	3.6
\$10,000-\$14,999	14	2.8
\$5,000-\$9,999	13	2.6
Under \$5,000	9	1.8

Of the respondents, 60.4% ( $f = 302$ ) were male and 39.6% ( $f = 198$ ) were female.

Respondents' education level varied from some high school to graduate school. The highest number of respondents reported being college graduates 42.2% ( $f = 211$ ); followed by graduate school 33.3% ( $f = 165$ ); some college 20.4% ( $f = 102$ ); high school graduate 3.8% ( $f = 19$ ); and some high school .6% ( $f = 3$ ).

Of the respondents, 40.6% ( $f = 203$ ) reported living in suburban settings; followed by 40.2% ( $f = 201$ ) living in urban settings; and 19.2% ( $f = 96$ ) reported living in rural settings.

Table 4.4 includes the factor loadings for the functions of wilderness solitude scale. The principal components method was used. The items did not factor on scales as suggested by previous research. One factor was utilized because there were significant cross loadings. The items were listed in the order of the factor loading values.

Table 4.4

*Factor Analysis for the Functions of Wilderness Solitude Scale*

Functions of Wilderness Solitude	Loading
a = .91	
10. For disengaging from everyday work roles	.726
18. For evaluating work matters with intimate friends	.702
8. As a relaxed period for reflecting upon past work experiences	.679
11. For releasing psychological stress	.677
12. For being alone with one's individual thoughts and feelings	.672
16. For exploring and thinking through work matters and concerns	.664
15. For the development of individuality concerning personal and spiritual concerns	.657
14. For developing a sense of independence	.643
6. For limiting visual and verbal interaction with strangers	.639
9. As an environment where you can maintain a desired "mental distance" from other individuals	.637
7. For resting the mind from anxiety and mental fatigue	.628
3. An emotional release from work	.616
1. For experiencing a period of personal autonomy	.610
4. For recovering from troubled or depressing moments at work	.593
5. For maintaining one's sense of individuality	.591
19. As a private setting for communicating with a few friends	.576
13. For regrouping one's thoughts	.567
17. For self evaluation and re-directing one's life time goals	.532
2. Personal autonomy/self identity	.488
22. For releasing physical tension	.473
20. Self evaluation	.455
23. As an opportunity for sharing confidences and intimacies with those you trust	.432
21. For identifying one's inner self	.389

<sup>a</sup> - 7-point scale: 7 = *extremely important* to 1= *not at all important*

Table 4.5 contains the frequencies and percentages by items for the twenty three item functions of wilderness solitude scale.

Table 4.5

*Frequencies and Percentages for the 23 Functions of Wilderness Solitude Scale (Function is listed on the far left column.)*

Funct.	1		2		3		4		5		6		7	
	Not at all important		Unimportant		Somewhat important		Neutral		Somewhat important		Important		Extremely Important	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
1	0	0	5	1.0	2	.4	12	2.4	60	12.0	163	32.6	258	51.6
2	3	.6	7	1.4	9	1.8	28	5.6	61	12.2	135	27.0	257	51.4
3	8	1.6	13	2.6	11	2.2	30	6.0	93	18.6	154	30.8	1911	38.2
4	3	.6	5	1.0	8	1.6	25	5.0	94	18.8	159	31.8	206	41.2
5	6	1.2	9	1.8	19	3.8	41	8.2	90	18.0	148	29.6	187	37.4
6	5	1.0	6	1.2	12	2.4	45	9.0	91	18.2	146	29.2	195	39.0
7	8	1.6	9	1.8	8	1.6	42	8.4	112	22.4	142	28.4	179	35.8
8	5	1.0	8	1.6	9	1.8	51	10.2	108	21.6	170	34.0	149	29.8
9	4	.8	6	1.2	9	1.8	42	8.4	84	16.8	161	32.2	194	38.8
10	13	2.6	12	2.4	15	3.0	50	10.0	108	21.6	139	27.8	163	32.6
11	4	.8	5	1.0	2	.4	18	3.6	79	15.8	185	37.0	207	41.4
12	2	.4	8	1.6	8	1.6	23	4.6	81	16.2	183	36.6	195	39.0
13	54	10.8	63	12.6	46	9.2	103	20.6	114	22.8	73	14.6	47	9.4
14	25	5.0	21	4.2	46	9.2	77	15.4	107	21.4	128	25.6	96	19.2
15	11	2.2	12	2.4	17	3.4	52	10.4	100	20.0	147	29.4	161	32.2
16	2	.4	6	1.2	8	1.6	19	3.8	76	15.2	156	31.2	233	46.6
17	52	10.4	75	15.0	67	13.4	94	18.8	106	21.2	67	13.4	39	7.8
18	10	2.0	15	3.0	20	4.0	52	10.4	109	21.8	132	26.4	162	32.4
19	15	3.0	18	3.6	28	5.6	74	14.8	103	20.6	150	30.0	112	22.4
20	33	6.6	41	8.2	41	8.2	107	21.4	119	23.8	86	17.2	73	14.6
21	14	2.8	31	6.2	40	8.0	81	16.2	126	25.2	138	27.6	70	14.0
22	101	20.2	93	18.6	81	16.2	103	20.6	83	16.6	25	5.0	14	2.8
23	26	5.2	44	8.8	46	9.2	91	18.2	129	25.8	101	20.2	63	12.6

<sup>a</sup> - 7-point scale: 7 = *extremely important* to 1 = *not at all important*

The information in Table 4.6 describes the minimum, maximum, mean and standard deviation for each of the 23 items for the functions of wilderness solitude scale. The Cronbach's alpha for the overall scale was acceptable at .91.

Table 4.6

*Mean and Standard Deviation for the Functions of Wilderness Solitude Scale*

Items	$\alpha$	Respondents			
		MIN	MAX	M	SD
Functions of Wilderness Solitude	.91				
1. For experiencing a period of personal autonomy		2.00	7.00	6.30	.92
2. Personal autonomy/self identity		1.00	7.00	6.14	1.17
3. An emotional release from work		1.00	7.00	5.83	1.34
4. For recovering from troubled or depressing moments at work		1.00	7.00	6.01	1.12
5. For maintaining one's sense of individuality		1.00	7.00	5.78	1.33
6. For limiting visual and verbal interaction with strangers		1.00	7.00	5.86	1.25
7. For resting the mind from anxiety and mental fatigue		1.00	7.00	5.77	1.30
8. As a relaxed period for reflecting upon past work experiences		1.00	7.00	5.71	1.22
9. As an environment where you can maintain a desired mental distance from other individuals		1.00	7.00	5.91	1.20
10. For disengaging from everyday work roles		1.00	7.00	5.59	1.44
11. For releasing psychological stress		1.00	7.00	6.09	1.05
12. For being alone with one's individual thoughts and feelings		1.00	7.00	6.00	1.11
13. For regrouping one's thoughts		1.00	7.00	4.13	1.79
14. For developing a sense of independence		1.00	7.00	4.98	1.65
15. For the development of individuality concerning personal and spiritual concerns		1.00	7.00	5.60	1.42
16. For exploring and thinking through work matters and concerns		1.00	7.00	6.12	1.09
17. For self evaluation and re-directing one's life time goals		1.00	7.00	3.97	1.77
18. For evaluating work matters with intimate friends		1.00	7.00	5.56	1.45
19. As a private setting for communicating with a few friends		1.00	7.00	5.26	1.52
20. Self-evaluation		1.00	7.00	4.58	1.71
21. For identifying one's inner self		1.00	7.00	4.94	1.52
22. For releasing physical tension		1.00	7.00	3.21	1.65
23. As an opportunity for sharing confidences and intimacies with those you trust		1.00	7.00	4.62	1.65

<sup>a</sup> - 7-point scale: 7 = *extremely important* to 1= *not at all important*



The information in table 4.7 depicts the factor loadings for the recollected benefits of wilderness solitude scale. The analysis revealed two factors: a factor focused on individual benefits and a factor on benefits impacting work.

Table 4.7

*Factor Loading for the Recollected Benefits of Wilderness Solitude Scale*

<i>Recollected Benefits of Wilderness Solitude</i>	
<i>a=.84</i>	
Factor/Item	Loading
Factor 1 (Individual Benefits)	
1. Learn more about who I am	.740
4. Improve my self-reliance	.705
5. Gain humility	.697
7. Enhance my environmental ethic	.683
6. Grow spiritually	.633
Factor 2 (Work Benefits)	
2. Better understand my work and values	-.885
3. Improve my sense of control over my work life	-.732

<sup>a</sup>- 5-point scale: 1 = *not at all* to 5 = *a lot*.

The frequencies and percentages for each item in the recollected benefits of wilderness solitude scale are identified in table 4.8.

Table 4.8

*Frequencies and Percentages by Item for the Recollected Benefits of Wilderness Solitude*

	1		2		3		4		5	
	Not at all				Somewhat				A lot	
	f	%	f	%	f	%	f	%	f	%
1	19	3.8	26	5.2	114	22.8	143	28.6	198	39.6
2	63	12.6	116	23.2	175	35.0	96	19.2	50	10.0
3	78	15.6	106	21.2	167	33.4	103	20.6	46	9.2
4	16	3.2	29	5.8	69	13.8	177	35.4	209	41.8
5	35	7.0	53	10.6	124	24.8	151	30.2	137	27.4
6	45	9.0	56	11.2	87	17.4	121	24.2	191	38.2
7	23	4.6	23	4.6	76	15.2	147	29.4	231	46.2

<sup>a</sup>- 5-point scale: 1 = *not at all* to 5 = *A lot*.

The information in table 4.9 includes the range of values, mean and standard deviation for each of the seven items in the recollected benefits of wilderness solitude scale. The Cronbach's alpha for the overall scale was .84.

Table 4.9

*Mean and Standard Deviation for the Recollected Benefits of Wilderness Solitude Scale*

			Respondents			
		<i>a</i>				
Recollected Benefits Overall		.84	MIN	MAX	M	SD
1. Learn more about who I am			1.00	5.00	3.95	1.08
2. Better understand my work and values			1.00	5.00	2.91	1.15
3. Improve my sense of control over my work life			1.00	5.00	2.87	1.18
4. Improve my self-reliance.			1.00	5.00	4.07	1.03
5. Gain humility			1.00	5.00	3.60	1.19
6. Grow spiritually			1.00	5.00	3.71	1.32
7. Enhance my environmental ethic			1.00	5.00	4.08	1.10

<sup>a</sup> - 5-point scale: 1 = *not at all* to 5 = *a lot*

The information in table 4.10 includes the factor loadings for the twenty item job satisfaction scale. A principal components extraction method was used with an Oblim rotational method. The factor analysis revealed three factors: 1) opportunities the job offered; 2) attitudes toward working conditions and supervisor; and 3) the freedom the job provided. This was in contrast to the two factors (intrinsic and extrinsic) identified by Weiss, Dawis, England and Lofquist (1967).

Table 4.10

*Factor Loadings for Job Satisfaction Scale*

<i>Job satisfaction</i>	
<i>a=.92</i>	
Factor One (Opportunity)	Loading
9. The chance to do things for other people	.855
11. The chance to do something that makes use of my abilities	.715
10. The chance to tell people what I do	.671
3. The chance to be somebody in the community	.646
20. The feeling of accomplishment I get from the job	.638
8. The way my job provides for steady employment	.530
1. Being able to keep busy all the time	.468
13. My pay and the amount of work I do	.262
Factor Two (Supervisor and Working Conditions)	
6. The competence of my supervisor in making decisions	-.859
5. The way my boss handles his/her workers	-.847
19. The praise I get for doing a good job	-.728
18. The way my co-workers get along with each other	-.708
12. The way my company policies are put into practice	-.702
17. The working conditions	-.611
7. Being able to do things that don't go against my conscience	-.418
Factor three (Freedom)	
2. The chance to work alone on the job	-.754
16. The chance to try my own methods of doing the job	-.711
15. The freedom to use my own judgment	-.696
3. The chance to do different things from time to time	-.514

<sup>a</sup> 5-point scale: 1 = *very dissatisfied* to 5 = *very satisfied*

The frequencies and percentages by item for the job satisfaction scale are included in table 4.11.

Table 4.11

*Frequencies and Percentages by Item for Job Satisfaction Scale*

	1 Very dissatisfied		2 Dissatisfied		3 Neither satisfied or dissatisfied		4 Satisfied		5 Very satisfied	
	f	%	f	%	f	%	f	%	f	%
1	11	2.2	54	10.8	110	22.0	245	49.0	80	16.0
2	15	3.0	45	9.0	142	28.4	217	43.4	81	16.2
3	20	4.0	53	10.6	59	11.8	232	46.4	136	27.2
4	21	4.2	51	10.2	165	33.0	178	35.6	85	17.0
5	52	10.4	91	18.2	118	23.6	170	34.0	69	13.8
6	50	10.0	64	12.8	121	24.2	195	39.0	70	14.0
7	15	3.0	35	7.0	82	16.4	233	46.6	135	27.0
8	16	3.2	29	5.8	58	11.6	200	40.0	197	39.4
9	8	1.6	23	4.6	107	21.4	197	39.4	165	33.0
10	20	4.0	40	8.0	221	44.2	151	30.2	68	13.6
11	22	4.4	50	10.0	64	12.8	220	44.0	144	28.8
12	42	8.4	115	23.0	191	38.2	126	25.2	26	5.2
13	43	8.6	101	20.2	85	17.0	196	39.2	75	15.0
14	44	8.8	122	24.4	176	35.2	117	23.4	41	8.2
15	17	3.4	43	8.6	66	13.2	231	46.2	143	28.6
16	24	4.8	33	6.6	95	19.0	215	43.0	133	26.6
17	20	4.0	47	9.4	93	18.6	230	46.0	110	22.0
18	18	3.6	55	11.0	109	21.8	215	43.0	103	20.6
19	32	6.4	69	13.8	153	30.6	186	37.2	60	12.0
20	28	5.6	60	12.0	91	18.2	201	40.2	120	24.0

<sup>a</sup> - 5-point scale: 1 = *very dissatisfied* to 5 = *very satisfied*

The minimum and maximum values, mean and standard deviation for the job satisfaction scale are included in Table 4.12. The Cronbach's alpha for the overall scale was acceptable at .92.

Table 4.12

*Mean and Standard Deviation for Job Satisfaction Scale*

			Respondents			
Items		<i>a</i>	MIN	MAX	M	SD
Job satisfaction overall		.92				
1. Being able to keep busy all the time.			1.00	5.00	3.66	.95
2. The chance to work alone on the job			1.00	5.00	3.61	.96
3. The chance to do different things from time to time.			1.00	5.00	3.82	1.07
4. The chance to be somebody in the community.			1.00	5.00	3.51	1.02
5. The way my boss handles his/her workers.			1.00	5.00	3.23	1.21
6. The competence of my supervisor in making decisions.			1.00	5.00	3.34	1.17
7. Being able to do things that don't go against my conscience.			1.00	5.00	3.88	.99
8. The way my job provides for steady employment.			1.00	5.00	4.07	1.01
9. The chance to do things for other people.			1.00	5.00	3.98	.93
10. The chance to tell people what I do.			1.00	5.00	3.41	.96
11. The chance to do something that makes use of my abilities.			1.00	5.00	3.83	1.09
12. The way company policies are put into practice.			1.00	5.00	2.96	1.01
13. My pay and the amount of work I do.			1.00	5.00	3.32	1.20
14. The chances for advancement on this job.			1.00	5.00	2.98	1.08
15. The freedom to use my own judgment.			1.00	5.00	3.88	1.03
16. The chance to try my own methods of doing the job.			1.00	5.00	3.80	1.06
17. The working conditions			1.00	5.00	3.73	1.03
18. The way my co-workers get along with each other.			1.00	5.00	3.66	1.04
19. The praise I get for doing a good job.			1.00	5.00	3.35	1.06
20. The feeling of accomplishment I get from this job.			1.00	5.00	3.65	1.13

<sup>a</sup> - 5-point scale: 1 = *very dissatisfied* to 5 = *very satisfied*.

## Research Question One

Research question one: Is there a relationship between the RBHWS and the job satisfaction of individuals who are employed or have recently been employed in any occupational setting? A Pearson's Correlation was used to answer this question. The correlation was analyzed using the two factors in the recollected benefits of wilderness solitude scale, the one factor of the functions of wilderness solitude scale, the length and duration of time spent in wilderness items, and the dependent variable, job satisfaction. The results of the Pearson's Correlation revealed a negative association (Davis 1971) between job satisfaction and the wilderness solitude sum, the functions of wilderness solitude scale ( $r = -.098$ ). A negative association indicates a negative relationship between the dependent and independent variable. As the independent variable (recollected benefits of wilderness solitude) increased, the dependent variable (job satisfaction) decreased. The Pearson's correlation revealed a negative relationship with the first factor (individual benefits) of the recollected benefits scale ( $r = -.01$ ) which was not significant, and a negligible (or very small) (Davis, 1971) relationship between the recollected benefits scale factor 2 (work) and job satisfaction, which was also not significant. A negligible association indicates there is a very small relationship between the independent and dependent variables such that a slight increase in the independent variable (recollected benefits of wilderness solitude) is associated with a slight increase in the dependent variable (job satisfaction).

The Pearson's correlation also revealed a negligible association (very small relationship) between the number of nights spent in wilderness over the past twelve months and job satisfaction; as well as the longest number of consecutive nights spent in wilderness

and job satisfaction. The  $r$  for number of nights in wilderness solitude was .013 and was not significant. The  $r$  for the longest number of consecutive nights in wilderness was .028 and was also not significant.

Table 4.13

*Relationship Between Job Satisfaction and the Restorative Benefits of Hiking in Wilderness Solitude as Measured by Pearson's Product Moment Correlation.*

	$r$	Overall Job Satisfaction	$p$
Wilderness solitude sum	-.098	Negative association	.029*
Recollected benefits Factor 1: Individual	-.01	Negative association	.874
Recollected benefits Factor 2: work	.035	Negligible	.438

Note: Davis's (1971) descriptors are as follows: .70 or higher = very strong association, .50-.69 = substantial association, .30 to .49 = moderate association, .10 to .29 = low association, .01 to .09 = negligible association. \* $p < .05$ .

## Research Question Two

Research question two: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed, or have recently been employed in any occupational setting impacted by age, gender, income or education level?

Gender was not a moderator of any of the variables (See table 4.14). Moderator variables identified include: age, income over \$100,000, income \$25,000-\$34,999, income \$20,000 - \$24,999, income \$10,000 - \$14,999, high school graduate, and graduate school. The Stepwise regression revealed age moderated "Recollected benefits factor 2" (RC 2, better understand my work and values); income over \$100,00 (over\_100) moderated "Recollected benefits factor 1" (RC 1, learning more about who I am); wilderness sum score (WSUM) was moderated by income ranges \$25,000 to \$34,999 and \$20,000 to \$24,999; RC2

(better understand my work and values) was moderated by the income range \$10,000 - \$14,999. RC2 (better understand my work and values) was moderated by the variables high school graduate and graduate school.

### **Research Question Three**

Research question three: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed or have recently been employed in any occupational setting impacted by selected moderating variables. The variables included living or working in rural, urban or suburban environments, working inside or outside, working in quiet or loud environments, hours worked per week, non-paid hours worked per week, the frequency of hiking in the past 12 months, the number of nights spent hiking in the past 12 months, and the longest number of consecutive days spent hiking over the past five years.

The variable noise (working in quite or loud environments) moderated WSUM (wilderness solitude scale) and RC2 (better understand my work and values). RC2 (better understand my work and values) moderated hours worked; Residing in an urban environment moderated RC2 (better understand my work and values). The variables non-paid hours, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years did not moderate the relationship.

Table 4.14 depicts the variables that moderate the relationship between job satisfaction and the RBHWS. The moderator variables explained 18.5% of the variance in job satisfaction (see Table 4.14).



Table 4.14

*Stepwise Multiple Regression to Identify Variables that Moderate the Relationship between Job Satisfaction and RBHWS*

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	
Regression	16214.15	13	1247.24	8.46	.000	
Residual	71352.77	486	146.82			
Total	87566.92	499				
	Overall R2	R2 Change	<i>b</i>	Beta	<i>t</i>	<i>p</i>
	18.5%					
Constant (66.26)						
Step 1						
Graduate School		3.1%	3.12	.11	2.59	.010*
Step 2						
High School		1.9%	12.19	.18	1.29	.19
Step 3						
Age		1.9%	.11	.10	2.34	.02*
Step 4						
Urban		1.2%	2.89	.11	2.59	.01*
Step 5						
Noise		1.9%	-1.67	-.15	-3.45	.00*
Step 6						
Job in _out		1.9%	5.17	.13	2.97	.00*
Step 7						
Income \$10-14k		1.1%	17.39	.22	1.57	.19
Step 8						
Income \$25-34k		1.1%	27.47	.51	1.61	.11
Step 9						
Income \$20-24k		.7%	-4.28	-.07	-1.66	.09
Step 10						
Recollected benefits 2 x hours worked		.9%	.016	.127	2.98	.003*
Step 11						
Recollected benefits 2 x high school grad.		1%	-3.99	-.32	-2.31	.021*
Step 12						
Recollected benefits 2 x Income \$10k-\$14k		1%	-4.41	-.34	-2.48	.014*
Step 13						
Wilderness sum x income \$25k-\$34k		.7%	-.28	-.64	-2.02	.044

**Note. \* $p < .05$**

The stepwise regression analysis developed a significant model ( $F = 8.46$ ,  $df = 146.82$ ,  $p = .000$ ). The overall model explained 18.5% of the variance in job satisfaction. The stepwise regression revealed attending graduate school explained 3.1%; graduating from high school explained 1.9%; age explained 1.95%; living in an urban environment explained 1.2%; noise explained 1.9%; job inside or outside explained 1.9%; income \$10,000 to \$14,999 explained 1.1%; income \$25,000 to \$34,999 explained 1.1%; and income \$20,000 to \$24,999 explained .7%; Recollected benefits factor two (RC2, better understand my work and values) was moderated by hours worked explaining .9%; Recollected benefits factor two was moderated by high school graduate explaining 1%; Recollected benefits factor two was moderated by income \$10,000 to \$14,999 explaining 1%; and the wilderness solitude scale was moderated by income \$25,000 to \$34,999 explaining .7%.

## **Summary**

This chapter presented the findings of analyzed data. Demographic information about the 500 participants was provided. Descriptive statistics related to each of the three measurement scales gave additional information related to participant responses. A factor analysis was conducted for each of the three scales to determine construct validity. Cronbach's alphas were used to examine internal consistency. To answer research question one, a Pearson's correlation was utilized to determine if a relationship between the RBHWS and job satisfaction existed. To answer questions two and three, Stepwise multiple regression was used to determine if moderator variables impacted the relationship between job satisfaction and the RBHWS.

Findings for research question one revealed there was a slight negative relationship between job satisfaction and the RBHWS. As RBHWS ratings increased, job satisfaction ratings decreased. There was a negligible (very small) relationship between the recollected benefits work factor and job satisfaction. The correlation also revealed a negligible (very small) positive relationship between nights spent in wilderness and job satisfaction, and total number of days spent in wilderness and job satisfaction. Neither was statistically significant.

The stepwise regression model explained 18.5% of the variance in job satisfaction. The stepwise regression revealed attending graduate school explained 3.1%; graduating from high school explained 1.9%; age explained 1.95%; living in an urban environment explained 1.2%; noise explained 1.9%; job inside or outside explained 1.9%; income \$10,000 to \$14,999 explained 1.1%; income \$25,000 to \$34,999 explained 1.1%; income \$20,000 to \$24,999 explained .7%; the factor Recollected benefits two (RC2, better understand my work and values) was moderated by hours worked explaining .9%; Recollected benefits factor two was moderated by high school graduate explaining 1%; Recollected benefits factor two was moderated by income \$10,000 to \$14,999 explaining 1%; and the wilderness solitude scale was moderated by income \$25,000 to \$34,999 explaining .7%.

## **Chapter V**

### **Summary, Conclusions and Recommendations**

The purpose of this exploratory research was to examine the relationship between the restorative benefits of hiking in wilderness solitude (RBHWS) and job satisfaction. This chapter includes an overall summary of the study, conclusions made based on the research, as well as recommendations for future research. To learn more about the relationship between the restorative benefits of hiking in wilderness solitude and its relationship to job satisfaction three research questions were developed. The first research question focused on determining if there was a relationship between the RBHWS and job satisfaction. The second research question investigated if the variables age, gender, income or educational level moderated the relationship between the RBHWS and job satisfaction. The third question sought to determine if selected moderating variables impacted the relationship between the RBHWS and job satisfaction. The moderating variables included: living or working in rural, urban or suburban environments, working inside or outside, working in quiet or loud environments, hours worked per week, non-paid hours worked per week, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years.

#### **Summary of Chapter One Through Four**

The primary objective of Chapter One was to provide support from the literature that there was a need for research on the RBHWS and job satisfaction. The complexity of modern life with noise, distractions, and stress can cause fatigue, information overload, cognitive and

affective problems (Gleick, 2000; Jackson, 2008; Lyman & Varian, 2003; Rosen, 2008; Stokols, 1999; Stokols, Misra, Runnerstrom & Hipp, 2009; Wellman & Haythornthwaite, 2002). Over 79% of the United States population lives in urban settings (United States Department of Transportation), and now for the first time over 50% of the world's population lives and works in urban environments (Lee, 2008). The opportunities to escape the demands of work and life, rest directed attention, and experience the RBHWS are very limited. Wilderness offers a unique setting to escape these pressures and experience solitude and restoration (Hammitt, 1982; Hammitt & Brown, 1984; Kaplan, 1978; Kaplan & Kaplan, 1989).

Job satisfaction is primarily an attitude (Spector, 1997). The opportunity to leave a work environment that causes stress and fatigue to experience solitude and restoration may impact an employee's attitudes toward their job and the workplace. Fishbein's (1963) Attitude Theory describes an individual's attitudes toward an object being a function of the beliefs about an object. This research linked theories and research to study the relationship between the RBHWS and job satisfaction. This was also the first empirical research directly related to the topic.

The purpose of Chapter Two was to review the literature related to the RBHWS, as well as job satisfaction. Chapter Two included a brief discussion of the advancement of the wilderness concept in the United States. A number of definitions for wilderness, solitude, privacy, and job satisfaction were introduced. Theories that have been used in the literature related to the RBHWS and for job satisfaction were also reviewed. The literature related to this study was organized into the topic categories of privacy, views of nature, wilderness

experience, solitude and privacy, restorative environments and job satisfaction. The literature review helped to identify no empirical research was available that specifically examined the RBHWS and job satisfaction. Literature containing empirical data on the importance of the presence of plants and windows with a view of nature in relation to job satisfaction was found.

A detailed description of the research methods for the study was included in Chapter Three. The sampling plan, data collection methods, instrumentation and measurement, validity, reliability, and the preliminary data analysis procedures were included. Missing data and outliers were addressed. Confirmatory factor analysis was conducted for all three instruments. Cronbach's alpha was used to test the reliability of the scales for each of the three instruments.

Chapter Four presented the findings of the analyzed data. The three research questions used to guide the study were addressed. Descriptive statistics were provided using the means, standard deviations, frequencies and percents for respondents' age, hours worked per week, hours of non-paid work per week, time in wilderness, nights in wilderness, and longest time in wilderness. Frequency and percent were provided for participant gender, level of education, setting of residence, setting of work, job (inside or outside), noise level at work, and income level. A Pearson's correlation was conducted to determine the relationship between the RBHWS and job satisfaction. The effect of moderator variables was explored through the use of stepwise multiple regression.

In this final chapter a summary of the findings is provided for each of the three research questions, and conclusions are presented. Recommendations for future research related to the topic are also provided, as well as an explanation of the study's limitations.

### **Discussion of Findings and Conclusions**

The purpose of this exploratory study was to learn more about the relationship between the restorative benefits of hiking in wilderness solitude (RBHWS) and job satisfaction. Three research questions were used to guide the study. Research question one sought to determine if there was a relationship between the RBHWS and job satisfaction. The second and third research questions focused on the role of moderator variables in the relationship between the RBHWS and job satisfaction. The moderator variables included age, gender, income and educational level for question two, and living or working in rural, urban or suburban environments, working inside or outside, working in quiet or loud environments, hours worked per week, non-paid hours worked per week, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years for question three.

### **Demographic Data**

The demographic data revealed participants in this survey were well-educated adults (75% earned a college degree or attended graduate school); lived mostly in urban and suburban environments (80%); and had an average of 20 trips to wilderness in a year. The population for this study was recruited heavily through the Appalachian Trail Conservancy, and the internet, making the group somewhat homogenous. The demographic background of

participants was similar to what was reported by Walker, Hull & Roggenbuck (1998) related to educational background and age; however, two noticeable differences in the populations existed: 23% of participants in the Walker et al. study were female, compared with 39% of participants in the present research; the largest percentage of participants (27%) earned between \$25,000 – \$39,000 per year in the Walker et al. study, compared with the largest percentage of participants in the present study (24%) earning over \$100,000 per year, which may have played a role in their responses. Not surprisingly, the demographic background of participants was strikingly different than those in Hammitt & Brown's (1984) study in which the average age of participants was 22, all of whom were enrolled in college courses focused on outdoor recreation and natural resources. The online data collection method utilized for the present research was likely the first time this method has been used for a study related to wilderness experience, which may have impacted who had access to the survey in comparison to previous studies that were conducted on site. The online distribution of this survey may have also impacted the survey results in comparison to use of a paper survey (McCoy, Marks, Carr, & Mbarika (2004).

### **Findings and Conclusions by Research Question**

The present research examined the restorative benefits of hiking in wilderness solitude and its relationship to job satisfaction. A convenience sample including anyone who was employed or who had recently been employed, that had hiked or backpacked in the backcountry or wilderness, was used for this research. Backcountry and wilderness include any environment that is primarily natural, and offers opportunities for solitude and privacy. The survey was available online at [www.hikingresearch.com](http://www.hikingresearch.com). The survey was promoted



online primarily through the Facebook pages of outdoor groups or organizations. The Appalachian Trail Conservancy posted information about the research on their Facebook page, and distributed a link to the survey to hikers who had completed 2,000+ miles.

The relationship of the RBHWS to job satisfaction was analyzed using a Pearson's correlation. The role of moderator variables in the relationship between the two variables was examined by using stepwise multiple regression.

### **Research question one findings and conclusions.**

Determining if there was a relationship between the RBHWS and job satisfaction was the objective of research question one. A Pearson's Correlation was used to determine if a relationship existed. The correlation was ( $r = -.098$ ) between the wilderness solitude scale and job satisfaction. This indicates there is a slightly negative relationship between the RBHWS and job satisfaction. As the rating for the RBHWS increased, the rating for job satisfaction decreased. The Pearson's correlation revealed a negative relationship with the first factor (individual benefits) of the recollected benefits scale ( $r = -.01$ ); and a negligible relationship between the recollected benefits scale factor 2 (work) and job satisfaction. This finding suggested hiking might provide an opportunity to cope with work-related issues giving a sense of control over work, but did not increase satisfaction with work. This may be due to the current economic situation creating job stress that is too severe to overcome. This finding is supported by previous research which found leisure activities are used as a way to balance the demands of work (Pearson, 1998; London, Crandall, & Seals, 1977; Haworth & Hill, 1992; Rice, Frone, & McFarlin, 1992; and Winefield, Tiggerman & Winfield, 1992). Prior research has also indicated overexposure to optimal experiences, such as the RBHWS,

can have a negative impact on offsite benefits (Walker, Hull, & Roggenbuck, 1998). This provided some explanation for the negative relationship between the RBHWS and job satisfaction. The Pearson's correlation revealed a negligible relationship ( $r = .013$ ) between the number of nights spent in wilderness and job satisfaction, and the number of consecutive nights spent in wilderness and job satisfaction. This correlation indicated the amount of time spent in wilderness could have some relationship to the restorative benefits experienced by participants, having a slight association to job satisfaction. This was supported by prior research that has found a correlation between increased restoration as a result of time in wilderness (Hammitt & Brown, 1984; Swatton & Potter, 1998; Borrie & Roggenbuck, 2001).

It should be noted the functions of wilderness solitude scale did not factor as expected based on the use of the scales in prior research. This could be a result of the scales being used with a new population, or because they were slightly modified to include information about the work setting. "When data vary because of changes in the sample, the data gathering process, or the numerous kinds of measurement errors, the results of the analysis also may change" (Hair, Black, Babin, Anderson & Tatham, 2006, p. 164). The five scale items that were modified had different factor loadings from the previous use of the scale by Hammitt & Brown (1984): "For disengaging from everyday work roles" had a factor loading of .726 (.568 in the original scale); "for evaluating work matters with intimate friends" had a factor loading of .702 (.437 in the original scale); "as a relaxed period for reflecting upon past work experiences" had a factor loading of .679 (.523 in the original scale); "for exploring and thinking through work matters and concerns" had a factor loading of .664 (.747 in the

original scale); and “an emotional release from work had a factor loading of .616 (.740 on the original scale).

### **Research question two findings and conclusions.**

Research question two: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed or have recently been employed in any occupational setting impacted by age, gender, income or education level?

Gender was not entered into the model because there was no significant difference between males and females. Moderator variables that impacted the relationship between the RBHWS and job satisfaction included: age, income over \$100,000, income \$25,000-\$34,999, income \$20,000 - \$24,999, income \$10,000 - \$14,999, high school graduate, and graduate school. The stepwise regression revealed age moderated “Recollected benefits factor 2” (RC 2, better understanding my work and values); income over \$100,000(over\_100) moderated “Recollected benefits factor 1” (RC 1, learning more about who I am); wilderness sum score (WSUM, wilderness solitude scale) was moderated by income ranges \$25,000 to \$34,999 and \$20,000 to \$24,999; RC2 (better understanding my work and values) was moderated by the income range \$10,000 - \$14,999. RC2 (better understand my work and values) was moderated by the variables high school graduate and graduate school. Attending graduate school was the moderator with the largest impact (3.1%). This was supported by previous research by (Shinn, 1993) that found age and level of education to be significant.

Each of the moderator variables for research question two moderated the relationship with the exception of gender. The results of research question two lead to the conclusion that age, income, and education level moderate the relationship between the RBHWS and job

satisfaction. This suggests how people experience the restorative benefits of hiking in wilderness solitude and the relationship this has to job satisfaction will vary based on age, income and level of education. Attending graduate school had the largest moderating impact and influenced the variable “better understanding my work and values”. It could be advanced education helps people better understand their work and values when given the opportunity to reflect on them in a wilderness setting. Age was identified as a moderator of the “Recollected Benefits Factor 2, work benefits.” It could be as people age they view the RBHWS as offering better opportunities to recover from stressful work environments. It could also mean the older participants worked more and may have valued the experience greater. If participants had recently retired from full-time employment and currently worked part-time or not at all, this could have had an impact as well. Age did relate to the way the RBHWS were experienced. Several different income levels served as moderating variables, each impacting different variables. This may reveal the RBHWS were different for individuals based on their income level. It may be having access to certain levels of income makes some aspect of the RBHWS more or less important. Having a certain level of income may increase or reduce stress and fatigue, or impact the type of stress or fatigue experienced. The level of income may also be linked to the type of work done, and the stress involved, which would help to further explain the different experiences.

### **Research question three findings and conclusions.**

Research question three: Is the relationship between the RBHWS and the job satisfaction of individuals who are employed or have recently been employed in any occupational setting impacted by selected moderating variables? The moderating variables

included: living or working in rural, urban or suburban environments, working inside or outside, working in quiet or loud environments, hours worked per week, non-paid hours worked per week, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years?

Residing in an urban environment was identified as a moderating variable. The variable noise (working in quiet or loud environments) moderated WSUM (wilderness solitude scale) and RC2 (better understanding my work and values); RC2 (better understanding my work and values) moderated hours worked; residing in an urban environment moderated RC2 (better understanding my work and values). The hours of non-paid work, the frequency of hiking in the past 12 months, the number of nights spent hiking in backcountry in the past 12 months, and the longest number of consecutive days spent hiking in backcountry over the past five years did not moderate the relationship. It can be concluded based on the results of question three the amount of time in wilderness was not associated with the RBHWS and job satisfaction. These results also indicated that working and living in an urban environment was an important variable that is associated with how people experience the RBHWS, specifically understanding their work and values. For individuals who work and live in urban environments, the RBHWS may provide an environment where individuals can better understand their work and values, opportunities they do not have in their everyday setting. Also, how someone who lives in an urban environment experiences the RBHWS may be different from that of someone who lives in a rural area. The perceived differences between the frantic nature of an urban environment and

the tranquility of a wilderness experience may be another cause for these relationships. This supports the conclusion of Cole (2001) who found living in urban environments significantly impacted wilderness experience. The level of noise in the workplace moderated the wilderness solitude scale, and may indicate people seek out the RBHWS to experience solitude and privacy available there, which is in direct contrast to their work environment. As noise within urban environments and in workplaces increases, workers may seek out more places to escape where they can experience quiet and solitude.

### **Recommendations**

This exploratory study was the first known research on the topic of the restorative benefits of hiking in wilderness solitude and its relationship to job satisfaction. As indicated earlier, the functions of wilderness solitude scale did not factor as expected based on the use of the scales in prior research. This could be a result of the scales being older, or because they were slightly modified to include information about the work setting. The scale was also used with a new population in the present research, which may have had an impact as well. The functions of wilderness solitude scales were developed in the 1980's and used with a population of college students. Another possible problem could be the similarity of the population participating in the survey. The survey was accessible online, and distributed primarily to members of hiking related organizations such as the Appalachian Trail Conservancy. The use of the database of 2,000 mile hikers from the Appalachian Trail Conservancy may have contributed to sampling error resulting in a skewed sample rather than a normal distribution. Sampling error occurs when you observe a sample instead of the entire population (Huck, 2008). The RBHWS experiences of the 2,000 mile hikers may have

been considerably different from the RBHWS experiences of participants who were not part of the database which skewed the sample and may have contributed to a bimodal distribution. A bimodal distribution is one in which a distribution has two different modes (Huck, 2008). Field testing of the survey instrument by asking approximately 150 - 200 participants to complete it would have provided an opportunity to identify any problems, and address those problems prior to collecting data to be used for analysis. Future research may want to consider the use of onsite surveying in addition to online availability, to broaden the survey sample. To address the issues identified with the factor analysis of the functions of wilderness solitude scales, new scales should be developed for future research on the functions of wilderness solitude as it relates to the workplace. The results of this research revealed a slight negative relationship between the RBHWS and job satisfaction. The correlation revealed a negligible (very small) relationship between the number of nights spent in wilderness and job satisfaction, and the total number of consecutive nights spent in wilderness and job satisfaction. This may indicate the amount of time in wilderness is an important component of the restorative experience. The RBHWS may become more significant the longer one spends in wilderness. This is supported by the research of Borrie & Roggenbuck (2001) who described the wilderness experience as being dynamic, emergent and multiphasic. There was also a negligible (very small) positive relationship between job satisfaction and the "Recollected Benefits Work Factor" (RC2). Participants indicated spending time in wilderness solitude helped them better understand their work and values, and helped them have a sense of control over their work- life. This reveals the RBHWS were not associated with job satisfaction, but were an effective way to help participants better

understand work, and feel a sense of control over work-life. This is similar to the findings of Grubb (1975), whose research examined assembly line boredom and individual differences in recreation participation. The study examined relationships between job boredom and recreation participation patterns among three groups of auto assembly line workers. Grubb concluded that there was a relationship between task repetitiveness, job boredom and frequency of participation in recreation.

### **Recommendations for Future Research**

The present study was exploratory and serves as a jumping off point for future research on the RBHWS and job satisfaction. Additional research is needed to better understand this relationship. Based on survey response, there is considerable interest in this topic. Additionally, no other research was found that focused on the problems identified in the present study. As the world population continues to grow, and the workplace and society get busier, louder, and more distracting, the importance of research on this topic will increase. While opportunities to experience solitude and privacy decrease, there will be a greater need for restorative environments that rest attention capacities and provide an escape from workplace stress.

Future research should consider how the RBHWS and the relationship to job satisfaction are impacted by ethnicity, socioeconomic status, gender, age and having physical challenges. Each of these populations has experienced some limitation of access historically to wilderness experience due to cultural, economic or physical barriers. The work of Wilderness Inquiry ([www.wildernessinquiry.org](http://www.wildernessinquiry.org)) provides access to wilderness for people from a diversity of backgrounds and is a valuable resource for future studies. A feminist



approach to this topic would be useful to help provide a clearer understanding of the wilderness experiences of women. The concept of wilderness, and wilderness theory has been criticized, being labeled as ethnocentric and androcentric (Roggenbuck, 2009). A study exclusively on the RBHWS of women would make a significant contribution to the literature in this field.

It would also be beneficial to consider replicating this study with a different population (e.g., sample from the work environment, not hiking communities). This would provide the opportunity to have a common work background and limit the possible extremes experienced in this study with long distance hikers who may not have had as many traditional work hours as other participants. Additional research focusing exclusively on Appalachian Trail “thru hikers”, or 2,000 mile hikers would help to better understand that population and provide a point of comparison to other populations. Taking this concept one step further, research examining the RBHWS based on specific types of jobs (e.g., managerial, technological, service, sales) and the type of benefits perceived as most important would be beneficial. Comparing two groups, one that experiences the RBHWS to another that participates in other leisure activities, would provide useful information for evaluating the RBHWS and its relationship to job satisfaction, as well as additional data about the restorative benefits of other leisure activities and how these benefits compare to the RBHWS.

A longitudinal study looking at the long-term impacts of the RBHWS compared to other leisure activities would provide stronger support for the belief leisure activities in nature are more restorative than others. A pre-test/post test survey design would be useful in capturing participant attitudes toward work and feelings of restoration immediately prior to

and after a RBHWS experience. This would also allow measurement of any changes occurring that positively or negatively impact work-related variables. A third step, following-up to collect data again in six months would help in learning more about the longer term benefits of the RBHWS. A longitudinal study should also be considered to learn more about the relationship between the RBHWS and job satisfaction over an extended period of time and how this impacts individuals. For example, are the benefits of the RBHWS cumulative, building on prior experiences? It is important to learn more about how people experience the RBHWS based on the region of the United States, or country, in which participants reside. This may impact perceptions of hiking and nature, as well as the availability of such opportunities. Future research should also seek to learn more about the relationship hiking in wilderness has on employees' attitudes toward workplace sustainability initiatives. It would also be beneficial to see if workplaces that encourage employees to hike in wilderness and have significant participation, experience a decrease in workplace violence.

This quantitative study provides a solid foundation for future research on the RBHWS from a qualitative perspective. A qualitative study could build on the present research by conducting interviews of individuals to provide deeper exploration of the RBHWS and the relationship this has to job satisfaction and the workplace. The qualitative research design that seems best suited for extending this research is phenomenological design. Phenomenological design is used so participants can describe the experiences as they are lived (Burns & Grove, 2005). Specific questions could be utilized to explore more in-depth how the RBHWS help in recovery from stressful work situations and which specific aspects of it are most important. A phenomenological study that involves hikers participating in the

study writing their reflections down at designated times in a journal a couple times a day for the duration of an extended trip, with directed reflection focusing specifically on work-related issues, would provide more depth of understanding about how the RBHWS impacts job satisfaction and coping with job stress. After the hiking experience and review of the reflection journals, participants would be interviewed to explore more completely their thoughts and feelings. It would also be beneficial to use this type of study to compare the experiences of individuals who day hiked; individuals who spent a couple of days in wilderness; and the experiences of people on extended wilderness hiking trips to compare responses, depth of reflection, and how their attitudes and thoughts evolved. Taking this phenomenological approach one step further, individuals could be asked to reflect at a designated time prior to the wilderness hiking experience while at work and at home on topics similar to those that will be focused on during the wilderness experience. Comparing these reflections may reveal changes in attitudes, beliefs and the level of stress experienced.

An additional qualitative approach would be to do an ethnographic study. Ethnographic studies are used to study people in their environment and are helpful for theory building (Esterberg, 2002). Data collected in an ethnographic study of the RBHWS could utilize participant observation and/or interviews. A unique perspective could be gained by accompanying an individual or a small group on an extended hiking trip, observing how they act as individuals and as a group, and doing interviews during the course of the trip to learn more about the experience. This would help learn more on a first hand basis about the psychological restoration and experience in nature that is described by many as unique. Participants could also keep reflective journals during the experience that could be evaluated

upon completion of the trip. The researcher would also want to take field notes during this research. When doing qualitative research, using multiple sources of data collection would increase the credibility of the conclusions made (Maxwell, 2005). The results of this type of research could be used to help shape a theory on the RBHWS.

Future research should also consider the public health benefits that may be associated with the RBHWS. Encouraging the general population to participate more actively in this leisure activity may have psychological and physical benefits that positively benefit the overall population's health, subsequently decreasing healthcare costs. A longitudinal study on this aspect of the RBHWS could provide valuable new insights.

Future research on the topic should also ensure the survey instrument will hold up during the study. The instrument should be field tested first. It is also recommended that if possible, a random sample of the population is used to allow generalizing the results to the broader population, thus strengthening research on the RBHWS.

Additional theoretical foundations should also be utilized in future studies. Independent variables focusing on how the RBHWS impact the ability to focus, reflect, feelings of restoration, and how this impacts the ability to manage stress from work and to perform work tasks should be considered. Attention Restoration Theory (Kaplan & Kaplan, 1989) should be considered for use in a theoretical framework as a dependent variable with the independent variable being Westin's (1967) Theory of Privacy or something similar. Another possible theoretical framework would be to have as a dependent variable Selye's (1978) General Adaptation Theory, which asserts exposure to environmental demands could have a cumulative negative impact, with the independent variable being Kaplan & Kaplan's

(1989) Attention Restoration Theory. Other theories related to job stress that should be considered include Beehr & Newman, 1978; Cummings & Cooper, 1979; French, Caplan, & Harrison, 1982; Kahn, Wolfe, Quinn, Snoeck, & Rosenthal, 1964; McGrath, 1976; and Schuler, 1980. The hypothesis for this type of theoretical framework would be opportunities to rest attention may alleviate the cumulative negative impact of job stress. Another theoretical framework would be to use Westin's (1967) Theory of Privacy as an independent variable with the dependent variable being Selye's General Adaption Model. Ulrich's (1979) theory that nature reduces stress could be used as an independent variable with the dependent variable being Malasch's (2003) theory related to job burnout as a prolonged response to chronic emotional and interpersonal stressors on the job. All of these theoretical frameworks would have particular value to HRD if demonstrated to help employees better manage the stress and demands of their jobs.

### **Implications for Human Resource Development**

Future research that builds on the present study can have significant implications for Human Resource Development (HRD) research and practice. The workplace is going to become increasingly more stressful, especially with the current economic conditions, and continued layoffs requiring the employees who remain to do more work. Problems associated with information overload are going to become more prevalent with continued advances in technology making transmission of information easier. Research on this topic can have implications for training, job performance and learning. Research identifying innovative ways to help employees balance work and life, as well as cope with stress and information overload, will enable HRD practitioners to encourage these types of activities

through employee development programs. If spending time hiking in wilderness offers opportunities to recover from stressful work situations, and positively impacts employees' ability to do their job, this will have serious implications for HRD related to organizational development. Organizations will benefit if the opportunity to rest attention capacities allows employees to be better focused and more able to learn upon returning from hiking in wilderness. Research in this area will become more critical as the lines between work and life outside of work continue to be blurred with technology providing constant connectivity. Future studies are needed that focus on the psychological and attention restoration benefits of hiking in wilderness and how they relate to the workplace. It may be beneficial to focus on how spending time in wilderness impacts the ability to do a job, or cope with a job, in addition to satisfaction with a job. Organizations could also realize important cost savings if employees become healthier as a result of this leisure activity. One company that has provided leadership in offering employees opportunities to balance work and life, particularly related to experiencing the outdoors, is the Patagonia Corporation.

Research on this topic also provides an important opportunity for HRD researchers and practitioners to cross disciplinary lines and work with colleagues in the fields of parks, recreation, and tourism; psychology; and kinesiology, as well as other disciplines. This would help strengthen not only this research topic, but provide opportunities for HRD research to be shared in a broader community. Additional research on this topic may also provide new workplace strategies to help HRD practitioners in their efforts related to employee development. HRD practitioners working with employee wellness professionals may be able to utilize the RBHWS as part of an integrative medical approach to help

individuals achieve and maintain health. This could also result in reduced healthcare costs for the organization.

Research on the RBHWS also provides opportunities to link with the emerging conversations on sustainability within HRD. Employees that spend time hiking in wilderness may become more attuned to the natural environment and be more willing to participate in sustainability initiatives. If this is this case, sustainability initiatives may want to include the RBHWS as part of their overall implementation plan for organizational growth in this area.

As research evolves on the RBHWS and its relationship to job satisfaction and the workplace, HRD graduate programs will need to consider how to incorporate this concept into the curriculum. The opportunity to utilize the RBHWS and other nature-related experiences may be one of the most important emerging opportunities for HRD researchers and practitioners. If it can be demonstrated that the RBHWS can be transferred to benefit the workplace, it will have broad implications for the future of HRD.

The RBHWS may not be understood by many who have not ventured there. Roggenbuck (2009) indicated his belief is the number of wilderness supporters in academia is declining. It is important for supporters of wilderness to work together across disciplinary lines and strengthen the literature related to the restorative benefits of wilderness solitude. Roggenbuck also described a culture that may not understand the benefits of wilderness, stating, “Science, technology, and materialism, all hallmarks of modernity and defining characteristics of our culture, might be negatively affecting wilderness use rates because they promise answers, truth, the good life, wealth, entertaining gadgets, fun, and excitement. For some, there may be no need for the slow and unpredictable rhythms of nature” (p. 6-7).

These cultural shifts will impact how people experience wilderness; their willingness to protect wilderness; and their acceptance of the RBHWS as a leisure option.

### **Limitations**

This research had a number of limitations impacting the results of the study. They included: 1) Data used for this research was self-reported by the participants. Due to time and financial constraints, behavior in this study was self-reported rather than observed. 2) An assumption was made that participants were answering truthfully. 3) Participants in this study had to be contemporary citizens of modern society. This is defined as individuals who live in developed nations, and who have access to education, and the many technological advances of the past century. Contemporary citizens have the financial means to afford travel to, and spending time in, wilderness solitude. 4) A random sample of the population was not used because of anticipated difficulty accessing this population, and constraints on time. Also limiting this study was the ability for those who were not currently employed, but who had recently been employed, to accurately recall job satisfaction.

The results of the study cannot be generalized, because a random sample was not used. This study did not include individuals who were not employed, or had not recently been employed who had not hiked, backpacked or in some other way experienced the RBHWS. The decision to include only individuals who were employed or who had recently been employed was required to obtain survey results measuring participant job satisfaction.



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## Appendices

## Appendix A

### Permission to use the functions of wilderness solitude scale

Page 1 of 2

Subj: RE: Privacy Scale  
Date: 11/13/2008 10:49:36 PM Eastern Standard Time  
From: HAMMITW@exchange.clemson.edu (William Hammitt)  
To: Ellison780@wmconnect.com

Mark,

Yes, you may use the scale. Let me know what you find out.

Good Luck,  
Bill Hammitt

---

**From:** Ellison780@wmconnect.com [mailto:Ellison780@wmconnect.com]  
**Sent:** Thu 11/13/2008 9:53 PM  
**To:** hammitw@clemson.edu  
**Subject:** Privacy Scale

Hi Dr. Hammitt-

I am working on my proposal for my dissertation at NC State. I am seeking your permission to use the following scale:

Hammitt, W. (1984). Functions of privacy in wilderness environments. *Leisure Sciences*, 6 (2), 151-166.

I appreciate your assistance. Please let me know if you have any questions.

Regards,

Mark Ellison  
Doctoral Student  
North Carolina State University

---

----- Headers -----  
Return-Path: <HAMMITW@exchange.clemson.edu>  
Received: from rly-db05.mx.aol.com (rly-db05.mail.aol.com [172.19.130.80]) by air-db09.mail.aol.com (v121\_r4.4) with ESMTP id MAILINDB091-ac6491cf54487; Thu, 13 Nov 2008 22:49:36 -0500  
Received: from mx6.clemson.edu (mx6.clemson.edu [130.127.235.211]) by rly-db05.mx.aol.com (v121\_r4.4) with ESMTP id MAILRELAYINDB054-ac6491cf54487; Thu, 13 Nov 2008 22:49:24 -0500  
Received: from CUMAIL1.CAMPUS.CU.CLEMSON.EDU (backex-3.clemson.edu [130.127.9.161]) by mx6.clemson.edu (8.13.8/8.14.3) with ESMTP id mAE3nOU6018493 for <Ellison780@wmconnect.com>; Thu, 13 Nov 2008 22:49:25 -0500  
X-MimeOLE: Produced By Microsoft Exchange V6.5  
Content-class: urn:content-classes:message  
MIME-Version: 1.0  
Content-Type: multipart/alternative;  
boundary="=\_NextPart\_001\_01C9460B.F8E44335"  
Subject: RE: Privacy Scale  
Date: Thu, 13 Nov 2008 22:47:59 -0500  
Message-ID: <CE4A061C1DF1AB4D8A57D0F59008FD6801EE399D@CUMAIL1.CAMPUS.CU.CLEMSON.EDU>  
X-MS-Has-Attach:  
X-MS-TNEF-Correlator:  
Thread-Topic: Privacy Scale  
Thread-Index: AclGBDvbxKNVIS5MSmC1alxrlZZLxQAB42my  
References: <d3c.30ae5f39.364e4237@wmconnect.com>

Friday, November 14, 2008 Netscape Connect: Ellison780

Appendix B  
Permission to use the recollected benefits of wilderness solitude scale

Subj:	<b>Re: Research on Wilderness Solitude</b>
Date:	10/30/2008 10:50:41 AM Eastern Standard Time
From: jroggenb@vt.edu	
To: Ellison780@wmconnect.com	

Mark: You can certainly use any scale you find in that article for your work.  
Are the items to the whole scale in the paper you refer to? (I am retired and I don't have easy access to the journals anymore.)

If I can be of further assistance, let me know.

Joe

Quoting Ellison780@wmconnect.com:

> Dr. Roggenbuck-  
>  
> I am a doctoral student at NC State. Dr. Roger Moore is on my committee. My  
> dissertation research is looking at the relationship between spending time in  
> wilderness solitude and job satisfaction. Would it be possible to use for my  
> dissertation the scale from table 2 (page 461) of this study:  
>  
> Walker, G., Hull, R. & Roggenbuck, J. (1998). On-site optimal experiences and  
> their relationship to off-site benefits. Journal of Leisure Research, 30 (4),  
> p. 453-471.  
>  
> Please let me know if you have any questions.  
>  
> Regards,  
>  
> Mark Ellison  
> 704-796-5031  
> markellison@alumni.ncsu.edu  
>

Appendix C  
Permission to use the MSQ Short Form

UNIVERSITY OF MINNESOTA

*Twin Cities Campus*

*Department of Psychology  
College of Liberal Arts*

*N218 Elliott Hall  
75 East River Road  
Minneapolis, MN 55455  
Office: 612-625-2818  
Fax: 612-626-2079  
www.psych.umn.edu  
Email: psymain@umn.edu*

January 29, 2010

Mark Ellison  
780 Courtney Street  
Concord, NC 28025

Dear Mark Ellison:

We are pleased to grant you permission to use the Minnesota Satisfaction Questionnaire 1977 short form on a secure web site as you requested.

Please note that you must include the following copyright statement:

Copyright 1977, Vocational Psychology Research  
University of Minnesota. Reproduced by permission.

Vocational Psychology Research is currently in the process of revising the MSQ manual and it is very important that we receive copies of your research study results in order to construct new norm tables. Therefore, we would appreciate receiving a copy of your results including 1) demographic data of respondents, including age, education level, occupation and job tenure; and 2) response statistics including scale means, standard deviations, reliability coefficients, and standard errors of measurement. If your tests are scored by us, we will already have the information detailed in item #2.

Your providing this information will be an important and valuable contribution to the new MSQ manual. If you have any questions concerning this request, please feel free to call us at 612-625-1367.

Sincerely,  
  
Dr. David J. Weiss, Director  
Vocational Psychology Research

## Appendix D IRB Approval

North Carolina State University is a land-grant university and a constituent institution of The University of North Carolina

**Office of Research  
and Graduate Studies**

**NC STATE UNIVERSITY**

Sponsored Programs and  
Regulatory Compliance  
Campus Box 7514  
2701 Sullivan Drive  
Raleigh, NC 27695-7514

919.515.2444  
919.515.7721 (fax)

From: Carol Mickelson, IRB Coordinator  
North Carolina State University  
Institutional Review Board

Date: March 31, 2010

Project Title: The Restorative Benefits of Hiking in Wilderness Solitude and the Relationship to Job Satisfaction

IRB#: 1411-10

Dear Mr. Ellison;

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101. b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

**NOTE:**

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please forward a copy of this letter to your faculty sponsor, if applicable. Thank you.

Sincerely,

Carol Mickelson  
NCSU IRB

## Appendix E

### Subject Matter Expert Recruitment Materials

Hi Dr. -

I am a 5th year doctoral student at North Carolina State University. My dissertation research is focused on: "The restorative benefits of hiking in wilderness solitude and the relationship to job satisfaction."

My research is quantitative and the survey instrument will be available online to anyone who hikes and is employed, or recently employed. Before I begin collecting data I need to do a content validity check to ensure that each of the items included on the survey are actually needed to measure the construct. Would you be willing to serve as a "subject matter expert"? I will have an evaluation tool online for experts to use. This should only take 5-10 minutes. The scales I am using are adapted from Hammitt & Brown, 1984 (Functions of wilderness privacy) and Walker, Hull & Roggenbuck, 1998, (Recollected benefits of wilderness solitude). I also need feedback on the usability of the survey. Would you be willing to review the survey instrument for usability as part of a pilot test? Again, this should only take a few minutes.

If you know of anyone else who has the educational background and experience to serve as a subject matter expert please let me know. I need a couple more people. I also need a few more participants for the pilot study.

Once this study is ready to go I will send you a link to share.

Thanks for any assistance you can provide.

Regards,

Mark Ellison, M. Ed.

Doctoral Candidate

North Carolina State University

## Appendix E

### Subject Matter Expert Recruitment Materials

Thu, April 1, 2010 9:53:51 AM  
Content Validity Evaluation & Pilot Study for Research on Hiking  
From: Mark Ellison  
<[hikingresearch@yahoo.com](mailto:hikingresearch@yahoo.com)>  
View Contact  
To: [markellison@alumni.ncsu.edu](mailto:markellison@alumni.ncsu.edu)

---

Thank you for agreeing to assist me with the development of a survey instrument for my study on the restorative benefits of hiking in wilderness solitude and the relationship to job satisfaction. This will have two parts. First, as a subject matter expert, please do a content validity evaluation of the scales. Second, please complete the survey, and provide any feedback related to the usability of the instrument.

The content validity evaluation is available at:  
<http://www.surveymonkey.com/s/contentvalidity>

The survey is available at: <http://www.surveymonkey.com/s/hikingresearch>  
For the purposes of this research, hiking in wilderness is referred to as backcountry hiking on the survey instrument. I used the term backcountry hiking to reduce confusion on what might be considered a wilderness area. I explain this in my dissertation.

Once you have completed the survey please email me at [hikingresearch@yahoo.com](mailto:hikingresearch@yahoo.com) with any feedback that you have related to the usability of the survey instrument.

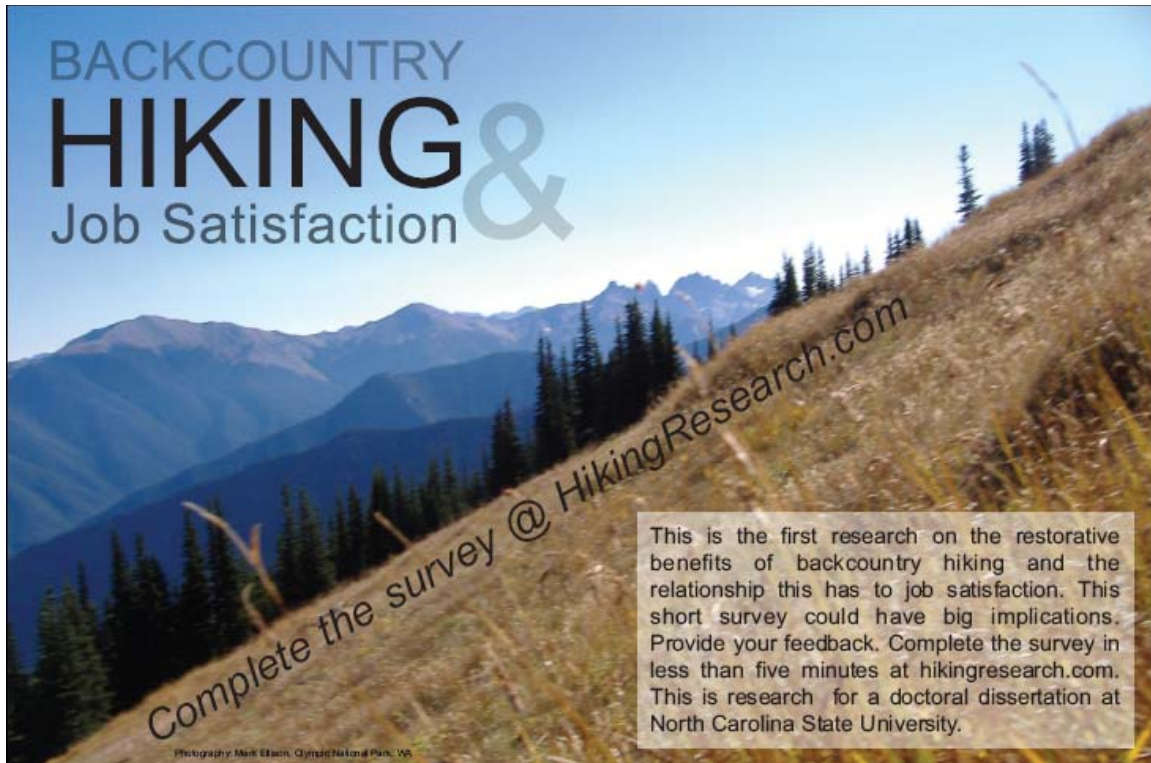
Thank you for assisting me with the development of this survey instrument. Reward yourself, and go take a hike!

Regards,

Mark Ellison  
Doctoral Candidate  
North Carolina State University



Appendix F  
Poster used to promote the survey



## Appendix G

### End User Interface for Online Survey

The screenshot shows a web browser window with the title "The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p". The address bar shows a URL from surveymonkeys.com. The browser's toolbar includes links to various NCSU resources like "MyPack Portal @ NC State University", "NCSU Libraries", and "WebCT Vista @ NCSU".

The survey content is displayed on a light green background. At the top, the title "The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010)" is followed by a progress bar showing "20%". Below this, the section "1. Information about this research" is introduced.

The text of the survey includes:

- A paragraph stating the purpose of the research is to learn more about the restorative benefits of backcountry hiking and its relationship to job satisfaction, conducted for a doctoral dissertation at North Carolina State University.
- A paragraph stating participation requirements: individuals should hike, be employed, or recently employed, and be at least 18 years of age.
- A paragraph explaining the survey includes questions about workplace experiences and supervisor relationships, and that it will take approximately 5 minutes to complete.
- A paragraph stating there are no risks or benefits to the participant.
- A paragraph stating the information collected is confidential and does not include personally identifiable information like email or IP address.
- A paragraph providing contact information for the researcher, Mark Ellison, at hikingresearch@yahoo.com.
- A paragraph providing contact information for Deb Paxton, Regulatory Compliance Administrator, at Box 7514, NCSU Campus (919/515-4514).

A consent statement follows: "\* 1. I have read and understand the above information. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled."

Below the consent statement, a prompt asks the user to "Please select one of the following:" with two radio button options:

- ☐ I agree to participate in this study (continue by selecting the next button below).
- ☐ I decline participation (please select the exit link in the upper right corner).

A "Next" button is located at the bottom of the survey content area. The browser's taskbar at the bottom shows several open applications, including "Microsoft Outlook Web...", "Yahoo! Mail...", "The Restorative Bene...", "IDRAFTS", and "ELUSION PROPOSAL...". The system clock in the bottom right corner shows "1:30 AM".

## Appendix G (continued)

### End User Interface for Online Survey

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p

http://www.surveymonkey.com/s.asp?sm=34f8b0d246b9a09d9c0c0e17a2f90908b0d703d

File Edit View Favorites Tools Help

Links map new COHS Website COHS Email MyPack Portal @ NC State University NCSU Libraries WebCT Vista @ NCSU SonaWeb Journal of wilderness Electronic Forms (eForms) scholar360 Research Administration (SPARCS) cabarus

Google Search Share Sidelink Check Translate AutoFill

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010)

2. Functions of Solitude When Backcountry Hiking

40%

The purpose of this section is to learn more about the importance you place on various aspects of solitude experienced while backcountry hiking. Solitude does not mean complete isolation, but refers to opportunities for escape from everyday roles and pressures, and modern urban environments, for restoration.

1. How important for you are these general functions of solitude when backcountry hiking?

	1. Extremely important	2. Important	3. Somewhat important	4. Neutral	5. Somewhat unimportant	6. Unimportant	7. Not at all important
For exploring and thinking through work matters and concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a relaxed period for reflecting upon past work experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For disengaging from everyday work roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self evaluation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a private setting for communicating with a few friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For experiencing a period of personal autonomy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For self evaluation and re-directing one's life-time goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For maintaining one's sense of individuality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For evaluating work matters with intimate friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For resting the mind from anxiety and mental fatigue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An emotional release from work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For releasing psychological stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For recovering from troubled or depressing moments at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For regrouping ones thoughts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For developing a sense of independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For being alone with one's individual thoughts and feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As an environment where you can maintain a desired "mental distance" from other individuals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Done

start Microsoft Outlook Web... Inbox (6) - Yahoo! M... The Restorative Bene... IDRAFTS ELLISON\_PROPOSAL...

Local intranet 100%

1:31 AM

Appendix G (continued)  
End User Interface for Online Survey

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p

http://www.surveymonkey.com/s.aspx?sid=3761642&gid=1&pg=1&cid=1&2f630690UN7U%3D

Google

Search

Sign In

Links

map-view

COGS Website

COGS Email

MyPack Portal @ NC State University

NC State Libraries

WebCT Vista @ NC State

SonixWeb

Journal of wilderness

Electronic Forms (eForms)

scholar360

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010)

Page

Tools

As an opportunity for sharing confidences and intimacies with those you trust

An emotional release from work

For evaluating work matters with intimate friends

For self evaluation and re-directing one's life-time goals

Personal autonomy/self identity

For developing a sense of independence

As a private setting for communicating with a few friends

For releasing psychological stress

Self evaluation

For regrouping ones thoughts

For experiencing a period of personal autonomy

For recovering from troubled or depressing moments at work

For identifying ones inner self

For releasing physical tension

For resting the mind from anxiety and mental fatigue

For exploring and thinking through work matters and concerns

For being alone with one's individual thoughts and feelings

As an environment where you can maintain a desired "mental distance" from other individuals

For disengaging from everyday work roles

For the development of individuality concerning personal and spiritual concerns

As a relaxed period for reflecting upon past work experiences

For maintaining one's sense of individuality

Prev

Next

Local intranet

100%

start

Microsoft Outlook

Firefox (3) - Yahoo! M...

The Restorative Bene...

IEBARTS

ELLSON, PROPOSAL...

9:37 AM

## Appendix G (continued)

### End User Interface for Online Survey

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p

http://www.surveymonkey.com/s.aspx?sm=2d8NNDQ24dyap5Rq2H8D1VQJCL8A1%2Fv90950UN7U%3D

File Edit View Favorites Tools Help

Links: sap-new, COHS Website, COHS Email, MyPack Portal @ NC State University, NCSU Libraries, WebCT Vista @ NCSU, SoraWeb, Journal of wilderness, Electronic Forms (eForms), scholar360, Research Administration (SPARC), cabanus

Google Search, Share, Sidelis, Check, Translate, AutoFill

The Restorative Benefits of Backcountry Hiking and Its Relationship to Job Satisfaction (2010) Exit this survey

### 3. Recollected Benefits of Backcountry Hiking

60%

The purpose of this section is to better understand your backcountry hiking experience.

1. To what extent did your time backcountry hiking help you to:

	1. Not at all	2	3. Somewhat	4	5. A lot
Learn more about who I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better understand my work and values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve my sense of control over my work life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve my self reliance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gain humility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grow spiritually	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhance my environmental ethic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Prev Next

Done

start, Microsoft Outlook, Firefox (5) - Yahoo! M..., The Restorative Bene..., JERACTS, ELIZON PROPOSAL...

Local intranet 100%

1:31 AM

## Appendix G (continued)

### End User Interface for Online Survey

The purpose of this section is to better understand your satisfaction with your job. If you have had paid employment within the past 12 months this can be used. Copyright 1977, Vocational Psychology Research, University of Minnesota. Reproduced by permission.

**1. Rate how satisfied you are with the following aspects of your paid employment:**

	1. Very dissatisfied	2. Dissatisfied	3. Neither satisfied or dissatisfied	4. Satisfied	5. Very satisfied
1. Being able to keep busy all the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The chance to work alone on the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The chance to do different things from time to time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The chance to be "somebody" in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The way my boss handles his/her workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The competence of my supervisor in making decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Being able to do things that don't go against my conscience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The way my job provides for steady employment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The chance to do things for other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. The chance to tell people what I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. The chance to do something that makes use of my abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. The way company policies are put into practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. My pay and the amount of work I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. The chances for advancement on this job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. The freedom to use my own judgement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. The chance to try my own methods of doing the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. The working conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. The way my co-workers get along with each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. The praise I get for doing a good job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. The feeling of accomplishment I get from this job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix G (continued)

### End User Interface for Online Survey

The screenshot shows a web browser window with the title "The Restorative Benefits of Backcountry Hiking and its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p". The address bar shows a URL from surveymonkey.com. The browser's toolbar includes a search bar, a "Sign In" button, and several bookmarks. The survey page has a green header with the title and an "Exit this survey" link. Below the header, a progress bar indicates 100% completion. The main content area is green and contains the following text and questions:

This information is being collected to better understand how certain variables impact backcountry hiking and its relationship to job satisfaction.

1. What is your gender?

☐ Female

☐ Male

2. What is your age? (You can not participate in this research if you are under the age of 18)

3. About how many hours of paid work do you do a week? If you are not currently employed, how many hours of paid work did you do in your most recent job within the past 12 months?

4. How many hours of non-paid work do you do a week?

5. What was your annual household income in 2009?

☐ More than \$100,000

☐ \$75,000-\$100,000

☐ \$50,000-\$74,999

☐ \$35,000-\$49,999

☐ \$25,000-\$34,999

☐ \$20,000-\$24,999

☐ \$15,000-\$19,999

☐ \$10,000-\$14,999

☐ \$5,000-\$9,999

☐ Under \$5,000

6. Is your job mostly inside or outside?

☐ Inside

☐ Outside

The Windows taskbar at the bottom shows the "start" button, several open applications (Microsoft Outlook, Yahoo! Mail, The Restorative Bene..., IDRAFTS, ELLISON\_PROPOSAL...), and the system clock showing 1:14 AM on 1/14/2010.

The Restorative Benefits of Backcountry Hiking and its Relationship to Job Satisfaction (2010) - Microsoft Internet Explorer p

http://www.surveymonkey.com/s.aspx?sm=2nHdUGZ4Byjap5ng7m6GTVQICU8A1%2FnsX0K6SUN7U%3D

Google Search Sign In Links xsp-new COGS Website COGS Email MyPack Portal @ NC State University NCSU Libraries WebCT Vista @ NCSU SonixWeb Journal of wilderness Electronic Forms (eForms) scholar360

The Restorative Benefits of Backcountry Hiking and it...

Inside  
Outside

7. Rate the noise level of your work environment on a scale of 1-5 (one quiet, five loud).

1) Quiet 2) 3) Some Noise 4) 5) Loud

8. What is your level of education?

Some high school  
High school graduate  
Some college  
College graduate  
Graduate school

9. Describe the community where you currently reside.

Urban (A community of 2,500 or more)  
Suburban (Residential area on the outskirts of a city)  
Rural (An area with a population of less than 2,500)

10. Describe the area where you currently work.

Urban (A community of 2,500 or more)  
Suburban (Residential area on the outskirts of a city)  
Rural (An area with a population of less than 2,500)

11. How many times did you hike in backcountry areas in the past 12 months?

12. How many nights did you spend on overnight backcountry hiking trips in the past 12 months?

13. What is the longest number of consecutive days you have spent on a backcountry hiking trip over the past 5 years?

Prev Done

Done Local intranet 100%