

CONNECTING WITH NATURE: THE EFFECTS OF
ORGANIZED CAMP EXPERIENCES AND EARLY-LIFE OUTDOOR EXPERIENCES
ON CHILDREN'S ENVIRONMENTAL CONSCIOUSNESS

By

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This study examined how children aged 9 - 14 years, attending two different residential summer camps, responded to questions related to their connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues (i.e., environmental consciousness). The study also explored the association of early-life experiences in the outdoors with campers' responses related to their environmental consciousness. Both camps were situated in similar, natural outdoor settings, but only one of the camps (designated as Camp A) engaged the children in intentional environmental education programming. The other camp (designated as Camp B) served as a control group, but also provided a setting for studying the effects of participation in a summer camp in a natural outdoor setting *without* intentional environmental education programming on the campers' environmental consciousness.

Samples of children attending Camp A and Camp B were surveyed before and after their camp experience to determine any changes in their environmental responses from pre- to post-camp experience. Early-life outdoor experiences, as reported by the children in the pre-camp

questionnaires, were analyzed to determine associations between levels of early-life outdoor experiences and environmental response scores on both the pre- and post-camp surveys. Results showed that Camp A children's overall scores increased significantly from pre- to post-camp experience, although the scores were significantly higher on only two of the four indices measured. The scores of Camp B children showed no significant increases, either in the aggregate or on any of the four indices individually, from pre- to post camp experience. Higher levels of early-life outdoor experience were associated with significantly higher scores on environmental scales at both camps both pre- and post-camp.

KEYWORDS: connection with nature, outdoor recreation, environmental education, adventure education, early-life outdoor experience, environmental philosophy

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Introduction

"Children are born with a sense of wonder and an affinity for Nature. Properly cultivated, these values can mature into ecological literacy, and eventually into sustainable patterns of living"(Barlow, 2004, p. 6)

Since the early 1960's people have become increasingly aware of worldwide environmental problems such as air and water pollution, ozone layer depletion, loss of biodiversity, and a greenhouse effect aggravated by human activity. Some authors have even suggested that nothing less than a paradigm shift in environmental consciousness, resulting in (or from) a reevaluation of humankind's place in nature, is imperative for our survival (Russell, 1988). In any event, alleviating the crisis will require a concerted, multidisciplinary approach as well as a thorough consideration of philosophical and spiritual issues.

Richard Louv's (2005) book, *Last Child in the Woods*, brought worldwide attention to another dimension of the environmental crisis. Louv suggested that most children in America today have little or no contact with, or experience in, the natural world, leading to what he calls "nature-deficit disorder" (p. 10). Louv was not the first to realize the importance of children's connection with nature. Many authors and researchers believe that today's children lack the amount and type of exposure to nature necessary for developing environmental values or constructing meaning from environmental education (Kellert, 2002; Orr, 2002).

Children are an important part of the solution to environmental and ecological problems because their attitudes and behaviors are generally carried over into adulthood (Basile, 2000). In light of the present disconnect of children with nature, how can their love of, and connection to, nature and their consequent environmental consciousness, best be cultivated? Literature

exploring humans' relationship with nature, learning theories, attitude formation, and the relationship between attitudes, intentions and behaviors, contributes to a better understanding of how children can connect with nature. The purpose of this study was to further that understanding by (1) comparing the effects of organized camp experiences at two separate but similar summer camps on children's connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues in natural area settings; and (2) examining the association of early-life experiences in the outdoors with the campers' levels of environmental consciousness.

Background

Over the past four decades, numerous researchers have attempted to understand what makes people care about the environment and which activities and programs may result in improved environmental attitudes and behaviors. Some studies have focused on individuals' self-reported influences of early-life experiences (Tanner, 1980; Place, 2000), while others explored the association between environmental concern and participation in outdoor recreation (e.g., Dunlap & Heffernan, 1975; Thapa & Graefe, 2003), outdoor adventure education (Martin, 2004; Rea, 2006), and environmental education (Hanna, 1995; Johnson & Manoli, 2008). The results of these studies have been inconclusive and often inconsistent. Research summaries (e.g., Berns & Simpson, 2009) have raised more questions than they have answered regarding what is working and how. In the context of outdoor adventure education, Berns and Simpson questioned whether this research has focused so much on the therapeutic value of the outdoors and emancipatory goals, such as self-efficacy and self-confidence, that the association between outdoor recreation and environmentalism has not been adequately documented or studied. Other authors (e.g., Lugg, 2004; Thomas, 2005) describe a greening of outdoor education that is integrating the

emancipatory goals of adventure education with the instrumental goals of environmental education (D'Amato & Krasny, 2011) at the risk, according to some (e.g., Martin, 2004), of marginalizing or eliminating the role of adventure activities in outdoor education.

Although the relationship of humans with nature has been the subject of debate for millennia, children's connection with nature is a relatively new research subject. Researchers have struggled to conceptualize connection with nature in psychological, spiritual, and wilderness contexts, as well as from the perspectives of childhood development and education. During the last two decades, studies have been conducted and instruments developed (e.g., Cheng & Monroe, 2011) to measure connection with nature and find ways to increase and strengthen it. The importance of connection with nature goes beyond its essential role in child development, and some believe the future of humans, as a species, depends on it (e.g., Kellert, 2009). Little has been revealed, however, about how this connection might be established.

Justification

Understanding and cultivating children's environmental attitudes is crucial to rectifying the environmental degradation of the past two centuries. In time, children will need both the inclination and the necessary skills to address environmental issues. To date, however, the literature has not provided sufficient insight into what helps children care about the environment, or which activities, or programs, may serve to deepen their connection with nature and environmental consciousness. Numerous studies, using different theories, research methods, and instruments, have been conducted with children attending residential environmental education school programs, residential environmental education summer camps, and traditional residential summer camps in the outdoors. There have been few (if any) studies, however, comparing increases in pro-environmental attitudes, stewardship and connection to nature achieved at a

summer camp with an intentional environmental education component to similar increases that may be achieved at a recreational summer camp in a similar natural setting without an intentional environmental education component. Furthermore, few (if any) studies have been reported which combined measurements of outdoor/adventure education constructs with measurements of environmental education constructs and early-life experiences.

Purpose

The purpose of this study was to examine how campers aged 9 - 14 years attending two different camps responded to questions related to connection with nature (Connection with Nature), environmental stewardship (Stewardship), interest in environmental learning and discovery (Discovery), and knowledge and awareness of environmental and ecological issues in natural area settings (Awareness). In addition, the study examined the association of early-life outdoor experiences (ELOE) with the level of campers' environmental consciousness. Both camps were situated in similar natural outdoor settings, but only one of the camps engaged children in intentional environmental education programming. The other summer camp served as a control group and also provided the opportunity for examining the effect of outdoor recreation and adventure activities in an organized camp setting, without intentional environmental programming, on children's connection with nature and environmental consciousness.

This study examined four research questions:

1. Is participation in a summer camp in a natural setting *with* intentional environmental education programming (designated as Camp A) associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness?
2. Is participation in a summer camp in a natural setting *without* intentional environmental education programming (designated as Camp B) associated with an

- increase in children's Connection with Nature, Stewardship, Discovery, and Awareness?
3. Is there a difference in the amount of change in Connection with Nature, Stewardship, Discovery, and Awareness between the children attending Camp A and the children attending Camp B?
 4. Are early-life outdoor experiences associated with increased levels of Connection with Nature, Stewardship, Discovery, and Awareness?

Definition of Terms

- Connection with Nature Index – a scale measuring levels of (a) comfort in the outdoors, (b) conception of humanity's relationship to the environment, (c) engagement with surroundings when in natural settings, and (d) interest in outdoor activities (Stern, Powell, & Ardoin, 2008).
- Early-life outdoor experiences (ELOE) – early-life interaction with rural, natural, or other fairly pristine habitats (Ewert, Place, & Sibthorp, 2005). Within the context of this study, *early-life* refers to childhood and youth up to the time of camp attendance (i.e., up to the age of 14 years).
- ELOE Index – a scale measuring levels of early-life outdoor experiences.
- Environmental consciousness – individuals' propensity to engage in pro-environmental behaviors based on combined affective, cognitive, and dispositional psychological factors, including a pro-environmental worldview (affective), information and knowledge (cognitive), and attitudes towards action (dispositional) (Sanchez & LaFuente, 2010).
- Environmental education - a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills

and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978).

- Environmental stewardship (Stewardship) – participants’ attitudes toward environmental conservation, and intentions and actions regarding environmental behaviors (Stern, Powell, & Ardoin, 2008).
- Stewardship Index – a scale for measuring environmental stewardship.
- Interest in environmental learning and discovery (Discovery) – levels of participants’ interest in learning about natural history and directly exploring this topic in various settings (Stern, Powell, & Ardoin, 2008).
- Discovery Index – a scale for measuring interest in environmental learning and discovery.
- Knowledge and awareness of environmental and ecological issues in natural area settings (Awareness) – levels of participants’ knowledge and awareness of such environmental and ecological issues as conservation and preservation practices and biodiversity in natural settings (adapted from Stern, Powell, & Ardoin (2008).
- Awareness Index – a scale for measuring knowledge and awareness of environmental and ecological issues in natural area settings

Literature Review

An examination of children's connection with nature and environmental consciousness raises epistemological, psychological, sociological, spiritual, and educational questions. What is the relationship of humans to the natural world? Are humans separate from nature or a part of it? How is knowledge acquired, and what stimulates interest in learning? Which teaching/learning strategies and environments are most effective? What factors contribute to attitude formation? How does attitude influence behavior? What motivates environmentally responsible behavior? What interventions are most effective in producing desired changes in knowledge, attitudes and behaviors? A wealth of literature, in multiple disciplines including philosophy, psychology, education, and outdoor recreation, addresses these often interrelated topics.

Connection with Nature

Western civilization and tradition is based largely on the premise that humankind exists separate and apart from the natural world. From the Holy Bible, in which God commanded Adam and Eve to “replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth” (Genesis 1:28, King James Bible, Cambridge Ed.), to Francis Bacon, who envisioned nothing less than the total transformation of nature in the cause of science (Geisinger, n. d.), to modern economic commodification of nature in the name of sustainable development (Castree, 2003), the idea that humans are separate from nature has imbued almost every tradition of Western thought. This anthropocentric philosophy fueled both the industrial revolution and the scientific and technological advances of the last two centuries, which resulted in an actual (i.e., not merely philosophical) separation of humans from nature.

Regardless of one's opinion on humans' connection with nature, it is indisputable that humans' relationship with nature (as conceived in Western Civilization) was not always what it is today. For most of history, humans lived and evolved in the natural environment. In other words, nature is, evolutionally speaking, an integral part of the human condition. Wilson (1984) hypothesized that humans have a fundamental biological connection with nature and both the propensity and need to affiliate with other living organisms. His *biophilia* hypothesis has been advanced to explain people's preferences for natural environments over built environments, the effects of natural settings in reducing stress, shorter postoperative hospital stays for patients with a view of trees from a window than patients with a view of a brown wall, and the beneficial effects of direct contact with animals on a wide range of clinical patients (Kahn, 1997). Cramer (2008), reflecting on Wilson's biophilia theory, expressed concern that children who lack connection with nature will be less motivated to protect it.

The issue of humans' relationship with nature informs today's studies of environmental problems and solutions and is also implicated in the conservation/preservation dichotomy in 19th and 20th century environmental debate. This debate involved two schools of thought that emerged, beginning around 1850, regarding natural resource management ("The evolution of the conservation movement", 2002). The preservationist school began as a back-to-nature movement advocated in the earlier years by Henry David Thoreau, George Caitlin, and George Perkins Marsh, and in the early 20th century by John Muir, founder of the Sierra Club ("Role of water in the environmental movement", n. d.). Their philosophy, later enhanced by Aldo Leopold's (1949) land ethic, held that nature should be preserved for its own sake, because of its intrinsic value apart from its utility to humans. Preservationists viewed nature and humans as parts of an organic whole, with each needing the other to survive (Oelschlaeger, 1991). Conservationist

philosophy, championed by Gifford Pinchot and Theodore Roosevelt, embodied a utilitarian approach, applying policies of scientific management for the more responsible and efficient use of natural resources for human consumption (Zinser, 1995). Pinchot was appointed director of the newly established National Forest Service, a division of the Department of Agriculture, in 1905, evidencing a public policy favoring the conservationist position (Zinser, 1995). The schism persisted, however, culminating with the Hetch Hetchy dam controversy. This dispute pitted Preservationists against conservationists over the issue of flooding the Hetch Hetchy Valley in Yosemite National Park to construct a reservoir for the benefit of the City of San Francisco. The Preservationists lost the battle and the dam was built; the loss, however, spawned a campaign for an independent federal agency to protect and care for National Parks. As a result, the National Park Service was created as a division of the Department of the Interior in 1916 (Righter, 2006). Nonetheless, with the exception of National Parks and designated wilderness areas, land management became dominated by the Conservationist philosophy in the twentieth century. The dichotomy of preservation versus conservation is still evident, however, in environmental policy today (Zinser, 1995).

Humans' relationship with nature is a preeminent issue in much of current environmental and ecological research. Louv (2005) popularized the issue of children's disconnect from nature, but the concern was already evident in the literature before he published *Last Child in the Woods*. Notably, Leopold (1949) suggested that people abuse the environment because they regard it as a commodity to be exploited for personal benefit rather than a part of themselves. Others have argued that expanding our sense of self to include the natural world will foster environmental protection, as environmental destruction would then equal self-destruction (Mayer & Frantz, 2004). To test this theory, Mayer and Frantz developed the Connectedness to Nature

Scale (CNS) to measure adults' affective sense of oneness with the natural world, and to evaluate whether this sense of connectedness leads to ecological behaviors. Mayer and Frantz (2004) reported the results of five studies that, in addition to establishing the reliability and validity of the scale, supported both Leopold's contention that connectedness to nature leads to concern for nature and Roszak's assertion that people who feel connected to nature will be less likely to harm it. The results also demonstrated a moderately strong positive relationship between feelings of connectedness to nature and pro-environmental behavior. Moreover, the results suggested that personal well-being is associated with a sense of feeling connected to nature.

Schultz (2000), building on earlier research that described environmental concerns as egoistic (concern for self), altruistic (concern for other people), and/or biospheric (concern for all living things), theorized that environmental concern is connected with a person's notion of self and the degree to which people define themselves as independent, interconnected with other people, or interconnected with all living things. He hypothesized that different environmental concerns could be activated through manipulative interventions. Focusing primarily on biospheric concerns, Schultz tested his hypothesis using a perspective-taking intervention where participants were shown slides depicting animals being harmed by environmental degradation. Some participants were instructed to take the perspective of the animal and others were instructed to remain objective. Results showed that participants instructed to take the perspective of the animal expressed significantly higher levels of biospheric concern than participants instructed to remain objective. Based on these results, Schultz suggested that activities that reduce a person's perceived separation from nature would lead to increased biospheric concern.

Guiney and Oberhauser (2009) examined conservation volunteers' psychological connection to nature and found that almost all volunteers felt a connection to nature, and for

most, this connection began in childhood. In this study, most of the volunteers were 10 (or younger) when they became interested in nature; many felt this interest had always existed, suggesting that their love of nature was innate. Activities that sparked these volunteers' interest in nature included unstructured exploration, observing wildlife, and collecting natural items. Furthermore, many of the volunteers had spent time on farms, parks, and undeveloped land. These volunteers indicated that increased contact with nature provided numerous personal benefits, including aesthetic (appreciation of natural beauty), affective (stress reduction), intellectual (desire to learn), and spiritual (connection to something larger than self) benefits.

Cheng and Monroe (2011), building on earlier studies (e.g., Mayer & Frantz, 2004) suggesting that affective factors are essential elements in predicting pro-environmental behaviors, developed an instrument to measure *children's* affective attitude toward nature. Four dimensions were included in their children's connection to nature index: (a) enjoyment of nature, (b) empathy for creatures, (c) sense of oneness with nature, and (d) sense of responsibility toward nature. A study conducted with the instrument showed that children's connection to nature, and previous experience in nature, influenced their intention to participate in nature-based activities in the future. Furthermore, connection to nature, perceived family value toward nature, and perceived control, each positively influenced the children's interest in performing environmentally friendly behaviors. The connection to nature variable had the strongest influence on the children's interest in participating in nature-based activities. Results suggested that connection to nature is a strong predictor of children's interests in environmentally friendly practices. The results also showed that previous experience in nature increased children's feelings of connectedness with nature. An unexpected finding was that self-efficacy was a strong predictor of connection to nature, suggesting that development of a connection with nature is

influenced by children's sense that they were able to help the environment. Cheng and Monroe suggested that providing hands-on environmental education to children might enhance children's affective attitudes toward nature and their interest in protecting nature.

Brymer and Gray (2009) revealed a different aspect of connection with nature in a qualitative study of athletes engaging in extreme nature sports such as big-wave surfing, extreme skiing, and mountaineering. These athletes described their experience with the natural world as an intimate dance with nature, indicating a holistic experience. For these athletes, the natural world facilitated a deeper, more positive understanding of themselves and their place in the environment. Brymer and Gray noted that, "In a sense, they have no 'relationship' with nature because there is no separation" (p. 144). This mystical, or spiritual, aspect of connection with nature has been explored by other authors. Ashley (2007) reported the following characteristics of wilderness spirituality:

"a feeling of connection and interrelationship with other people and nature; a heightened sense of awareness and elevated consciousness beyond the everyday and corporeal world; cognitive and affective dimensions of human understandings embracing peace, tranquillity [*sic*], harmony, happiness, awe, wonder, and humbleness; and the possible presence of religious meaning and explanation." (p. 65)

Heintzman (2010), in a review of the literature, identified several reasons why nature fosters spirituality: nature elicits a sense of wonder and awe; it helps some people connect with God or a higher power; it provides a sense of peace and tranquility; and it provides a setting to explore spirituality through reflection. Heintzman noted that individuals' apprehension of nature is

complex and varied, and that most researchers left the definition of *spirituality* to the individual participants.

One obstacle to measuring a person's connection with nature is defining what it means. Although several authors have formulated working definitions (e.g., Mayer & Frantz, 2004; Schultz, 2002), a study by Vining, Merrick, and Price (2008) revealed a paradox where individuals see themselves as a part of nature while at the same time perceiving that nature excludes humans. This same paradox is reflected in various conceptualizations of wilderness. The notion of wilderness embodied in the Wilderness Act of 1964 defines wilderness as a place "...where man himself is a visitor who does not remain" (as quoted in Saarinen, 1998) is consistent with the definition of wilderness as "a tract of land, whether a forest or a wide barren plain, uncultivated and uninhabited by human beings" (as quoted in Callicott & Nelson, 1998, p. 85). Many authors have questioned this limited conceptualization. Saarinen (1998) described four concepts of wilderness: utilism, humanism, mysticism and biocentrism. The perspective of utilism represents the perspective that humans have an unrestricted right to exploit natural resources. The humanism perspective is the view that maintains the natural environment is a source of raw materials as well as a source for attaining ethical, aesthetic, and mental equilibrium, serving the furtherance of human development. The perspective of mysticism purports that man and nature are both parts of a greater whole, which implies unity between humans, the natural, and the divine (i.e., everything is connected). The biocentrism perspective is the view that the natural environment has intrinsic value and holds that humans have no special rights to exploit nature (Saarinen, 1998). These four conceptions of wilderness mirror the debate about what humans' relationship with nature should be, as discussed earlier in this section, and

add additional insight to understanding the conservation/preservation dichotomy, as it relates to learning more about different ways people may perceive connection with nature.

Outdoor Recreation

Since outdoor recreation involves direct contact with nature it is often assumed that participants in nature-based outdoor recreation will have a greater appreciation of natural surroundings and will thus espouse a pro-environmental orientation. An early study by Dunlap and Heffernan (1975) examined whether participation in outdoor recreation activities was associated with increased environmental concern among the general public. Studying a sample of residents in the State of Washington, Dunlap and Heffernan tested three hypotheses: (a) that participation in outdoor recreation is positively associated with levels of environmental concern, (b) that the association is stronger for persons engaged in appreciative activities (e.g., hiking, wildlife viewing) than for those engaged in consumptive activities (e.g., hunting, fishing), and (c) that the association is stronger with respect to the specific environments which foster these activities than the environment in general. The first hypothesis received weak support; findings were mixed with respect to the positive association between outdoor recreation participation and overall environmental concern. There was considerable support for the second hypothesis, which explained the weakness of support for the first hypothesis: participants involved in appreciative activities were more likely to have a strong association with environmental concern than participants involved in consumptive activities. The third hypothesis also received considerable support. Dunlap and Heffernan pointed out that different world views may exist between appreciative and consumptive recreationists. While appreciative activities involve the enjoyment of nature without altering it, reflecting a preservationist view, consumptive activities involve altering the environment to some extent, reflecting a utilitarian view.

Subsequent studies, many replicating some aspect of Dunlap and Heffernan's (1975) study, have shown mixed results. Observing that prior researchers measured environmental attitudes but not environmental behaviors, and noting also the weak link between attitudes and behavior in the literature, Nord, Luff, and Bridger (1998) examined the association between forest recreation activities and pro-environmental behavior. Based on prior research, they hypothesized a weak association between forest recreation and environmental concern. They extended Dunlap and Heffernan's theory by hypothesizing that appreciative forms of forest recreation are positively associated with pro-environmental behavior. Results confirmed a weak association between forest recreation and general environmental concern but showed a substantial association between forest recreation and pro-environmental behavior. This association was only slightly reduced when controlled for demographic factors. Theodori, Luloff, and Willets (1998) reported substantially similar results, but they categorized activity types as "appreciative to slight resource-utilization activities" and "moderate to intensive resource-utilization activities". Both Nord et al. and Theodori et al. found that fishing, although categorized as a consumptive or moderate to intensive resource-utilization activity, was associated with positive pro-environmental behaviors, leading both to suggest that the "assumptive-consumptive" typology might not be the best conceptual framework.

Thapa and Graefe (2003) further extended this line of research, categorizing activities as appreciative, consumptive, and motorized (e.g., snowmobiling, trail biking, and motor boating), and measuring pro-environmental attitudes and pro-environmental behavior. Thapa and Graefe's results were consistent with the previous studies in that person's participating in appreciative activities generally had stronger pro-environmental orientations than participants involved in consumptive and motorized activities. Tiesl and O'Brien (2003) obtained similar results, but

found that the relative effects of different recreation activities differed across different measures of environmental concern and behavior. For example, hunters were more likely to join an environmental group, or donate money, than fishers, who were more likely to purchase environmentally labeled products. Tiesl and O'Brien also expressed concern with the traditional approach of aggregating activities, noting that on some measures the effect of hunting and fishing were significantly different from each other.

Acknowledging the literature demonstrating positive associations between appreciative outdoor recreation and pro-environmental behaviors, and recognizing that positive experiences in nature contribute to the formation of positive attitudes regarding ecological behavior, Hartig, Kaiser, and Bowler (2001) hypothesized that people who seek restorative experiences in natural environments also exhibit pro-environmental behaviors. To test the hypothesis, a sample of university students rated the restorative qualities of a freshwater marsh and then completed a measure of general ecological behavior. Results showed that ecological behaviors were associated with a perceived potential for restorative experience in a natural environment. Sandell and Öhman (2010) also addressed the inherent value of outdoor experiences and encounters with nature within the scope of environmental and sustainability education. In an article reviewing the environmental history of outdoor life in Sweden and several case studies, Sandell and Öhman proposed that outdoor activities give rise to experienced-based meanings about nature, which complement scientific descriptions. They further proposed that outdoor experiences facilitate reconnection of humans to the natural environment by providing opportunities to experience human interconnection with the natural environment as a dynamic rather than static concept. Moreover, direct encounters with nature can lead to more empathic relationship with the natural world, thus generating situations in which personal moral relations to nature are created.

Palmberg and Kuru (2000), in a study of 11 and 12 year olds, some with outdoor experience and some without, found that participants with outdoor experience had a discernible empathetic relationship to nature. The participants also exhibited better social behavior and higher moral judgments. Those with the highest level of outdoor experience could “express feelings that even included the feelings of other people and organisms” (p. 35).

Organized camping, defined by Henderson, Bialeschki, and James (2007) as “organized experiences in group living in the outdoors that use trained leaders to accomplish intentional goals” (p. 756), is one type of outdoor recreation engaged in by children. Organized camping in the United States developed in response to increasing urbanization and the desire of parents to have their children to spend school vacations in lush natural settings that promoted physical health (Thurber & Malinowski, 2000). The American Camp Association estimates that about 10 to 12 million individuals come to camp each year, mostly children and youth (cited in Henderson et al., 2007). According to Thurber and Malinowski (2000) organized camping experiences “teach young people how to survive in the woods, respect nature, and live harmoniously with all of God’s creations” (chapter 16, para. 8), indicating that such experiences may catalyze the connection of children with nature.

Influencing Attitude and Behavior

Attitude is a multidimensional construct comprising several interrelated components, generally referred to as the cognitive, affective, and conative components (Cottrell, 2003). The cognitive component consists of knowledge, thoughts and ideas about an attitude object. The affective component refers to emotional responses, and the conative component relates to behavioral intention and commitments toward an attitude object. An attitude object can be virtually anything about which an attitude can be formed, including issues, behavior, places,

proposals, events, and so on (Cottrell, 2003; Johnson & Stedman, 2001). Attitudes are thought to function partly as guides to behavior; one might therefore expect attitudes toward the environment to guide environmental behavior (Axelrod & Lehman, 1993). Research, however, shows that attitudes are often inconsistent with behavior (Ajzen & Fishbein, 1977). This inconsistency often diminishes when the attitude and the behavior in question are more directly related (Ajzen & Fishbein, 1980; Axelrod & Lehman, 1993).

Ajzen and Fishbein's (1980) theory of reasoned action suggested that attitude, when associated with appropriate action, is a reliable predictor of corresponding behavior. Ajzen and Fishbein held that attitudes are based on beliefs regarding the consequences of performing a behavior and on evaluations of the desirability of those consequences. The discrepancy between attitudes and behavior revealed by the literature led to a reformulation of the theory of reasoned action as the theory of planned behavior (TPB), which recognizes that the influence of attitudes on behavior in specific situations is moderated by other, more immediate factors over which a person may have no control (Ajzen, 1991). A key element of the TPB is *intention* to perform a given behavior. The stronger the intention, the more likely the behavior will be performed. According to the TPB, perceived behavioral control (i.e., confidence in the ability to perform), together with behavioral intention, can be used directly to predict behavioral achievement (Ajzen, 1991).

Bamberg (2003) criticized the short shrift given the role of general attitudes (as opposed to specific attitudes) in the process of intention formation, suggesting that the weak direct relationship between general environmental concern and specific environmental behaviors shown in prior studies resulted from an inadequate understanding of *how* general attitudes influence specific behaviors. Bamberg hypothesized that general attitudes, when activated, guide

the framing of a decisional problem, the relevant alternatives, and the personally salient decision criterion. If the general attitude is strong, it operates to form an intention to engage in specific behavior. Using this expanded TPB framework, Bamberg tested his hypothesis by examining the influence of environmental concern (the general attitude) on specific behavior (the decision to acquire information about green electricity products) and found that students with high levels of environmental concern not only showed greater interest in obtaining information about green electricity products, but they actually requested the information. Thus, Bamberg concluded that while environmental concern, as a general attitude, may have no direct effect on behavior, it does have an effect on intention formation and thus an indirect effect on behavior.

De Groot and Steg (2007) further explored Bamberg's (2003) expanded TPB as a framework for examining the effect of environmental concern as a determinant of intent formation. Using Schultz's (2000) categorizations of environmental concern as egoistic, altruistic, or biospheric, de Groot and Steg examined the relationships between environmental concerns, attitudes toward using a proposed transferium (a park-and-ride facility), and intentions to use the transferium. The study population included shoppers and employees in the location for the proposed transferium. Results showed that all three types of environmental concerns were related to attitudes toward the transferium but not to intentions to use the transferium. Egoistic concerns (concerns for themselves) appeared to be most strongly related to intentions to use the transferium for both shoppers and employees. Noting that different environmentally sensitive situations may evoke different types of environmental concern (i.e., altruistic or biospheric), de Groot and Steg emphasized the importance of tailoring environmental messages in accordance with the nature of concern (see, e.g., Pelletier & Sharp, 2008).

Nigbur, Lyons and Uzzell (2010) further expanded the TPB by incorporating the notions of Schwartz's (1977) norm activation model and Stryker's (1987) self-identity theory directly into the TPB. The norm activation theory holds that social norms motivate individual behavior only if they are also personal norms. Social norms become personal norms through a process of internalization whereby the individual comes to understand the value and importance of the norm and accept the norm as his or her own viewpoint (Schwartz, 1977). Self-identity theory regards a person's self-identity as a composite of roles performed by the individual (e.g., parent, employee, or environmentalist). These roles foster behavior that fulfills the role and validates the individual (Stryker, 1987). Nigbur et al. tested their extended TPB framework in the context of household waste recycling, hypothesizing that (a) self-identity would add to the prediction of intention and, possibly, behavior; and (b) personal norms would directly predict intentions to recycle. Results of the study supported the TPB, both generally and as extended. Intentions predicted recycling behavior, while attitudes, perceived control, and personal norms predicted intentions to recycle. In addition, self-identification as a "recycler" promoted intention to recycle over and above the effect of the usual predictors of attitudes and intentions. Descriptive social norms also significantly predicted intention to recycle after accounting for the usual predictors. Furthermore, both self-identity as a recycler, and the descriptive social norm for recycling, contributed directly to *behavior* as well as intentions.

Millar and Tesser (1986) suggested that behaviors are driven by either the affective or the cognitive components of attitudes (or both). In a study of the effect of thought on the attitude-behavior relation, they found that behaviors intended to accomplish a goal independent of the attitude object (instrumental behaviors) were more likely to be cognitively driven, while behaviors engaged in for their own sake (consumatory behaviors) were more likely to be

affectively driven. Results of Millar and Tesser's study strongly supported their hypothesis that attitudes would be highly predictive of behavior when the component influencing the attitude matched the component influencing the behavior.

Subsequent studies (e.g., Cheng & Monroe, 2011) suggest that affective factors, such as empathy and sympathy, are essential elements in predicting pro-environmental behaviors. Mayer and Frantz (2004) suggested that an affective relationship with nature might have a stronger impact on ecological behavior than knowledge-based information. Axelrod and Lehman (1993) explored the motivational role of three types of desired outcomes (tangible reward, social acceptance, and outcomes reflecting deeply held principals) in predicting environmentally responsible behaviors. Their study population included both a community population and a student population. Results indicated that pro-environmental behaviors were not motivated solely by a principled outcome desire to save the environment but were also motivated by tangible (e.g., economic or material gain) and social (e.g., respect and acceptance) outcome desires. Axelrod and Lehman found that desires for tangible outcomes were most strongly associated with behaviors reported for the community sample, whereas desires for principled outcomes (e.g. environmental protection) were most highly predictive of students' reported behaviors. Social outcome desires were predictive of students' behaviors, but not of community members' behaviors. Axelrod and Lehman's findings have practical implications for interventions aimed at producing environmentally responsible behaviors, suggesting that interventions address the types of outcomes desired.

Drawing on Ryan and Deci's (2000) self-determination theory, Darner (2009) explored intrinsic and extrinsic motivation in the context of environmental behavior. According to Ryan and Deci (2000), self-determined motivation arises when psychological needs for autonomy,

competence, and relatedness are satisfied. Autonomy refers to the need to feel that one's behavior originates within oneself; competence refers to the need to feel effective and in control of bringing about desired outcomes; and relatedness refers to the need to feel a sense of belonging to a social group (Ryan & Deci, 2000). Individuals may internalize previously extrinsically motivated behaviors such that they become part of an individual's own values and beliefs (Ryan & Deci). According to Darner (2009), both frequency and variety of pro-environmental behaviors correlate most highly with self-determined motivation. Thus, if pro-environmental behaviors become more externally regulated, they become less frequent. Knowing which behaviors are pro-environmental, why they are important, and how to engage in them, helps people feel more competent to act in environmentally responsible ways (Darner, 2009). Similarly, in a study of youth aged 12 to 18 years, Renaud-Dubé, Taylor, Lokes, Koestner, and Guay (2010) found that higher autonomous motivation toward the environment was associated with more frequent pro-environmental behaviors such as recycling and conserving energy. Motivation for engaging in such behaviors was higher in older youth, suggesting that internalized environmental values and beliefs may emerge as adolescents grow older.

The often weak relationship between attitude and behavior was addressed by Manfredo, Yuan, and McGuire (1992) from the perspective of attitude accessibility. Their theory was derived from Fazio's (1986) Process Model of Attitudes, which recognized that attitudes will not always influence perception and behavior, particularly if the attitudes are not accessed, or retrieved, from memory. According to this model, factors promoting accessibility include direct experiences and repeated pairing with attitude objects. Attitude extremity (strength) is also correlated with attitude accessibility. Manfredo et al.'s study supported the concept of attitude accessibility and its affect on attitude-behavior relationship, finding that the more a subject

discussed an attitude object (in their study, a controlled burn policy), and had direct experience with it, the more likely it was for attitudes to predict behavioral intentions.

Pelletier and Sharp (2008) proposed the use of persuasive communication strategies for tailoring and framing messages to affect behavior. They suggested that self-determined motivation could be enhanced by tailoring messages to processes underlying behavior change (i.e., becoming aware of a problem, deciding what to do about it, and implementing a behavior) and by framing these messages in terms of the intrinsic or extrinsic costs or benefits of the behavior. They further suggested, consistent with Darner (2009), that behavior resulting from self-determined motives is more likely to be maintained than externally motivated behavior. Moreover, progressively communicating information on how to implement goals and their intentions could further enhance internalization and maintenance of behavior. Millar and Tesser (1986), addressing inconsistencies in persuasive communication literature, suggested that attitudes based on the affective component of attitude may not be susceptible to manipulation through informational (cognitive) messages, and attitudes based on the cognitive component may not be susceptible to emotional (affective) appeals. Pooley and O'Conner (2000) contend that, while environmental responses may be based on all three components of attitude (i.e., affective, cognitive, and conative), attitude and behavior change are produced in the affective domain. This literature suggests that effective environmental education, in addition to providing basic knowledge of ecological principles directed at the cognitive domain, should target all three domains, focusing on the affective for developing of environmental values, the cognitive for developing analytical skills, and the conative for developing environmentally conscious behavior (Pooley & O'Conner, 2000).

Sanchez and LaFuente (2010) proposed a definition and theoretical model of environmental consciousness that integrates each component of attitude for a more comprehensive construct of environmental attitudes, intentions, and behaviors combined. Environmental consciousness is an “individuals’ propensity to engage in pro-environmental behaviours” (p. 732) and includes a pro-environmental worldview endorsing a wide range of pro-environmental behaviors. Sanchez and LaFuente’s model reflects a hierarchical causal relationship between the attitudinal dimensions where the process from attitude to behavior is mediated successively from the affective (general concerns and beliefs) to the cognitive (information and knowledge) and dispositional (feelings of self-efficacy and individual responsibility together with willingness to act and assuming personal costs of environmental behavior) dimensions to actual engagement in pro-environmental behaviors.

Experiential Education

Kolb (1984), drawing on the works of Dewey, Lewis, and Piaget, described experiential learning as the process by which knowledge is created through the *transformation* of experience. According to Kolb, and his predecessors, the purpose of education is to stimulate inquiry, not to memorize a body of knowledge. Knowledge is socially constructed and organized in experiences that provide a context for the information. Dewey (1938) theorized that experience is a synergism of two principles—continuity and interaction. Continuity of experience means that each experience influences a person’s future thinking and actions. Interaction involves the influence of past experience on a present situation. In an educational context, then, the experience of a lesson will depend on (a) how well the teacher arranges and facilitates the lesson, and (b) the students’ abilities see to connect the present lesson with past experiences, similar lessons, and teachers (i.e., to see the relevance of the lesson). In other words, “the teacher’s role

is to facilitate students' learning by engaging them in experiences that are fundamentally reflective because of their relevance to students' lives” (Estes, 2004, p. 146). Thus, experiential learning is a cyclical and holistic process of continual transactions between the learner and his or her environment. Educators are responsible for organizing the information and facilitating quality learning experiences (Roberts, 2003). If they understand students’ past experiences, educational situations can be presented more effectively.

Experiential learning theory informs much of the literature on environmental concern and is the educational model upon which most outdoor education is predicated. Blair (2009) reviewed the literature on school gardens as experiential learning tools. The quantitative studies she reviewed showed positive outcomes in the areas of science achievement and food behavior but no improvement in environmental attitudes or social behavior. Blair indicated, however, that validity and reliability issues reduced general confidence in this finding. The qualitative studies reported by Blair demonstrated a broader scope of desirable outcomes, including positive social and environmental behaviors. More importantly, Blair noted a difference between a structured discrete experiential learning activity and long-term experiential involvement, such as occurs over time in a school gardening program. Acknowledging studies that demonstrated the effectiveness of experiential learning in stimulating higher orders of cognition, Blair noted that school gardening projects fostered many unstructured learning opportunities not present in a lesson plan, but which happened spontaneously and involved students and mentors in multidirectional learning.

Ballantyne and Packer (2009) found that the most effective learning experiences in natural environments—learning that encompassed changes in knowledge, attitudes, and behavior—occurred through experience-based rather than teacher-directed strategies. In a study

population composed of students participating in 12 different outdoor environmental education programs, Ballantyne and Packer found that emotional engagement of students with respect to the effects of environmental degradation had a powerful influence on learning. They also determined that the emotions did not have to be negative; in fact, experiences resulting in attitudinal and behavioral learning were more likely to be associated with happy, calm emotions rather than sad or angry emotions.

Outdoor Education Models

Outdoor education developed as an experiential discipline focused on “education *in*, *about*, and *for* the outdoors” the goals of which include “an awareness of and respect for self, others and the natural environment” (as quoted in Wattchow, 2004, p.3). Sandell and Öhman (2010) noted that “outdoor activities may generate situations in which personal moral relations to nature are created” (p. 121), indicating that in the context of outdoor education individuals can acquire an understanding of nature that is different from the scientific understanding of the concept. Wals, Geerlin-Eijff, Hubeek, van der Kroon, and Vader (2008) identified two types of learning in outdoor education: emancipatory learning focused on personal growth and instrumental learning focused on environmental behaviors. Two traditions of outdoor education have emerged manifesting these types of learning: outdoor environmental education, focusing on specific environmental issues or scientific fieldwork, and adventure education, focusing on physical skills, technical skills, personal and social development through challenging situations (Cooper, 1999). Both depend on the natural environment and are experiential in approach, but each involves different processes for reaching their respective goals (Hanna, 1995). Regardless of the difference in goals, both traditions have demonstrated positive influences on certain areas of environmental concern.

Adventure education. Outdoor adventure education is exemplified by the Outward Bound program implemented in the United States in 1961 (Bacon, 1987). The Outward Bound process and curriculum have evolved since 1961 from a “mountains speak for themselves” (MST) model, which emphasized direct learning from the experience itself, to an “Outward Bound Plus” model, which utilized instructor facilitation to *process* the experience, to a metaphoric model, which emphasized application of the lessons learned to daily life by transforming Outward Bound activities into experiential metaphors for life challenges (Bacon, 1987). The earlier MST model deemphasized discussion and feedback, and stressed the private, unguided and personal reflection by participant’s allowing them to generate their own insights and feelings from their experiences. Instructors provided space and time for reflection but did not actively facilitate the process. James (1980) criticized the MST model arguing that, while learning may (or may not) occur without instructor facilitated processing/reflection, lessons were not likely to be transferable to life beyond the outdoor adventure experience. James contended that education providing intense adventure experiences should also provide intentional tools for facilitating reflection on those experiences so participants could connect their lessons to future life experiences. Most scholars seem to agree with James (1980). Martin (2004) suggested that high adventure outdoor activities maybe one of the most effective educational tools available for developing positive relationships between humans and nature, particularly when they include opportunities for structured reflection. Rea (2006), however, criticized what he called the processing pedagogy, and the high degree of proactive intervention by leaders and instructors, suggesting that such interventionist techniques might actually negate the opportunity for meaningful self-reflection. Rea further emphasized the need for participants in adventure

activities to make their own meaning rather than conforming to the influence of the leaders; i.e., to let the mountains speak for themselves.

The role of processing and facilitation in outdoor education continues to be the subject of debate. According to Fink (2003), humans are intrinsically driven to make meaning based on experiences, information, and ideas. Without reflection and dialogue, however, meaning may remain at the subconscious level, being limited, distorted, or even destructive. Reflection, alone or as a process of dialog with others, pulls meaning up to the conscious level where it is shaped by the learner. Through dialog with others, "... the possibility of finding new and richer meanings increases dramatically. In addition, when people collaboratively search for the meaning of experiences, information and ideas, they also create the foundation for community" (Fink, p. 106). Rea (2008), however, criticized children's educators for dwelling too much on facilitated reflection and processing, suggesting that children construct meaning from their experiences "without (or in spite of) these practices" (p.47). Brown (2002), examining the interaction between a leader and students in an adventure education setting, found that the leader's directive practices had a restricting effect on the students' ability to construct meaning from their experience. Specifically, in his study the leader in question acted as a "gatekeeper" (p. 111) of the reflective process by establishing a predetermined sequence in which students were allowed to participate and limiting the topics on which students could comment. Estes (2004) provided an alternative view, critiquing the tendency of leaders and instructors to be over-directive when facilitating reflection, and arguing that reflection conducted in a student-centered manner better facilitates meaningful self-reflection. In other words, Estes recognized the value of facilitative practices but argued that students, rather than instructors, should be at the center of the process.

As noted earlier, Wals et al. (2008) described two types of education: instrumental and emancipatory. The instrumental approach focuses mainly on the transfer of explicit knowledge, whereas the emancipatory approach emphasizes human development, the exchange of tacit or implicit knowledge, and facilitation of collaborative meaning making. Emancipatory outcomes related to personal growth have traditionally been the focus of outdoor adventure education programs, but such programs have also produced increased interest in outdoor recreation, positive environmental attitudes, commitment to conservation, and desire to learn about nature (D'Amato & Krasny, 2011). D'Amato and Krasny (2011) explored how adventure education might result in both emancipatory and instrumental environmental learning. They contended that, in the context of environmental education, instrumental education seeks to change environmental behaviors while emancipatory education seeks to engage participants in an active dialogue to establish their own objectives and plans for action. Interpreting the results of a qualitative study of adventure program participants from the perspective of transformational learning theory, which integrates self-reflection and action, they found that while participants spoke mostly of personal growth, they also reported experiencing a strong connection with nature approaching awe, leading to increased interest in conservation and commitment to pro-environmental behavior.

In the last four decades, the influence of environmental issues on policy development has resulted in a *greening* of outdoor adventure education manifested as a shift in focus away from personal and social benefits to environmental education (Thomas, 2005). Lugg (2004) suggested framing and implementing adventure activities as environmental education and questioned whether some activities were more appropriate for environmental education purposes than others. Preston (2004) expressed concerns that skill-intensive activities, such as rock climbing

and whitewater paddling, require too much focus on the activity itself, with the environment becoming mere staging backdrop. Thomas (2005), in an ongoing action research project exploring ways to resolve the tension between using adventure activities while educating participants about particular regions, communities, and their histories, reported comments of the adventure activity leaders. One leader (James) observed, “at times I find these [environmental] activities a little contrived and perhaps it would be better to simply allow people to absorb the place in their own way” (p. 35). Another, Tim, endorsed, “allowing the river to teach and provide its own ideas for you to merely interpret. I have found that these moments while on the river provide the greatest learning experiences for student ... not having contrived educational teachings, but waiting for the student’s interest to spark” (p. 35). Martin (2004) observed that outdoor education needs programming that enhances environmental connectedness while retaining the alternative pedagogy of adventure-based learning. For Martin, the greening of outdoor education risks the exclusion of adventure, fun, and emotional connection with the outdoors from the learning process. From his study of the role of outdoor adventure activities in shaping human relationships and connectedness to nature, Martin found that emotional connections to the natural world could be elicited by participation in such activities. According to Martin “[a]dventure induces an emotional response, but also draws people to wild places that play their own role in eliciting emotional reactions from participants” (p. 27).

Outdoor recreation, outdoor adventure education, and environmental education have, in fact, been combined in the numerous residential environmental education centers that have flourished in the United States since the 1960s. Such centers offer a short-term curriculum of environmental education programs to students as an adjunct to their regular school year

curriculum. In addition, many offer summer camp programs (both day and residential overnight) with intentional environmental education components.

The conservation movements of the early to mid 20th century recognized organized camping as an educational experience and the value of camps as providers of experiential learning environments. Residential camp experiences have traditionally focused on helping campers reach new skill levels in a variety of areas (Henderson et al., 2007). Recognizing the importance of environmental education many, but not all, residential summer camps now include intentional environment education in their programming. In any event, residential summer camps are typically placed in natural settings and their philosophies and programs generally promote healthy environmental values, whether or not they provide intentional environmental education programming (Thurber & Malinowski, 2000).

Camp research has been going on for many years, but since camps are such large providers of youth services, and the goals of camp are human growth and development, Henderson et al. (2007) argued that further research is necessary to add to a growing knowledgebase, including research related to the value of the outdoors for children. Dresner and Gill (1994), observing that participants in nature-based summer camps gain greater familiarity with nature and achieve greater comfort in the outdoors, conducted a study of participants in a nature study program at a residential summer camp. Following a two-week camp experience, participants showed greater comfort in the outdoors, greater interest in outdoor (as opposed to indoor) activities, increased awareness of environmental issues, and increased enthusiasm about and awareness of things in nature. Self-esteem also increased significantly by the end of the camp experience. Kruse and Card (2004) examined the effects of a zoo's conservation education camp program on campers' conservation knowledge, attitudes, and behaviors before and after the

camp experience. The program included four levels of camps with increasing degrees of animal husbandry. Pre- and post-camp surveys showed that conservation knowledge, attitude, and behavior scores increased over the study period, though patterns of change varied by camp level. Increases in conservation knowledge, attitude, and behavior scores corresponded to increased levels of animal husbandry. Moreover, campers with previous conservation education camp experience had higher knowledge and attitude scores than did those without experience. Eagles and Demare (1999), however, examined the effect of a Sunship Earth program at a summer camp on moralistic attitudes and ecologicistic attitudes of the campers and found no measurable impact of the program on these attitudes. They attributed this lack of impact to a possible ceiling effect for environmental attitudes: the children enrolled in the camp program already had moderate levels (mean = 3.5 on a 1 to 5 point scale) of these attitudes. Children who scored lowest on the pre-test showed the most gain on the post-test, but the results were still not significant.

Environmental education. McCrea (2006) traced the origins of environmental education to philosophers such as Jean-Jacques Rousseau (1712-1778), who felt that education should maintain a focus on the environment, and to educators such as Louis Agassiz (1807-1873) who encouraged students to “study nature, not books”. The roots of modern environmental education in North America are often said to lie in the public awakening to the growing environmental crisis that followed the 1962 publication of Rachel Carson’s *Silent Spring*. Whatever its origins, the perceived importance of environmental education in combating environmental deterioration has been demonstrated by the multitude of environmental education conferences and summits held, worldwide, since the late 1960s and the passage of major environmental education legislation, including the National Environmental Education Acts of 1970 and 1990 (McCrea, 2006). The goal of environmental education, as set forth in the Belgrade Charter (UNESCO-

UNEP, 1976), is “to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones” (as quoted in Adkins & Simmons, 2002, p. 4). The North American Association for Environmental Education (NAAEE) identified six dimensions of environmental education: (a) interdependence (the connectedness of all living things), (b) systems (the organization of life and elements), (c) where one lives (connection to place as a foundation for exploring the natural world), (d) integration and infusion (incorporating environmental education into all curricular areas rather than offering it as a separate activity or content area), (e) roots in the real world (direct experience with natural objects such as soil, worms, leaves, seeds, birds, insects, and weather), and (f) lifelong learning (emphasizing such skills as creativity, critical thinking, communication, and collaborative learning) (Torquati, Gabriel, Jones-Branch, & Leeper-Miller, 2010).

Promoting environmentally responsible behavior is the ultimate goal of environmental education (Simmons, 1991). Simmons proposed a behavior model of environmental education wherein knowledge of environmental issues and natural systems, problem-solving skills, attitudes, and the development of self-esteem all contribute to the development of environmentally responsible behavior. In a survey of 1,225 environmental education and nature centers throughout the United States, Simmons asked center representatives to identify their goals from a list of goals reflecting the components of the proposed model. Results revealed inconsistency among the centers’ endorsement of these goals. The centers actively encouraged environmentally responsible behavior, and most endorsed helping people change their lifestyles. Many, however, were reluctant to support the goals of influencing attitudes, disseminating

information about local environmental issues, or helping people develop environmental problem-solving skills. Overall, Simmons concluded, the centers were endorsing a model that “simplistically links nature study directly to environmental behavior” (p. 20).

The literature discussed next deals with evaluations of specific environmental education programs and assessments of outcomes produced by such programs. Hanna (1995) examined the effect of a 10-day ecology education program on participants’ wilderness knowledge, attitudes and behavior. Pre- post- and delayed post-test results showed significant positive changes in participants’ basic ecological knowledge, minimal impact knowledge, attitudes about wilderness issues, and wilderness intentions and behavior. Delayed post-test scores on basic ecological knowledge dropped, but participants’ scores remained relatively constant on the other outcomes (i.e. attitudes, intentions, and behaviors).

Smith-Sebasto and Semrau (2004) evaluated the effect of a residential environmental education program in changing students’ attitudes toward the environment. In a study conducted at the New Jersey School of Conservancy (NJSOC), Smith-Sebasto and Semrau examined whether NJSOC programs changed the attitudes of selected participants toward the environment and whether the programs were meeting the school’s mission objectives. Attitudes were measured by pre- and post-experience surveys containing items coded into one of three domains based on whether the item addressed personal preferences(affective domain), ideas (cognitive domain), or behavior (conative domain). The mission objectives, also coded as affective, cognitive, or conative, included (a) developing sensitivity and awareness concerning the Earth and the problems that threaten life on the planet (affective), (b) facilitating participants’ self-examination of their roles in contributing to environmental improvement (cognitive), and (c) providing students with the skills necessary to play productive roles in improving the quality of

life (conative). Analysis of the pre- and post-experience surveys revealed that NJSOC's programming was ineffective in altering students' overall attitudes. Further analysis, however, showed a significant increase in conative scores, though not in affective or cognitive scores, indicating that the programs *were* effective in increasing environmentally responsible behaviors. Results of a qualitative analysis of lesson plans showed that programming was effective in meeting the school's affective and conative, but not the cognitive, mission objectives.

Stern, Powell, and Ardoin (2008) conducted a similar study at the Great Smoky Mountains Institute at Tremont, a residential environmental education center located within the Great Smoky Mountains National Park (Tremont). Specifically, they explored the effects of Tremont's 3- and 5-day environmental education programs on participants' measures of connection with nature, environmental stewardship, interest in learning and discovery, and awareness of the Great Smoky Mountains National Park (GSMNP) and biodiversity. The study used a pre- post- delayed post-test design. Analysis of the pre- and post-test scores showed significant increases in each of the four outcomes measured. The delayed post-test revealed that increases in students' commitment to environmental stewardship and their knowledge and awareness of GSMNP and biological diversity remained significant three months after attending a program. Increases in students' interest in learning and discovery and their connection with nature, however, diminished during the three-month period following the program.

The American Institutes for Research (2005) examined the effects of outdoor education programs on, among other things, students' appreciation of the importance of the wise use of natural resources and stewardship of the environment. Three scales were used to measure this construct: concern for conservation, attitude toward science, and environmental behavior. The study used a pre- post- delayed post-test design with a control group, as well as parent and

teacher surveys. Analysis of the pre-test and post-test scores showed that the scores of participants in the outdoor education programs increased significantly on only one of the scales (concern about conservation). The increase, however, was not significantly larger than gains by the control group. The delayed post-test showed significant losses for the control group on two of the three scales (attitude toward science and environmental behaviors) but no significant losses for program participants. Surveys of the parents revealed that students who participated in the programs had significantly larger gains in environmental behaviors than the children in the control group.

Johnson and Manoli (2008) conducted a study of fifth and sixth graders participating in Sunship Earth programs at residential outdoor education centers. The study examined the effects of the program on the participants' perceptions regarding preservation (including intent of support, care with resources, and enjoyment of nature) and utilization (including altering nature and human dominance). Pre- and post-program scores of participants showed significant increases in scores for preservation on all three measures. Scores decreased, indicating a more pro-environmental perception, for utilization on both measures. A control group showed no significant difference in scores on any measures except for a significant *decrease* in the intent of support measure (preservation).

Although the literature demonstrates that environmental education programs can be effective in producing certain pro-environmental outcomes, and can also increase participants' feelings of connectedness with nature, individuals often bring with them a set of pre-existing environmental beliefs and attitudes, which were formed earlier in life (Ewert et al., 2005). These early-life outdoor experiences, and their effects, are discussed in the following section.

Early-Life Outdoor Experiences

Early-life outdoor experiences, and other significant life experiences, may have a substantial impact on environmental attitudes, behavior, and connection with nature. Newhouse (1990) suggested that most environmental attitudes are formed because of life experiences rather than any specific program designed to change attitudes. Tanner (1980) examined the significance of early-life experiences among conservationists in the United States and found that outdoor experiences, defined as interactions with rural, natural, or other fairly pristine habitats, were a prominent factor in the development of a conservationist attitude. Palmer (1993) examined the significance of various categories of influence on the development of environmental educators' knowledge and concern and confirmed Tanner's finding that childhood experience of the outdoors was the single most important factor in developing personal concern for the environment. Palmer noted that, for some respondents, environmental concern developed during childhood waned in teenage years but reemerged during adulthood. Chawla's (1998) review of qualitative and survey studies found that adults who had significant and positive exposure to nature as children—experiences, often with significant adults, that socialized them to view nature in positive and meaningful ways—were more likely to be environmentally sensitive, concerned, and active. Bixler, Floyd, and Hammitt (2002) examined the association between childhood play experiences in nature, and later environmental preferences, in the domains of work, leisure, and school. Results from their study of middle school and high school students supported the idea that childhood play influences later interest in wildlands, environmental preferences, outdoor recreation activities, and occupations in outdoor environments. While environmental attitudes and activism were not directly measured, Bixler et al. found nothing to support a relationship between childhood play in wildlands and environmentalism. This author suggests that Palmer's

(1993) caveat regarding the waning of environmental concern during teenage years, which reemerged during adulthood, may explain the lack of support for such relationship in Bixler et al.'s study of middle school and high school students.

Place (2000) examined the role of early life outdoor experience in determining environmental attitudes. In a study of students at Indiana University, Place found that the factors most significant in determining ecocentric attitudes included early-life appreciative outdoor experiences, media (television and reading), and negative environmental experiences (e.g., effects of pollution, loss of a significant place). Ewert et al. (2005) likewise found that early-life appreciative experiences were associated with ecocentric beliefs and early-life consumptive experiences were associated with anthropocentric beliefs. Greater early-life exposure through the media to positive environmental beliefs, and witnessing negative environmental events, also led to more ecocentric beliefs. Exposure to formal education about the environment and involvement in organizations were not significant predictors of either ecocentric or anthropocentric beliefs.

Wells and Lekies (2006) examined the connection between childhood involvement with nature and adult environmentalism from a “life course” perspective (Bronfenbrenner, 1995). From this perspective, early experiences set a person on a particular trajectory toward an outcome (Bronfenbrenner, 1995); thus, childhood participation with nature may set a child on a trajectory toward environmentalism in adulthood. Wells and Lekies found that childhood *solo* experiences in “wild nature” activities (such as hiking or playing in the woods) and “domesticated nature” activities (such as picking flowers, planting trees, and caring for plants) were positively associated with adults’ environmentally responsible behaviors. Childhood experiences in nature with other people, however, had a *negative* effect on adult environmental attitudes. Furthermore, childhood environmental education, whether in classrooms, camp

programs, or discrete programming, had no significant effect on adult environmental attitudes. Wells and Lekies' results also indicated that people who participated in nature activities before the age of 11 were more likely to profess pro-environmental attitudes and behaviors as adults, indicating that engagement with the natural world at a young age may stay with people in a powerful way and that shapes their subsequent environmental path. Eagles and Demare's (1999) suggestion that attitude change occurs primarily from early youth up to the early teen years, at which time attitudes become more fixed and less susceptible to change, may explain why participation in later years of adolescence is not as strongly associated with adult environmentalism as participation before age 11.

Summary

The literature recognizes contributions from experiential education, outdoor recreation, outdoor adventure education, environmental education, and early-life outdoor experiences to improving pro-environmental attitudes and behaviors and increasing feelings of connection with nature. Despite hundreds of studies, however, no particular measures, constructs, or programs have emerged as optimal for determining what type of programs and/or experiences promote environmental concern and connection to nature. Moreover, results have been inconsistent due, perhaps, to the many disciplinary approaches, theoretical frameworks and instruments employed by various researchers. Theories reflect psychological, educational, and ecological, as well as spiritual and philosophical, perspectives. Additionally, a biophilia hypothesis of humans' connection with nature (Wilson, 1984) has emerged, furthering the development of a new discipline, ecopsychology (Roszak, 2001). A host of instruments have been developed to measure environmental concern, including the New Environmental Paradigm Scale (Dunlap & Van Liere, 1978) and its progeny, the New Ecological Paradigm Scale (Dunlap, Van Liere,

Mertig, & Jones, 2000), the Children's Attitudes Toward the Environment Scale (Musser & Malkus, 1994), the New Ecological Paradigm Scale for Children (Manoli, Johnson & Dunlap, 2007), the Environmental Action Internal Control Index (Smith-Sebasto & D'Costa, 1995), the Children's Environmental Attitude and Knowledge Scale (Leeming, Dwyer, & Bracken, 1995), and many others.

Although studies number in the hundreds, if not thousands, this author is unaware of any studies comparing the effects of different types of summer camps on children's levels of environmental concern and connection with nature. Furthermore, with the exception of Bixler et al.'s (2002) research with middle school and high school students, the author is not aware of any studies examining the effect of children's early-life (or prior) outdoor experience on their levels of environmental concern while they are of middle-school age or younger. This study contributes to the literature by (a) comparing how campers aged 9 to 14 years attending two different summer camps responded to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues in natural area settings; and (b) examining the association of early-life experiences in the outdoors with the level of campers' environmental consciousness. Both camps were situated in similar natural outdoor settings but only one of the camps engaged children in intentional environmental education programming. The study explored the following research questions:

1. Is participation in a summer camp in a natural setting *with* intentional environmental education programming (designated as Camp A) associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness?

2. Is participation in a summer camp in a natural setting *without* intentional environmental education programming (designated as Camp B) associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness?

3. Is there a difference in the amount of change in Connection with Nature, Stewardship, Discovery, and Awareness between the children attending Camp A and the children attending Camp B?

4. Are early-life outdoor experiences associated with increased levels of Connection with Nature, Stewardship, Discovery, and Awareness?

To answer these questions, six null hypotheses were tested:

1. Participation in a summer camp in a natural setting *with* intentional environmental education programming (designated as Camp A) is not associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness.

2. Participation in a summer camp in a natural setting *without* intentional environmental education programming (designated as Camp B) is not associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness.

3. There is no difference in the amount of change in Connection with Nature, Stewardship, Discovery, and Awareness between the children attending Camp A and the children attending Camp B.

4. Levels of early-life outdoor experiences were not associated with increased pre-camp mean scores on Connection with Nature, Stewardship, Discovery, and Awareness for children at either Camp A or Camp B.

5. Levels of early-life outdoor experiences were not associated with increased post-camp mean scores on Connection with Nature, Stewardship, Discovery, and Awareness for children at either Camp A or Camp B.

6. Levels of early-life outdoor experiences had no effect on the amount of change in means scores from pre-to post-camp experience for children at either Camp A or Camp B.

Methods

This study used a quasi-experimental, non-equivalent comparison group, pre-test/post-test design (Shadish, Cook, & Campbell, 2002) to address the research questions identified in the previous section. The design used a control group, but participants were not randomly selected.

Study Population and Sampling

The population for the study consisted of 126 children, aged 9 through 14, attending summer camp at an environmental education center (Camp A, 88 children) and a traditional outdoor adventure camp (Camp B, 38 children). The study sample included the entire population and surveys were given as a census. Camp A is located within the boundaries of a National Park and Camp B is located in the same region but outside the National Park boundaries. Both camps offer a variety of outdoor activities typical to resident camp programs for this age group and region, including: wilderness hikes, river and stream swimming, survival skill activities, campfire programs, and overnight camping trips away from built camp facilities. In addition to these outdoor activities, Camp A also includes environmental education programs as part of the resident campers' summer schedule, including stream ecology, geology, naturalist skills, tree and wildflower identification, and wildlife management, led by a staff of teacher/naturalists. Camp B does not offer environmental education programs.

Survey Instrument

The present study used an adaptation of the questionnaires developed by Powell, Stern, and Ardoin (2006) for the purpose of evaluating the environmental education programs of the Great Smoky Mountains Institute at Tremont ("Tremont"). To design the questionnaires, Powell, Stern, and Ardoin conducted workshops with the Tremont staff and representatives of the Great Smoky Mountains National Park ("GSMNP") to identify Tremont's specific outcome goals.

Based on these goals, and relevant literature, survey items were created and grouped into four indices for the outcomes of interest to Tremont: connection with nature (“Connection with Nature”), environmental stewardship (“Stewardship”), interest in learning and discovery (“Discovery”), and knowledge and awareness of GSMNP and biological diversity (“Awareness”). These indices were incorporated into pre- and post-visit questionnaires for use with students enrolled in Tremont’s school-year residential environmental education programs. The questionnaires used a combination of response types, including Likert-type scales, true/false/don’t-know, and multiple-choice, to measure outcomes in each of these four indices. The questionnaires were pilot-tested with two three-day programs and one five-day program in accordance with procedures described by DeVellis (as cited in Stern, Powell, & Ardoin, 2008) and revised for validity and reliability. Cronbach’s alpha scores for each index ranged from .70 to .79 (Stern, Powell, & Ardoin, 2008). Although the questionnaires were specifically developed to reflect the desired outcomes for Tremont programs as envisioned by the Tremont staff, Stern, Powell, and Ardoin (2008) noted many parallels with other instruments commonly used by other environmental education researchers, including but not limited to, CHEAKS (Leeming et al., 1995) and CATES (Musser & Malkus, 1994). This indicates that the questionnaire would be appropriate, with minor modifications, for use in settings similar to Tremont. One of the designers of the questionnaires (R. Powell, personal communication, March 29, 2011) confirmed this inference. So that the questionnaires could be used with a comparison group, the “Awareness” measures, and any other items that specifically referred to the Smoky Mountains or GSMNP, were modified to apply to natural areas and parks generally. Thus, “Awareness” hereinafter refers to this measure as modified for the purposes of this study. To ensure face validity for the present study, two environmental education experts reviewed the questionnaire

and some language was modified to ensure fit with the research questions and the study sample. Also, all responses were converted to Likert-type scales to facilitate analysis of results.

Items designed to elicit information about participants' early-life outdoor experiences were added to the pre-camp questionnaire. Responses to these items were also scored on a five-point Likert-type scale ranging from (1) *strongly agree* to (5) *strongly disagree*. These items were drawn from the New Environmental Paradigm (NEP) scale as modified by Place (2000) and further modified by Ewert et al. (2005). According to Ewert and Baker (2001), the NEP is the most widely used measure of general environmental concern, and it has been modified by a number of authors to elicit information on other environmentally related variables not included in the original NEP scale.

Place (2000) added questions to the NEP scale designed to elicit responses related to early-life outdoor experiences. From data gathered in Place's pilot test, the reliability of the modified instrument was established using Cronbach's coefficient alpha for each variable. Alpha was set at .70, which represents a moderate level in determining whether individual items measure the same construct (Place, 2002). Items with alpha < .70 were examined for outliers (generally defined as data points far outside the normal distribution for the item (e.g., Osborne & Overbay, 2004), but not specifically defined by Place), which were then eliminated to boost the alpha level for that item to .70 or above. Items that still had alpha < .70 were reworded. Any items containing two or three questions that generated identical responses were eliminated to reduce the length of the survey.

Ewert et al. (2005) further tested the modified scale, using item analyses on all of the measures from the data set with Cronbach's alpha set at .70. All but one variable met this criterion; the alpha for early-life negative environmental experiences was .56. This variable was

retained, however, as the literature provided a theoretical basis for its inclusion. Cronbach's alphas for the other independent variables ranged from .78 to .86. The Cronbach's coefficient for the dependent variable (ecocentric/anthropocentric belief) was .83. Ewert et al. also conducted bivariate correlations and determined that the independent variables could be treated as discrete, posing no problems of multicollinearity for regression analysis.

Data Collection

Attendees at each camp were administered pre-camp questionnaires as soon as practicable after their arrival at camp, prior to their engaging in any substantive camp activities. Post-camp questionnaires were administered in the evening of the final full day of camp at Camp A and on the morning of departure at Camp B. Prior to administering any questionnaires, the researcher obtained written informed consent from each participant's parent or guardian (Appendices D through F contain IRB-approved informed consent and assents documents). Questionnaires were distributed and collected by the researcher and completed by the campers. No incentives were offered to induce participation and there were no consequences for refusal to participate. The researcher explained to all campers that participation in the study was voluntary and that choosing to complete the questionnaires would constitute a presumption of their consent to participate. Nevertheless, written assent was obtained from each camper 12 years of age or older and an assent script was read by the researcher to all participants, who then indicated their consent verbally and by initialing a written copy of the script. The questionnaires took approximately fifteen minutes to complete. Campers placed their names on the questionnaires so that pre-camp and post-camp questionnaires could be properly matched. Each questionnaire was subsequently numbered and all identifying information was removed to maintain confidentiality.

Data Analysis

The data were analyzed with descriptive and inferential statistics using SPSS® software. Analysis of frequency distributions confirmed normal distributions for each of the indices, allowing the use of parametric statistics for further analysis. Scores on all items within each of the five indices (Connection with Nature, Discovery, Stewardship, Awareness, and ELOE) were averaged to create a composite variable for each index. The ELOE Index scores were divided into “Low” and “High” categories by determining the mean score and allocating scores below the mean to the “Low” category and scores at or above the mean to the “High” category. Analysis of variance (ANOVA), repeated measures ANOVA, and multivariate analyses of variance (MANOVA) were used to compare pre- and post-camp means and means between the two camps, with Bonferroni’s correction applied to multiple comparisons. The level of significance was established at $p < .05$, consistent with other studies reported in the literature.

Results

The study sample comprised 126 children aged 9 to 14 years attending Camp A and Camp B. All but two of the children agreed to participate in the study, resulting in a 98% response rate. Eighty-six children were enrolled in Camp A, 43 female and 43 male. Of this number, 83% had visited a national or state park before, 55% had been to a similar camp before, and 45% were return visitors to Camp A. Thirty-eight children were enrolled in Camp B, 14 female and 24 male. Of this number, 68% had visited a national or state park before, 47% had been to a similar camp before, and 53% were return visitors to Camp B. Socio-economic data was not collected.

Survey responses were coded and entered into SPSS® for analysis. Prior to analyzing the data, reliability was checked by calculating Cronbach's alpha for each index. Cronbach's alpha exceeded the a priori acceptable value of .70 (Ewert et al., 2005; Place, 2000; Stern, Powell & Ardoin, 2008) for the Discovery (.83), Stewardship (.72), Awareness (.74), and ELOE (.78) indices. The Connection with Nature Index had a lower level of reliability, with alpha of .51. Scores on each item within an index were then averaged to create index scores for each participant. Missing data was infrequent and appeared to be completely at random. Averaged rather than summated indices were used to ensure that no cases would be eliminated from analysis due to missing data.

A one-way ANOVA was performed to determine the differences between Camp A and Camp B participants prior to the camp experience. The results are summarized in Table 1. The mean scores of Camp A participants were significantly higher than those of Camp B participants on all indices except the Connection with Nature Index, on which the mean scores were statistically the same (Connection with Nature ($F(1, 122) = 1.11, p = .30$); Discovery ($F(1, 122)$

= 10.1, $p = .002$); Stewardship ($F(1, 122) = 6.70, p = .011$); and Awareness ($F(1, 122) = 10.9, p = .001$).

Table 1
Comparison of Pre-Camp Means

Variable	Camp	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>	<i>p</i>
Connection with Nature	Camp A	86	3.84	0.55	(1, 122)	1.11	.30
	Camp B	38	3.73	0.52			
Discovery	Camp A	86	4.00	0.69	(1, 122)	10.1	.002**
	Camp B	38	3.56	0.72			
Stewardship	Camp A	86	4.14	0.57	(1, 122)	6.70	.011*
	Camp B	38	3.85	0.64			
Awareness	Camp A	86	4.14	0.53	(1, 122)	10.9	.001**
	Camp B	38	3.80	0.57			

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high.
* $p < .05$. ** $p < .01$.

Finally, statistical tests were performed to answer each of the research questions addressed by the study.

Research Question #1

The first research question, asking whether participation in a summer camp in a natural setting with intentional environmental education programming (Camp A) is associated with an increase in children’s Connection with Nature, Discovery, Stewardship, and Awareness, was examined by testing the following null hypothesis: Participation in a summer camp in a natural setting *with* intentional environmental education programming (Camp A) is not associated with an increase in children’s Connection with Nature, Stewardship, Discovery, and Awareness (null hypothesis #1). Null hypothesis #1 was tested by analyzing pre-camp and post-camp scores of Camp A participants with repeated measures ANOVA and MANOVA. Results are summarized

in Table 2. The multivariate test for the effect of time on total scores revealed a significant increase on the overall pro-environmental responses among participants from pre to post test (Wilks' $\Lambda = .89$, $F(4, 81) = 2.60$, $p = .042$, $\eta_p^2 = .114$). Box's test revealed a violation of the assumption of equality of covariate matrices ($p = .002$); however, MANOVA is robust against violations of this assumption.

Given the significance of the multivariate results, the univariate main effects of time were examined for each of the Dependent Variables separately, using Bonferroni's correction for multiple comparisons. Significant effects were obtained for Discovery ($F(1, 84) = 4.68$, $p = .033$, $\eta_p^2 = .053$) and Awareness ($F(1, 84) = 8.67$, $p = .004$, $\eta_p^2 = .094$) but not for Connection with Nature ($F(1, 84) = 0.52$, $p = .47$, $\eta_p^2 = .006$) or Stewardship ($F(1, 84) = 2.61$, $p = .11$, $\eta_p^2 = .030$). Levene's test showed violations of the assumption of homogeneity of variances for the Stewardship and Awareness means (pre-camp and post-camp) and the Discovery post-camp mean. Univariate tests are robust against violations of the assumption, however, when the degrees of freedom for error is 20 or more and samples sizes are equal. Based on these results, null hypothesis #1 was rejected with respect to Discovery and Awareness but not with respect to Connection with Nature or Stewardship.

Table 2

Comparison of Pre- and Post- Means for Camp A

DV	Time	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Connection with Nature	Pre-Camp	3.82	0.056	86				
	Post-Camp	3.85	0.062	86	(1, 84)	0.52	.47	.006
Discovery	Pre- Camp	3.96	0.068	86				
	Post- Camp	4.10	0.079	86	(1, 84)	4.68	.033*	.053
Stewardship	Pre- Camp	4.12	0.058	86				
	Post- Camp	4.19	0.058	86	(1, 84)	2.61	.11	.030
Awareness	Pre- Camp	4.11	0.051	86				
	Post- Camp	4.26	0.053	86	(1, 84)	8.67	.004**	.094

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high.

DV = Dependent Variable

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

Research Question #2

The second research question, whether participation in a summer camp in a natural setting *without* intentional environmental education programming (Camp B) was associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness, was examined by testing the following null hypothesis: Participation in a summer camp in a natural setting *without* intentional environmental education programming (Camp B) is not associated with an increase in children's Connection with Nature, Stewardship, Discovery, and Awareness (null hypothesis #2). Null hypothesis #2 was tested by analyzing pre-camp and post-camp scores of Camp B participants with repeated measures ANOVA and MANOVA. Results are summarized in Table 3. The multivariate test for the effect of time revealed no significant difference on pro-environmental responses among participants from pre to post test (Wilks' $\Lambda = .94$, $F(4, 33) = 0.55$, $p = .70$, $\eta_p^2 = .063$). Box's test revealed no violation of the assumption of equality of covariate matrices ($p = .11$).

Univariate main effects of time were examined for on each of the Dependent Variables separately, using Bonferroni's correction for multiple comparisons. Levene's test showed no violations of the assumption of homogeneity of variances. There was no significant effect of time on any of the four Dependent Variables: Connection with Nature ($F(1, 36) = 2.00, p = .17, \eta_p^2 = .001$); Discovery ($F(1, 36) = 0.76, p = .39, \eta_p^2 = .011$); Stewardship ($F(1, 36) = 0.83, p = .37, \eta_p^2 = .010$); and Awareness ($F(1, 36) = 0.38, p = .54, \eta_p^2 < .001$). Based on these results, null hypothesis #2 was accepted.

Table 3
Comparison of Pre- and Post-Camp Means for Camp B

Index	Time	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>P</i>	η_p^2
Connection with Nature	Pre-Camp	3.76	0.083	38	(1, 36)	2.00	.17	.053
	Post- Camp	3.62	0.11	38				
Discovery	Pre- Camp	3.60	0.12	38	(1, 36)	0.76	.39	.021
	Post- Camp	3.48	0.16	38				
Stewardship	Pre- Camp	3.91	0.93	38	(1, 36)	0.83	.37	.023
	Post- Camp	3.84	0.97	38				
Awareness	Pre- Camp	3.85	0.086	38	(1, 36)	0.38	.54	.010
	Post- Camp	3.80	0.074	38				

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high. DV = Dependent Variable

Research Question #3

The third research question, which explored differences in the amount of change in Connection with Nature, Stewardship, Discovery, and Awareness scores between the children attending Camp A and the children attending Camp B, was examined by testing the following null hypothesis: There is no difference in the amount of change in Connection with Nature, Stewardship, Discovery, and Awareness between the children attending Camp A and the children attending Camp B (null hypothesis #3). To test null hypothesis #3, the amount of change from

pre-camp to post-camp was calculated for each of the four Dependent Variables and new variables were computed to represent the amount of change (the “Change Variables”). MANOVA was conducted to determine the effect of type of camp on the combined Change Variables. Results are summarized in Table 4. The multivariate test revealed that the effect of type of camp on overall change was not significant (Wilks’ $\Lambda = .94$, $F(4, 117) = 1.84$, $p = .13$, $\eta_p^2 = .059$). Box’s test revealed a violation of the assumption of equality of covariate matrices ($p = .001$); due to the sample size ($N = 124$), the multivariate test is robust against violations of this assumption.

Univariate main effects of type of camp were examined for each of the Change Variables separately, using Bonferroni’s correction for multiple comparisons. Significant effects were obtained for Awareness ($F(1, 120) = 4.50$, $p = .036$, $\eta_p^2 = .036$) but not for Connection with Nature ($F(1, 120) = 2.99$, $p = .087$, $\eta_p^2 = .024$), Discovery ($F(1, 120) = 3.76$, $p = .055$, $\eta_p^2 = .030$) or Stewardship ($F(1, 120) = 2.87$, $p = .093$, $\eta_p^2 = .023$). Levene’s test was significant for Discovery ($p = .012$) but sample size ($N = 124$) makes ANOVA robust against violation of the assumption of homogeneity of variances. Based on these results, null hypothesis #3 was accepted.

Table 4

Amount of Change in Means from Pre- to Post-Camp

Change Variable	Camp	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>P</i>	η_p^2
Connection Δ	Camp A	.039	0.058	86	(1, 120)	2.99	.087	.024
	Camp B	-.14	0.088	38				
Discovery Δ	Camp A	.11	0.065	86	(1, 120)	3.76	.055	.030
	Camp B	-.12	0.099	38				
Stewardship Δ	Camp A	.071	0.047	86	(1, 120)	2.87	.093	.023
	Camp B	-.075	0.072	38				
Awareness Δ	Camp A	.15	0.050	86	(1, 120)	4.50	.036*	.036
	Camp B	-.049	0.077	38				

Note. *M* = amount of change in mean scores from pre- to post-camp.

* $p < .05$.

Research Question #4

The fourth research question, exploring the association between levels of early-life outdoor experiences (ELOE) and scores on the Connection with Nature, Stewardship, Discovery, and Awareness indices for the children at each camp, was analyzed by testing the following null hypotheses: (a) Levels of early-life outdoor experiences were not associated with increased pre-camp mean scores on Connection with Nature, Stewardship, Discovery, and Awareness for children at either Camp A or Camp B (null hypothesis 4); (b) Levels of early-life outdoor experiences were not associated with increased post-camp mean scores on Connection with Nature, Stewardship, Discovery, and Awareness for children at either Camp A or Camp B (null hypothesis 5); and (c) Levels of early-life outdoor experiences had no effect on the amount of change in means scores from pre-to post-camp experience for children at either Camp A or Camp B (null hypothesis 6). To test these null hypotheses, ELOE mean scores were placed into two categories, “Low” and “High”, as previously described in the Methods section. At Camp A,

38 campers had a low level of ELOE and 48 had a high level of ELOE. At Camp B, 23 campers had a low level of ELOE, and 15 had a high level of ELOE.

Next, a MANOVA was performed to examine the effect of level of ELOE on the pre-camp survey scores of Camp A and Camp B participants. Results are summarized in Table 5. The multivariate test revealed that level of ELOE had a significant main effect on the overall pre-camp survey scores of both Camp A participants (Wilks' $\Lambda = .73$, $F(4, 81) = 7.40$, $p < .001$, $\eta_p^2 = .27$) and Camp B participants (Wilks' $\Lambda = .70$, $F(4, 33) = 3.60$, $p = .015$, $\eta_p^2 = .30$). Box's test revealed a violation of the assumption of equality of covariate matrices for the Camp A comparisons ($p = .028$); however, MANOVA is robust against violations of this assumption. There was no violation of the assumption of equality of covariate matrices for the Camp B comparisons.

Univariate tests on each of the four Dependant Variables separately, using Bonferroni's correction for multiple comparisons, showed that higher levels of ELOE were significantly associated with higher (more pro-environmental) pre-camp mean scores on all variables for Camp A participants: Connection with Nature: $F(1, 84) = 12.5$, $p = .001$, $\eta_p^2 = .13$); Discovery: $F(1, 84) = 20.1$, $p < .001$, $\eta_p^2 = .19$); Stewardship: $F(1, 84) = 12.0$, $p = .001$, $\eta_p^2 = .13$); Awareness: $F(1, 84) = 20.6$, $p < .001$, $\eta_p^2 = .24$). Significant associations between higher ELOE level and higher pre-camp mean scores were shown for Camp B participants on Stewardship ($F(1, 36) = 12.0$, $p = .001$, $\eta_p^2 = .25$) and Awareness ($F(1, 36) = 8.80$, $p = .005$, $\eta_p^2 = .20$) but not on Connection with Nature ($F(1, 36) = 3.90$, $p = .056$, $\eta_p^2 = .098$) or Discovery ($F(1, 36) = 1.55$, $p = .22$, $\eta_p^2 = .041$). Based on these results, null hypothesis #4 was rejected with respect to the effect of levels of ELOE on Camp A pre-camp mean scores and with respect to the effect of levels of ELOE on Camp B pre-camp scores on the Stewardship and Awareness indices. Null

hypothesis #4 was accepted with respect to the effect of levels of ELOE on Camp B pre-camp mean scores on the Connection with Nature and Discovery indices.

Levene’s test showed no violations of the assumption of homogeneity of variances for the Camp B comparisons. With respect to the Camp A analysis, Levene’s test showed violations of the assumption of homogeneity of variances for the Stewardship and Awareness means.

However, univariate tests are robust against violations of the assumption when the degrees of freedom for error is 20 or more and samples sizes are equal.

Table 5
Effects of High and Low ELOE on Pre-Camp Means

Type of Camp	Dependent Variable	ELOE Index	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Camp A	Connection with Nature	Low	3.62	0.084	38	(1, 84)	12.5	.001**	.13
		High	4.01	0.075	48				
	Discovery	Low	3.66	0.10	38	(1, 84)	20.1	< .001***	.19
		High	4.27	0.091	48				
	Stewardship	Low	3.92	0.087	38	(1, 84)	12.0	.001**	.13
		High	4.32	0.078	48				
	Awareness	Low	3.85	0.076	38	(1, 84)	26.6	< .001***	.24
		High	4.38	0.067	48				
Camp B	Connection with Nature	Low	3.60	0.10	23	(1, 36)	3.90	.056	.098
		High	3.93	0.13	15				
	Discovery	Low	3.45	0.15	23	(1, 36)	1.55	.222	.041
		High	3.74	0.19	15				
	Stewardship	Low	3.60	0.12	23	(1, 36)	12.0	.001**	.25
		High	4.23	0.14	15				
	Awareness	Low	3.59	0.11	23	(1, 36)	8.80	.005**	.20
		High	4.10	0.13	16				

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Third, MANOVA was used to examine the effect of level of ELOE on the post-camp survey scores of Camp A and Camp B participants. Results are summarized in Table 6. The multivariate test reveals that level of ELOE had a significant main effect on the overall post-camp survey scores of Camp A participants (Wilks' $\Lambda = .74$, $F(4, 81) = 7.17$, $p < .001$, $\eta_p^2 = .26$) but not Camp B participants (Wilks' $\Lambda = .76$, $F(4, 33) = 2.66$, $p = .050$, $\eta_p^2 = .24$). Box's test revealed a violation of the assumption of equality of covariate matrices for the Camp A comparisons ($p = .002$); however, MANOVA is robust against violations of this assumption. There was no violation of the assumption of equality of covariate matrices for the Camp B comparisons.

Univariate analysis for each of the Dependent Variables, using Bonferroni's correction for multiple comparisons, revealed that higher levels of ELOE were significantly associated with higher post-camp scores (more pro-environmental responses) on all variables for Camp A participants: Connection with Nature ($F(1, 84) = 12.16$, $p = .001$, $\eta_p^2 = .13$), Discovery ($F(1, 84) = 20.08$, $p < .001$, $\eta_p^2 = .19$), Stewardship ($F(1, 84) = 17.72$, $p < .001$, $\eta_p^2 = .17$), and Awareness ($F(1, 84) = 23.46$, $p < .001$, $\eta_p^2 = .22$). Significant associations between higher ELOE level and higher post-camp scores were shown for Camp B participants on Stewardship ($F(1, 36) = 6.44$, $p = .016$, $\eta_p^2 = .15$) and Awareness ($F(1, 36) = 5.81$, $p = .021$, $\eta_p^2 = .14$) but not on Connection with Nature ($F(1, 36) = 4.10$, $p = .050$, $\eta_p^2 = .10$) or Discovery ($F(1, 36) = 1.14$, $p = .29$, $\eta_p^2 = .031$). Based on these results, null hypothesis #5 was rejected with respect to the effect of levels of ELOE on Camp A post-camp mean scores and with respect to the effect of levels of ELOE on Camp B post-camp scores on the Stewardship and Awareness indices. Null hypothesis #5 was accepted with respect to the effect of levels of ELOE on Camp B post-camp scores on the Connection with Nature and Discovery indices.

Levene's test showed no violations of the assumption of homogeneity of variances for the Camp B comparisons. With respect to the Camp A analysis, Levene's test showed violations of the assumption of homogeneity of variances for the Discovery ($p = .012$), Stewardship ($p < .001$), and Awareness ($p < .001$) means. However, univariate tests are robust against violations of the assumption when the degrees of freedom for error is 20 or more and samples sizes are equal.

Table 6
Effects of High and Low ELOE on Post-Camp

Type of Camp	Dependent Variable	ELOE Index	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Camp A	Connection with Nature	Low	3.64	0.092	38	(1, 84)	12.16	.001**	.13
		High	4.07	0.082	48				
	Discovery	Low	3.72	0.12	38	(1, 84)	20.08	< .001***	.19
		High	4.43	0.11	48				
	Stewardship	Low	3.95	0.087	38	(1, 84)	17.72	< .001***	.17
		High	4.43	0.077	48				
	Awareness	Low	4.00	0.079	38	(1, 84)	23.46	< .001***	.22
		High	4.51	0.070	48				
Camp B	Connection with Nature	Low	3.40	0.14	23	(1, 36)	4.10	.050	.10
		High	3.84	0.17	15				
	Discovery	Low	3.31	0.20	23	(1, 36)	1.14	.29	.031
		High	3.65	0.25	15				
	Stewardship	Low	3.59	0.12	23	(1, 36)	6.44	.016*	.15
		High	4.08	0.16	15				
	Awareness	Low	3.62	0.092	23	(1, 36)	5.81	.021*	.14
		High	3.98	0.11	16				

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high.
* $p < .05$. ** $p < .01$. *** $p < .001$

Finally, MANOVA was used to analyze the effect of level of ELOE on the amount of change from pre-camp and to post-camp of both Camp A participants and Camp B participants. Results are summarized in Table 7. Multivariate test results reveal that the level of ELOE had no

significant effect on the overall amount of change in scores of either Camp A participants (Wilks' $\Lambda = .98$, $F(4, 81) = 0.36$, $p = .83$, $\eta_p^2 = .018$), or Camp B participants (Wilks' $\Lambda = .94$, $F(4, 33) = 0.54$, $p = .71$, $\eta_p^2 = .062$). Box's test revealed a violation of the assumption of equality of covariate matrices ($p = .029$) for Camp A comparisons; however, MANOVA has been shown to be robust against violations of this assumption. There was no violation of the assumption of equality of covariate matrices ($p = .15$) for Camp B comparisons.

Univariate tests showed no significant effect of level of ELOE on the amount of change in scores with respect to any of the individual Change Variables for either Camp A (Connection with Nature [$F(1, 84) = 0.089$, $p = .77$, $\eta_p^2 = .001$], Discovery [$F(1, 84) = 0.93$, $p = .34$, $\eta_p^2 = .011$], Stewardship [$F(1, 84) = 0.88$, $p = .35$, $\eta_p^2 = .010$], and Awareness [$F(1, 84) = 0.017$, $p = .90$, $\eta_p^2 < .001$]) or Camp B (Connection with Nature [$F(1, 36) = 0.31$, $p = .58$, $\eta_p^2 = .008$], Discovery [$F(1, 36) = 0.024$, $p = .88$, $\eta_p^2 = .001$], Stewardship [$F(1, 36) = 0.85$, $p = .36$, $\eta_p^2 = .023$], and Awareness [$F(1, 36) = 0.94$, $p = .34$, $\eta_p^2 = .025$]). There were no violations of Levene's test of homogeneity of variances. Based on these results, null hypothesis #6 was accepted.

Table 7

Effects of High and Low ELOE on Amount of Change

Type of Camp	Change Variable	ELOE Index	<i>M</i>	<i>SE</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Camp A	Connection Δ	Low	0.023	0.080	38	(1, 84)	.089	.77	.001
		High	0.055	0.071	48				
	Learn Δ	Low	0.063	0.078	38	(1, 84)	.93	.34	.011
		High	0.16	0.070	48				
	Steward Δ	Low	0.030	0.065	38	(1, 84)	.88	.35	.010
		High	0.11	0.058	48				
	Knowledge Δ	Low	0.15	0.074	38	(1, 84)	.017	.90	.000
		High	0.14	0.065	48				
Camp B	Connection Δ	Low	-0.20	0.13	23	(1, 36)	.31	.58	.008
		High	-0.087	0.16	15				
	Learn Δ	Low	-0.14	0.17	23	(1, 36)	.024	.88	.001
		High	-0.095	0.21	15				
	Steward Δ	Low	0.001	0.10	23	(1, 36)	.85	.36	.023
		High	-0.15	0.13	15				
	Knowledge Δ	Low	0.028	0.10	23	(1, 36)	.94	.34	.025
		High	-0.13	0.12	15				

Note. Mean scores are based on a 5-point Likert-type scale where 1 was low and 5 was high.

Discussion

Results of the study showed that Camp A (camp with intentional environmental education) participants' scores increased significantly on the Discovery Index and the Awareness Index from pre- to post camp experience while the Camp B (control group) participants' scores did not. This result is consistent with those of Hanna (1995) and Stern, Powell and Ardoin (2008) and supports a theory that environmental education programming is effective in producing some desirable environmental outcomes. The absence of significant increases in scores on the Connection with Nature Index and the Stewardship Index is inconsistent with Hanna's finding of significant increases in wilderness intentions and behavior and Stern et al.'s findings of significant increases using identical Connection with Nature and Stewardship indices. Stern et al., however, conducted their study during the school year with a sample of schoolchildren accompanied by teachers, a setting much different from a summer camp.

The absence of significant increases in scores by Camp B participants on any of the indices seems to contradict much of the literature on outdoor recreation, including that on organized camping. Most of the non-camp outdoor recreation literature reviewed (e.g., Dunlap & Heffernan, 1975; Nord et al., 1998; Thapa & Graefe, 2003; Theodori et al., 1998; Tiesl & O'Brien, 2003) involved the examination of associations between environmental concerns and preferred types of outdoor recreation, rather than the more immediate effects of participation in outdoor recreation on the environmental concerns of youth. In addition, some of the literature examining the effects of outdoor recreation on environmental measures, in the summer camp context, involved camps that included some environmental programming (e.g., Dresner & Gill, 1994; Kruse and Card, 2004). The results of this study, with respect to Camp B, may suggest that outdoor recreation alone, even in an organized camp setting, does not contribute to increased

levels of environmental consciousness in children –in other words, the mountains do *not* speak for themselves (Bacon, 1987; Rea, 2006), at least not to children, in the absence of some kind of facilitated processing and/or guided reflection (Fink, 2003). However, it could also be that a few days' exposure to nature in an organized camp setting is insufficient to effect a significant change in pre-existing preferences and environmental perceptions, as suggested by Kaplan and Kaplan (1989). This explanation is consistent with Blair's (2009) suggestion that long-term involvement in unstructured experiential programs, such as school gardens, is more effective than shorter, more structured and discrete experiential learning experiences. Whatever the explanation, the findings of this study underscore the need identified by Henderson et al. (2007) for additional research on what type of outdoor programs achieve particular outcomes with regards to environmental education.

The absence of significant effects of the organized camp experience on some indices for both camps may also be due to the ceiling effect described by Eagles and Demare (1999). As in their study, pre-camp mean scores on all indices (measured on a scale from 1 to 5, with 5 being the most pro-environmental response) were relatively high for both camps. Camp A pre-camp mean scores were 3.82 (Connection with Nature), 3.96 (Discovery), 4.12 (Stewardship), and 4.11 (Awareness). Camp B pre-camp mean scores were 3.76 (Connection with Nature), 3.60 (Discovery), 3.91 (Stewardship), and 3.85 (Awareness). The explanation for such high pre-camp scores is not certain, but there are several possible explanations. The high scores could be the result of socially desirable responding, defined by Ewert and Galloway (2009) as responding in a way perceived as socially or politically correct rather than in accordance with the respondent's true perceptions and beliefs. They might also be explained by the effect of relatively high levels

of prior experience in the outdoors on the scores, consistent with other findings of this study. The mean ELOE score for both camps combined, as measured by the pre-camp surveys, was 3.66.

As Camp B showed no significant increase in scores on any scale, the third research question, which addressed whether the amount of change differed significantly between camps, adds little more to the discussion. Multivariate tests revealed no significant difference between Camp A participants and Camp B participants in the amount of change overall from pre-camp to post-camp. Univariate tests revealed a significant difference in the amount of change between Camp A and Camp B for Awareness but not for Connection with Nature, Discovery, or Stewardship. However, several points are worth noting: (a) Camp A pre-camp means were significantly higher than Camp B pre-camp means on all indices except Connection with Nature, indicating that campers were different at the outset due to self-selection of the type of camp; (b) Camp A post-camp means were significantly higher than Camp B post-camp means on all indices; (c) Camp A scores increased significantly from pre- to post-camp only on the Discovery and Awareness indices; and (d) Camp B scores showed no change from pre- to post-camp on any index. Thus, the provision of intentional environmental education programming produced a significant effect on these campers' knowledge of environmental issues and desire to discover and learn about nature but made no significant impact on campers' connection to nature or desire to protect or conserve nature.

As disclosed earlier, the survey instruments used in this study contained items designed to measure environmental responses on four indices. These indices, Connection with Nature, Discovery, Stewardship, and Awareness, were developed to reflect the environmental education outcome goals of the Great Smoky Mountains Institute at Tremont (Powell, Stern & Ardoin, 2006; Stern, Powell & Ardoin, 2008). Although it was not the stated intention of the developers,

each of these indices could be categorized according the affective, cognitive, and conative components of attitude (Cottrell, 2003; Smith-Sebasto & Semrau, 2004). The Connection with Nature Index (items 1.a through 1.g of the questionnaires), which includes such items as “I feel comfortable in the outdoors”, “Humans are a part of nature, not separate from it” and “I’d rather visit a park than see a movie”, seems to elicit affective, or emotional responses. Cottrell (2003) included similar items in an affective scale, stating that these sorts of beliefs of these fall within the context of feelings. The Awareness Index (items 5.a through 5.k of the questionnaires), which examines knowledge of environmental and ecological issues (e.g., “Trees and plants help clean the air”; “An ‘exotic’ species is a plant or animal that came from somewhere else”), is clearly cognitive. The Discovery Index (items 2.a through 2.g of the questionnaires), which measures interest in learning about environmental issues (e.g., “Learning how pollution harms nature”) is action oriented, and thus conative. The Stewardship Index (items 3.a through 4.d of the questionnaires) is both cognitive (e.g., “It’s important to protect as many different kinds of animals and plants as we possibly can”) and conative (e.g. “I turn off the water while I brush my teeth”). Examining the results from this perspective may provide additional insights for providers of outdoor recreation, adventure education, or environmental education programming who want to influence affective domains.

The significant results on the Discovery and Awareness indices may signify that Camp A’s intentional environmental education programming is effective in producing change in cognitive and conative attitudes, while the lack of significant increase in scores on the Connection with Nature Index indicates that the summer camp programming does not change affective, or emotional, responses. This interpretation is consistent with literature suggesting that attitude change occurs in the affective domain, which may not be susceptible to informational

messages targeted at the cognitive or conative domains (Millar & Tesser, 1986; Pooley & O’Conner, 2000). It does not fully explain the non-significant results on the Stewardship Index, which is both cognitive and conative but is consistent with earlier findings of no significant impact of environmental education on environmental attitudes (Ewert et al., 2005; Wells and Lekies, 2006).

Although the results of this study relating to the first three research questions could suggest that the mountains do not speak for themselves, the findings with respect to the fourth research question may support a different conclusion. Results showed that higher levels of ELOE were significantly associated with higher (more pro-environmental) responses on all indices combined for both camps and with higher responses on each individual index for Camp A and on two of the four indices for Camp B. These results support Newhouse’s (1990) suggestion that life experiences may have more impact on attitude formation than programs designed to change attitudes and are consistent with results reported by Tanner (1980), Palmer (1993), Place (2000), and Cheng & Monroe (2011). Although early-life outdoor experience literature has not involved the issue of facilitated processing and reflection on experience, most of the outdoor experiences contemplated by the literature, and most of the outdoor experiences measured by the ELOE Index in this study, did not involve facilitated reflection. Only three of the 14 items in the ELOE index refer to activities that might include some type of experience processing (e.g., prior environmental education, camping trips with youth groups or scouts, and belonging to youth groups that teach environmental values). The activities described in the other ELOE items include typical outdoor recreation activities that would not be likely to include any guided reflection, such as camping and exploring nature (alone or with family), hunting and fishing, and engaging in motorized activities such as boating and four-wheeling. Higher levels of ELOE,

involving these types of activities, were associated with more pro-environmental responses for participants in both camps. Seemingly then, merely engaging in unstructured outdoor experiences during early life produced the effect, consistent with the mountains speak for themselves theory (Bacon, 1987; Rea, 2006).

These results might seem inconsistent with the results relating to the second research question, where Camp B participants' means did not increase after a week of outdoor experience in nature. A possible explanation is that the outdoor experiences gained prior to attending camp (i.e., ELOE) occurred over a longer period of time, which may have resulted in more impact on environmental consciousness than a one-week camp experience.

Limitations

While this study included a diverse sample of campers, the population does not necessarily represent the broader population of children who participate in other summer camps, both with or without intentional environmental education program components. Likewise, the two camps used in the study may not be representative of the many residential environmental education summer camps and traditional residential summer camps in natural settings. Both camp's programs were pre-established; thus, there was no opportunity to manipulate the treatment. The study sample was not chosen by random selection but rather it was comprised children who self-selected to enroll in the camps. Pre-camp scores differed significantly between the two camps, suggesting the samples may have come from different populations. Furthermore, sample sizes were unequal, reducing the power of comparisons between the two camps. Additionally, the campers completed the pre- and post-camp questionnaires; therefore, the responses were self-reported and not subject to independent verification. Furthermore, results may have been affected by confounding factors such as age, gender, socio-economic status, and

place of residence. Finally, any findings of this study related to connection with nature may be unreliable due to the low alpha coefficient (.51) for the Connection with Nature Index.

Conclusions and Recommendations

Environmental sustainability may be the predominant scientific and social issue of the 21st century (Mayer & Frantz, 2004). Viable solutions to problems of environmental degradation and ecological destruction must be implemented soon to ensure sustainability for future generations. Regardless of the problem's immediacy, however, solutions must be thoughtfully crafted, strongly grounded in theory, and operational.

The following conclusions can be drawn from this study:

1. Intentional environmental education programming in a summer camp setting may result in increased knowledge of environmental issues and increased desire to discover and learn about nature.
2. Intentional environmental education programming in a summer camp setting may have no impact on connection to nature or desire to protect or conserve nature.
3. Short-term participation in outdoor recreation activities in nature, while attending summer camp, may have no effect on environmental attitudes, intentions, or behaviors nor increase connection with nature.
4. Early-life outdoor experiences may have a significant, positive influence on children's levels of connection with nature and environmental attitudes, intentions, and behaviors.

The results of this study have implications for both researchers and practitioners, and recommendations for each are set forth below.

Recommendations for Future Research

Revisions to the survey instrument used in this study should be considered by researchers who plan to continue using it:

1. The Connection with Nature Index should be re-tested for validity and reliability and revised as needed.
2. Two environmental education experts carefully reviewed the instrument for face validity prior to its use in this study. Some questions were re-worded and scales were changed to facilitate analysis (e.g., True and False questions were altered to Likert-type scales). These changes should be considered by other researchers who seek to improve this instrument.
3. Although the ELOE Index had good reliability (Cronbach's alpha .78), several items within the index do not relate to outdoor experience (e.g., prior environmental education, learning about the environment from books or movies). Removal of these items may result in a better instrument for measuring the associations between early-life outdoor experience, environmental attitudes, intentions, and behaviors, and connection with nature. Also, qualitative research focused on children's early life outdoor experiences could provide grounded-theory that could be used to improve this index. An additional consideration is to determine the amount of time spent in ELOE and the quality of such experiences in order to understand effects of ELOE better.

The results of the study support more general recommendations for future research as well:

1. A grounded theory, qualitative study of the connection with nature construct is needed to understand better what connection with nature means to children. To the degree assessing connection with nature is important to resource managers, environmental educators, and others advocating for environmental preservation (e.g.,

the Nature Conservancy), this type of research will be essential for developing a valid and reliable quantitative instrument to effectively measure this construct.

2. Consider setting probability at $p < .10$ instead of the commonly used $p < .05$. Some of results of this study that were nonsignificant at the level of $p < 0.05$ would have been significant at $p < 0.10$. Some researchers argue that the setting the significance level at $p < .05$ focuses too much on protecting against Type I error without due consideration of the probability, and implications, of committing Type II errors (Gregoire & Driver, 1987). Gregoire and Driver argued that commission of Type II errors “could deter pursuit of fruitful leads that were rejected mistakenly as unimportant” (p.264) and inhibit further study. This may be especially true in areas of study such as environmental education and connection with nature, where the consequences of committing a Type I error studies of environment are less than dire. In other words, a small decrease in protection against Type I error may be outweighed by the corresponding increase in protection against Type II error. Further study of the relative consequences of Type I and Type II errors in the fields of outdoor recreation and education is recommended to determine if $p < .05$ might be unduly restrictive in some areas of research.

Schultz (2000) lamented the difficulty of integrating a fragmented body of research into an organized theory. The literature, as well as some of the results of this study, provides support for a proposed theoretical model of environmental stewardship, which may incorporate: (a) reconnection with nature (Louv, 2005); (b) hands-on experiential education about environmental issues, with lessons carefully arranged to (i) facilitate students’ abilities to connect the lesson with past experiences and learning (Roberts, 2003), and (ii) ensure transferability of lessons to

life beyond the experience (James, 1980; D'Amato & Krasny, 2011); and (c) framing and tailoring messages to (i) target specific types of desired outcomes (Axelrod & Lehman, 1993), (ii) appeal to the attitude component (i.e., affective, cognitive, or conative) most closely associated with the desired attitude or behavior (Millar & Tesser, 1986), and (iii) enhance internalization processes in order to promote self-determined or intrinsically motivated behaviors (Pelletier & Sharp, 2008). This proposed model represents a multidisciplinary approach to children's connection with nature and environmental consciousness, integrating theories from literature in psychology, education, and outdoor recreation. Effective research to further develop and test this model should incorporate both qualitative and multivariate, quantitative methods (Ewert & Sibthorp, 2000). Applying a multivariate quantitative research methodology that reflects a multidisciplinary approach to children's connection with nature and environmental attitudes and behaviors presents a challenge to researchers: that of developing a reliable and valid instrument, which incorporates a sufficient number of items to operationalize the numerous variables required in order to test multiple, integrated theories. The instrument needs to be comprehensible to children and short enough to be completed in a reasonable amount of time.

Wattchow (2004) made a recommendation to both researchers and practitioners. Citing contradictory and sometimes mythical social constructions of nature and the danger of building upon false assumptions, Wattchow suggested that researchers and practitioners should themselves reconnect with nature to better understand the relationship between humans and nature and avoid "wander[ing] blindly in a terrain that always shifts beneath our feet" (p. 20) and the danger of "getting back to the wrong nature" (as quoted in Wattchow, 2004, p. 4).

Recommendations for Practitioners

Due to the limitations of this study, these results are not generalizable to a broader population; however, they still may have implications for practitioners, including schools, parks and recreation professionals, and environmental educators. The recommendations listed below are drawn from consideration of the study results and the literature review.

Environmental Educators

Environmental attitudes and behaviors are multidimensional and malleable constructs that may best be manipulated by interventions that integrate psychological and educational processes in conjunction with outdoor experiential activities. The results of this study support the following recommendations for effective educational strategies:

1. Combining traditional knowledge-based programming with activities and programs that engage children emotionally with respect to environmental issues (Ballantyne & Packer, 2009) may be more effective in producing increased environmental consciousness than knowledge-based programming alone.
2. Providing more opportunities for outdoor recreation in nature may lead in increased pro-environmental attitudes and behaviors.

Other effective strategies, suggested by the literature, include the following:

1. Encouraging and facilitating children's unstructured hands-on experiences in nature (Palmer, 1993; Wells & Lekies, 2006).
2. Adding programs designed to influence environmental attitudes and develop environmental problem-solving skills in addition to the more traditional knowledge-based informational programs offered by some environmental education and nature centers (Simmons, 1991).

3. Framing environmental messages to reflect the outcomes (e.g., economic, social, or conservationist outcomes) desired by the population served (Axelrod & Lehman, 1993).
4. Providing activities that incorporate pro-environmental behaviors, such as recycling, to reinforce children's perceived internal locus of control; i.e., confidence in their ability to perform (Renaud-Dubé et al., 2010).
5. Limiting the role of teachers or leaders in facilitated reflection, making processing of experience a student-centered activity, and allowing children time for self-reflection (Ballantyne & Packer, 2009; Estes, 2004; Fink, 2003; Rea, 2008).
6. Engaging younger children, at ages during which attitudes are forming, in environmental education and outdoor activities in nature. Several authors suggested ages ranging from pre-school to 10 or 11 years (Eagles & Demare, 1999; Renaud-Dubé et al., 2010; Wells & Lekies, 2006).
7. Fostering self-determined, intrinsic motivation towards active involvement in the natural environment by emphasizing the value and importance of environmental norms and facilitating their internalization by children (Nigbur, Lyons & Uzzell, 2010; Ryan & Deci, 2000).

Schools and Parks and Recreation

The results and literature may also have implications for local parks and recreation departments, as well as schools and summer camps. An important finding of the study was the association between higher levels of early-life outdoor experiences and higher scores on the environmental constructs measured, supporting the following recommendations:

1. Parks and recreation departments and summer camps are important providers of recreation in natural settings and should facilitate the opportunity for children of all ages to experience nature.
2. Schools can also provide experiences in nature through outdoor education curricula.

Local parks and recreation departments, schools and summer camps should also provide recreational and educational activities that incorporate recommendations from the literature.

Producing a “population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones” (as quoted in Adkins & Simmons, 2002, p. 4) is a long-term process that cannot be accomplished through isolated, discrete, and short-term interventions (Blair, 2009; Dresner & Gill, 1994). Therefore, the following recommendations are made:

1. Children need time and space for unstructured play in nature. Schools need effective environmental curricula that provide experiential opportunities to learn from first-hand from nature firsthand, in addition to classroom study and structured environmental educational programs.
2. Children should have the opportunity to construct their own meaning from unstructured experiences in nature (Rea, 2008) that may or may not be combined with facilitated, student-centered reflection (Ballantyne & Packer, 2009; Estes, 2004; Fink, 2003).
3. Adult environmental education and outdoor recreation should be encouraged, as children need the support and involvement of parents and other adult role models to develop, enhance, and sustain their environmental awareness (Dresner & Gill, 1994).

As the natural environment is all around us, so should be the opportunities for increasing environmental awareness, changing environmental attitudes and behaviors, and connecting with nature. Practitioners, including educators and parks and recreation personnel, are at the forefront in providing these opportunities and uniquely positioned to promote conservation and environmental stewardship among children as well as adults.

Final Thoughts

"We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well - for we will not fight to save what we do not love" (Gould, 1994). This quote reflects two important aspects of this study. First, it is crucial that children (and adults) reconnect with nature. To this author's knowledge, no one has disputed this idea, but few seem to understand it. Is "connection" a linking together of separate entities or the realization of a unified whole? Second, the quote reveals the ambivalent nature of humans' relationship with nature. No matter how fervently we believe that humans are part of nature, we necessarily create a separation when we step outside to examine the relationship. It is impossible to *see* the relationship from the inside.

Moreover, if humans *are* part of nature, are we not evolutionally exactly where we are supposed to be? Or does the evolution of consciousness and intelligence enable and direct us to determine, for better or worse, our own role in nature, choosing how we shall or shall not behave within it? Recorded history is a study of how humans have exercised this choice. Inquiring whether humans are part of, or separate, from nature, is a widely used measure of connection to nature (e.g., Stern, Powell, & Ardoin, 2008; Vining et al., 2008). This begs (or obscures) the larger question of the proper scope of human behavior in nature. To date, the only thing certain is that humans have overstepped their bounds. How we go forward from this point is *the* issue.

Ontologically correct or not, we perceive our present role as either the redeemer or the destroyer of something both a part of, and outside of, ourselves. Whether we are, or are not, part of nature, the choices we make will determine our survival as a species.

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APPENDIX A

IRB APPROVAL

(Original and Revised)



EAST CAROLINA UNIVERSITY

University & Medical Center Institutional Review Board Office
11-09 Brody Medical Sciences Building • 600 Moye Boulevard • Greenville, NC 27834
Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb

TO: Margaret Ann Garner, Student, Dept. of Recreation & Leisure Studies, ECU
FROM: UMCIRB
DATE: June 3, 2011
RE: Expedited Category Research Study
TITLE: "Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes"

UMCIRB #11-0353

This research study has undergone review and approval using expedited review on 5.31.11. This research study is eligible for review under an expedited category number 7 which includes research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.) The Chairperson (or designee) deemed this **unfunded** study **no more than minimal risk** requiring a continuing review in **12 months**. Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

The above referenced research study has been given approval for the period of **5.31.11** to **5.30.12**. The approval includes the following items:

- Internal Processing Form (dated 5.20.11)
- Parental Permission Form (dated 5.20.11)
- Minor Assent: Tremont (dated 5.20.11)
- Minor Assent: SMAC (dated 5.20.11)
- Assent Script (dated 5.20.11) COI Disclosure Form (dated 5.31.11)
- Research Proposal (dated 5.20.11)
- Pre-Camp Questionnaire (dated 5.20.11)
- Post-Camp Questionnaire (dated 5.20.11)

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

Note: Please do not initiate the above referenced research study until you obtain letter of support from the research sites.

The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies under the Food and Drug Administration regulation. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.

UMCIRB #:11-0353

UNIVERSITY AND MEDICAL CENTER INSTITUTIONAL REVIEW BOARD
REVISION FORM

RECEIVED
JUL 08 2011
UMCIRB

UMCIRB #: 11-0353

Date this form was completed: 7-8-11

Title of research: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Principal Investigator: Margaret Ann Garner
Sponsor: N/A

Fund number for IRB fee collection (applies to all for-profit, private industry or pharmaceutical company sponsored project revisions requiring review by the convened UMCIRB committee). If you are a non-ECU entity payment is required at the time of submission:

Fund	Organization	Account	Program	Activity (optional)
		73059		

Version of the most currently approved protocol: 5-20-11

Version of the most currently approved consent document: 5-20-11

CHECK ALL INSTITUTIONS OR SITES WHERE THIS RESEARCH STUDY WILL BE CONDUCTED:

- East Carolina University
- Pitt County Memorial Hospital, Inc
- Heritage Hospital
- Other Questionnaires will be completed at the Great Smoky Mountains Institute at Tremont in Townsend, Tennessee ("Tremont") and the Smoky Mountain Adventure Camp in Cosby, Tennessee ("SMAC"). Data will be analyzed and stored at ECU.
- Beaufort County Hospital
- Carteret General Hospital
- Bolce-Willis Clinic

The following items are being submitted for review and approval:

- Protocol: version or date: 7-8-11
- Consent: version or date: 7-8-11
- Additional material: Assent Script: version or date: 7-8-11
Tremont Assent Form (12+): version or date: 7-8-11
SMAC Assent Form (12+): version or date: 7-8-11

Complete the following:

1. Level of IRB review required by sponsor: full expedited
2. Revision effects on risk analysis: increased no change decreased
3. Provide an explanation if there has been a greater than 60 day delay in the submission of this revision to the UMCIRB.
4. Does this revision add any procedures, tests or medications? yes no If yes, describe the additional information:
5. Have participants been locally enrolled in this research study? yes no
6. Will the revision require previously enrolled participants to sign a new consent document? yes no

UMCIRB #:11-0353

Briefly describe and provide a rationale for this revision This revision will allow surveying of two additional groups at Tremont, the Teen High Adventure Group and the Field Ecology Adventure Group, which serve ages 13-17, in order to achieve greater parity in age with the groups being surveyed at the Smoky Mountain Adventure Camp. The revision also clarifies that all of the groups at the Smoky Mountain Adventure Camp are being surveyed. This is clear in Item 26 (Protocol Summary) of the initial processing form submission as well as the Proposal/Protocol submitted with the initial filing. In making the current revisions, however, the principal investigator noticed that Items 11(a) and 16 of the initial processing form omitted one of the SMAC groups, the SMAC Jrs. (ages 9-12). The purpose of the study and means of data collection remain unchanged. No revisions have been made to the questionnaires; amended documents filed herewith are revised only to show inclusion of the additional Tremont camps (they always contemplated the survey of all of SMAC's groups).

Margaret A. Garner Margaret A. Garner 7-8-11
Principal Investigator Signature Print Date

Box for Office Use Only

The above revision has been reviewed by:		
<input type="checkbox"/> Full committee review on _____	<input checked="" type="checkbox"/> Expedited review on <u>7/13/2011</u>	
The following action has been taken:		
<input checked="" type="checkbox"/> Approval for period of <u>7/13/2011</u> to <u>5/30/2012</u>		
<input checked="" type="checkbox"/> Approval by expedited review according to category <u>45 ZFR 46.110</u>		
<input type="checkbox"/> See separate correspondence for further required action		
<u>Michelle F. Blue</u>	Michelle F. Blue	<u>7/13/2011</u>
Signature	Print	Date

APPENDIX B

NATIONAL PARK SERVICE APPROVAL

your permit to conduct research within Great Smoky Mountains NP

Paul_Super@nps.gov

Sent: Thursday, June 02, 2011 11:50 AM
To: Garner, Margaret Ann
Cc: John DiDiego [john@gsmnit.org]; ken@gsmnit.org
Attachments: Garner_Permit_signature.pdf (250 KB) ; aPermitsChecklist for Inco~1.doc (35 KB)


Dear Margaret:

Attached you will find a PDF of your permit and the standard conditions of research within National Parks. Please look over both of these documents to be sure you can abide by them, and if so, please sign and return the last page of the permit, keeping a copy to have with you while you are working within the park. We are requiring you to coordinate your work with the Tremont director, Ken Voorhis, or his designate, and whatever they say goes. We also would like to consider if there is some way to archive the raw responses in the park, once all personal identifiers have been redacted, once you are finished with them. Let me know if you have any questions and if there is any way in the future that I can assist you.

Sincerely,

Paul

Paul E. Super
Science Coordinator
Appalachian Highlands Science Learning Center at Purchase Knob
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(See attached file: Garner_Permit_signature.pdf) (See attached file:
aPermitsChecklist for Incoming-PES.doc)

 <p align="center">SCIENTIFIC RESEARCH AND COLLECTING PERMIT</p> <p align="center">Grants permission in accordance with the attached general and special conditions</p> <p align="center">United States Department of the Interior National Park Service Great Smoky Mountains NP</p>	<p>Study#: GRSM-01072</p> <p>Permit#: GRSM-2011-SCI-0051</p> <p>Start Date: Jun 03, 2011</p> <p>Expiration Date: Dec 31, 2011</p> <p>Coop Agreement#: n/a</p> <p>Optional Park Code: n/a</p>
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<p>Name of principal investigator:</p> <p>Name: Margaret Garner Phone: 252-342-8763 Email: garnerma10@students.ecu.edu</p>
<p>Name of institution represented:</p> <p>East Carolina University</p>
<p>Co-Investigators:</p> <p>No co-investigators</p>
<p>Project title:</p> <p>Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes.</p>
<p>Purpose of study:</p> <p>The purpose of this study is to examine how children attending two different summer camps respond to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues (i.e., pro-environmental responses). In addition, early-life experiences in the outdoors will be considered as a possible predictor of pro-environmental responses from campers at both camps. Both camps will be situated in natural outdoor settings but only one of the camps will engage children in intentional environmental education programming.</p>
<p>Subject/Discipline:</p> <p>Social Science</p>
<p>Locations authorized:</p> <p>Questionnaires will be administered to campers at the facilities of the Great Smoky Mountains Institute at Tremont and the Smoky Mountain Adventure Camp (outside the park, in the Cosby area). The administration of the surveys is the only activity to be conducted.</p>
<p>Transportation method to research site(s):</p> <p>Access will be by motor vehicle, specifically, a red 2006 Jeep Cherokee, license plate number YXC2187.</p>
<p>Collection of the following specimens or materials, quantities, and any limitations on collecting:</p> <p>All campers participating in this study must have parental permission to participate. All activities and survey instruments must be approved by Ken Voorhis or his designate when working at Tremont.</p>
<p>Name of repository for specimens or sample materials if applicable:</p> <p>n/a</p>
<p>Specific conditions or restrictions (also see attached conditions):</p> <p>READ AND ABIDE BY NPS GENERAL CONDITIONS #1-18 (enclosed).</p> <p>ALL DATA COLLECTION MUST BE MADE WITH MINIMAL IMPACT TO THE PARK'S VISITORS.</p> <p>Park researchers working for other organizations will be required as part of their permit to file travel plans with their HOME work units to facilitate their location and rescue should they not return after work. This applies especially to backcountry travel, defined as travel to park lands that are essentially undeveloped or natural in character and are at least 250 feet from established roadways and developed areas. A general trip plan should also be filed for your stay in the park.</p>

THE PRINCIPAL INVESTIGATOR AND ALL CO-INVESTIGATORS MUST CARRY A COPY OF THE SIGNED RESEARCH PERMIT WITH THEM AT ALL TIMES WHILE WORKING IN THE PARK. IF you need to add any co-investigators who will work apart from the PI, MAKE COPIES FOR EACH "SATELLITE" GROUP and inform Resource Coordinator of additional names (paul_super@nps.gov; 828-926-6251). A copy of the permit or the vehicle identification sign should be displayed visibly in your parked vehicle when within the park.

PROTECT THE PARK'S CULTURAL RESOURCES BY NOT DISTURBING OLD HOMESITES, CEMETARIES, STRUCTURES, AND OTHER CULTURAL FEATURES. Locate studies well away from these areas.

COLLECT AWAY FROM PARK ROADS, TRAILS, AND OTHER HEAVILY USED AREAS WHENEVER POSSIBLE. Please be respectful of park visitors and neighbors; a permit to conduct research within the park does not convey or imply permission to conduct research on private land surrounding the park.

Please contact park curator Adriean Mayor (adriean_mayor@nps.gov, 865-430-4746) about depositing copies (or originals) of completed surveys in the park archives, once names and other confidential information has been redacted.

YOU ARE REQUIRED TO SUBMIT AN ONLINE REPORT OF YOUR RESEARCH ACTIVITIES EACH YEAR, and you must mail two copies of your final research report to our office upon completion of your project. Even if you did no work in the Park during a calendar year, you must go online and say so. The URL and password needed to input your Investigator's Annual Report are distributed electronically to permit holders at the end of the calendar year by Washington. We also request two copies (or one electronic copy) for our library of any publications, dissertations, etc. that use data collected in Great Smoky Mountains National Park.

Breach of any of the terms of this permit or for violation of park regulations will be grounds for revocation of this permit and denial of future permits.

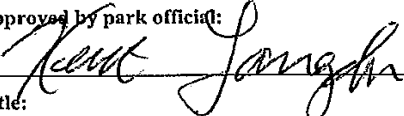
Recommended by park staff(name and title):

Reviewed by Collections Manager:

Yes ___ No ___

Approved by park official:

Date Approved:



6/1/11

Title:

Supervisory Bio/I&M Coordinator

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

(Principal investigator's signature)

(Date)

THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)

APPENDIX C

PERMISSION TO USE SURVEY INSTRUMENTS

Re: Tremont Study

Bob Powell [rbp@clemson.edu]

Sent: Tuesday, March 29, 2011 03:14 PM

To: Garner, Margaret Ann

Attachments: Student Pre-Survey.pdf (22 KB) ; Student Post-Survey.pdf (22 KB)

Dear Margaret,
Here are the instruments. I would consider adapting them if you feel the summer program has different outcomes.

Best,
Bob

Bob Powell
Assistant Professor
Dept. of Parks, Recreation, and Tourism Management
Dept. of Forestry and Natural Resources
128 McGinty Court
281 Lehotsky Hall
Clemson University
Clemson, SC 29634-0735
USA
864.656.0787
rbp@clemson.edu

> Dr. Powell:
>
>
>
> Thank you for allowing me to use your Tremont evaluation instrument. If
> you could attach it in a reply to this e-mail, that would be super!
>
>
>
> Sincerely,
>
> Margaret Garner
>

FW: Early life experience

Stevens, Cheryl [STEVENS@ECU.EDU]

Sent: Wednesday, March 14, 2012 03:41 PM

To: Garner, Margaret Ann

Attachments: SURVEY OF CHILDHOOD OUTDOO~1.doc (119 KB) ; QUALITATIVE INTERVIEW QUES~1.doc (37 KB) ; Survey.doc (143 KB) ; College Major Key for survey.doc (20 KB)

Dr. Cheryl A. Stevens, Professor
Recreation and Leisure Studies Department
Carol Belk Building, Room 2402
252-328-4638 (phone)
252-328-4642 (fax)
stevens@ecu.edu
www.ecu.edu/rcls

RCLS: Live well

You'll never run out of fun things to do
If you make everything you do fun

Mailing Address:
1401 Carol Belk Building • Mail Stop 540
East Carolina University
Greenville, NC 27858-4353



From: Greg Place <gplace@csu.edu>
Date: Wed, 27 Apr 2011 15:49:19 -0400
To: Cheryl Stevens <stevens@ecu.edu>
Subject: Re: Early life experience

Well that was close, thought I had lost the survey. Let me know what else might help. I have everything associated with the project

My personal email is drdsp1961@yahoo.com tho am sure the other will be operating for some time

On Wed, Apr 27, 2011 at 11:44 AM, Stevens, Cheryl <STEVENS@ecu.edu> wrote:
Please send questionnaire and other info you have per phone conversation

Thanks!

Dr. Cheryl A. Stevens, Associate Professor
Recreation and Park Management (RPM)
www.ecu.edu/rpm
College of Health and Human Performance
Department of Recreation and Leisure Studies
East Carolina University

You'll never run out of fun things to do

If you make everything you do fun

Carol Belk Building, Room 2402
Greenville, NC 27858-4353
252-328-4638 (phone)
252-328-4642 (fax)
stevensc@ecu.edu

--

Greg Place, Ph.D.
Professor/Director of Recreation
Department of Secondary Education, Professional Studies and Recreation
Chicago State University
9501 Sth. King Drive/JDC 219
Chicago, IL 60628-1598
<https://sites.google.com/site/gregplacerecreation/>
773-995-2294

APPENDIX D

PARENTAL DISCLOSURE AND INFORMED CONSENT

(Original and Amended)



Informed Consent for Child to Participate in Research

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Principal Investigator: **Margaret Ann Garner**
Institution/Department or Division: **College of Health and Human Performance/Department of Recreation and Leisure Studies**
Address: **170 Pelican Drive, Newport, NC 28570**
Telephone #: **252-342-8763**

Researchers at East Carolina University (ECU) study problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try to find ways to improve your lives and the lives of others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?

The purpose of this research is to examine how children attending two different camps respond to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues (i.e., pro-environmental responses). In addition, early-life experiences in the outdoors will be considered as a possible predictor of pro-environmental responses from campers at both camps. Both camps are situated in natural outdoor settings but only one of the camps will engage children in intentional environmental education programming. **The decision for your child to take part in this research is yours to make.** By doing this research, we hope to learn what helps young people care about the environment and which activities or programs serve best to connect them with nature and/or improve their environmental sensitivity, attitudes and behaviors.

Why is my child being invited to take part in this research?

Your child is being invited to take part in this research because she or he is enrolled in either the Tremont Discovery Camp or the Smoky Mountains Adventure Camp, the two camps being used in the study. If your child participates, she/he will be one of about 140 children at the two camps, approximately 70 at each camp.

Are there reasons my child should not take part in this research?

Participation in the research is voluntary. Non-participation in no way affects camper participation in camp activities. Campers will receive the same services at camp whether or not they agree to participate. There are no foreseeable risks involved in this study, and it has been determined that any risks that might be associated with this research are no more than what your child would experience in everyday life. Furthermore, your child will be asked prior to completing a questionnaire whether he or she wishes to participate and may decline to participate even if you have consented.

UMCIRB Number: 11-0353

Page 1 of 3

Consent Version 5/20/2011
UMCIRB Version 2010.05.01

SEARCHED
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FILED
MAY 31 11
2011

Parent/Guardian Initials

Unique Identifier: Garner Connection with Nature 2011

Title of Study: *Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes*

Where is the research going to take place and how long will it last?

The research will be conducted this summer at Tremont Discovery Camp and at the Smoky Mountains Adventure Camp, and will last until participating campers at each camp session have completed each of the two questionnaires described in the following paragraph. The total amount of time your child will spend on this study is approximately 30 minutes during one five day period.

What will my child be asked to do?

Your child will be asked to complete two questionnaires, one on the first evening of camp and one on the either the last evening of camp, or the fifth evening of camp if the camp session is for a period longer than one week. The questionnaires will ask about your child's outdoor experiences and how he or she feels about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all your child will be asked to do.

What possible harms or discomforts might my child experience if he or she takes part in the research?

It has been determined that the risks associated with this research are no more than what your child would experience in everyday life.

What are the possible benefits my child may experience from taking part in this research?

Your child may not experience any personal benefit from participating but the information gained by doing this research may help improve the overall camp experience in the future. This research might help us learn more about the types of activities or programs that best connect children and nature and improve their environmental sensitivity, attitudes and behaviors, and may, therefore, benefit recreation professionals and educators by informing future activities and programs.

Will my child be paid for taking part in this research?

Your child will not be compensated for participating in the study.

What will it cost me for my child to take part in this research?

It will not cost you any money for your child to be part of the research.

Who will know that my child took part in this research and learn personal information about my child?

To do this research, ECU and the people and organizations listed below may know that your child took part in this research and may see information about your child that is normally kept private. With your permission, these people may use your child's survey responses to do this research:

- The University & Medical Center Institutional Review Board (UMCIRB) and its staff, who have responsibility for overseeing your welfare during this research, and other ECU staff who oversee this research.
- The Principal Investigator and her research coordinator

How will you keep the information you collect about my child secure? How long will you keep it?

Names will be on the questionnaires but will only be used for matching pre- and post-camp questionnaires. Each questionnaire has a cover page with no identifying information. Results will be reported anonymously and in aggregate format. The questionnaires, consent and assent forms will be maintained by the researcher in a locked file cabinet for 3 years from completion of the study, at which time they will be shredded. No one other than the persons named in the preceding response will have access to the data.

UMCIRB Number: 11-0352

Page 2 of 3

Consent Version 5/20/2011
UMCIRB Version 2010.05.01

10-11-11
5-3-11
5-3-12

Parent/Guardian Initials

Unique Identifier: Garner Connection with Nature 2011

Title of Study: Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes

What if I decide I do not want my child to continue in this research?

If you decide you no longer want your child to be in this research after it has already started, you may stop at any time. Your child will not be penalized or criticized for stopping.

Who should I contact if I have questions?

The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at 252-342-8763 on weekdays between 8:00 a.m. and 5:00 p.m. Eastern time. If you have questions about your child's rights as someone taking part in research you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 on weekdays between 8:00 a.m. and 5:00 p.m. Eastern time. If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971.

I have decided that my child may take part in this research. What should I do now?

The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop my child's participation in this study at any time.
- By signing this informed consent form, I am not giving up any of my child's rights.
- I have been given a copy of this consent document, and it is mine to keep.

Parent/Guardian's Name (PRINT)	Signature	Date
--------------------------------	-----------	------

Child's Name (PRINT)

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

Person Obtaining Consent (PRINT)	Signature	Date
----------------------------------	-----------	------

UMCIRB Number: 11-0353
Consent Version 5/20/2011
UMCIRB Version 2010.05.01

UMCIRB APP. NUMBER
FROM <u>5/31/11</u> TO <u>5/30/12</u>

Page 3 of 3

Parent/Guardian Initials



Informed Consent for Child to Participate in Research

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Principal Investigator: **Margaret Ann Garner**

Institution/Department or Division: **College of Health and Human Performance/Department of Recreation and Leisure Studies**

Address: **170 Pelican Drive, Newport, NC 28570**

Telephone #: **252-342-8763**

Researchers at East Carolina University (ECU) study problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try to find ways to improve your lives and the lives of others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?

The purpose of this research is to examine how children attending two different camps respond to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues (i.e., pro-environmental responses). In addition, early-life experiences in the outdoors will be considered as a possible predictor of pro-environmental responses from campers at both camps. Both camps are situated in natural outdoor settings but only one of the camps will engage children in intentional environmental education programming. **The decision for your child to take part in this research is yours to make.** By doing this research, we hope to learn what helps young people care about the environment and which activities or programs serve best to connect them with nature and/or improve their environmental sensitivity, attitudes and behaviors.

Why is my child being invited to take part in this research?

Your child is being invited to take part in this research because she or he is enrolled in either the Tremont Camps or the Smoky Mountains Adventure Camp, the two camps being used in the study. If your child participates, she/he will be one of about 155 children at the two camps, approximately 85 at Tremont and 70 at SMAC.

Are there reasons my child should not take part in this research?

Participation in the research is voluntary. Non-participation in no way affects camper participation in camp activities. Campers will receive the same services at camp whether or not they agree to participate. There are no foreseeable risks involved in this study, and it has been determined that any risks that might be associated with this research are no more than what your child would experience in everyday life. Furthermore, your child will be asked prior to completing a questionnaire whether he or she wishes to participate and may decline to participate even if you have consented.

UMCIRB Number: 11-0353

Page 1 of 3

Consent Version 7/8/2011
UMCIRB Version 2010.05.01

UMCIRB
APPROVED
FROM 7-13-11
TO 5-3-12

Parent/Guardian Initials

Unique Identifier: Garner Connection with Nature 2011

Title of Study: Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes

Where is the research going to take place and how long will it last?

The research will be conducted this summer at the Tremont Camps and at the Smoky Mountains Adventure Camp, and will last until participating campers at each camp session have completed each of the two questionnaires described in the following paragraph. The total amount of time your child will spend on this study is approximately 30 minutes during one five- or ten-day period.

What will my child be asked to do?

Your child will be asked to complete two questionnaires, one on the first evening of camp and one on the either the last evening of camp, or after the second week of camp if the camp session is for a period longer than two weeks. The questionnaires will ask about your child's outdoor experiences and how he or she feels about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all your child will be asked to do.

What possible harms or discomforts might my child experience if he or she takes part in the research?

It has been determined that the risks associated with this research are no more than what your child would experience in everyday life.

What are the possible benefits my child may experience from taking part in this research?

Your child may not experience any personal benefit from participating but the information gained by doing this research may help improve the overall camp experience in the future. This research might help us learn more about the types of activities or programs that best connect children and nature and improve their environmental sensitivity, attitudes and behaviors, and may, therefore, benefit recreation professionals and educators by informing future activities and programs.

Will my child be paid for taking part in this research?

Your child will not be compensated for participating in the study.

What will it cost me for my child to take part in this research?

It will not cost you any money for your child to be part of the research.

Who will know that my child took part in this research and learn personal information about my child?

To do this research, ECU and the people and organizations listed below may know that your child took part in this research and may see information about your child that is normally kept private. With your permission, these people may use your child's survey responses to do this research:

- The University & Medical Center Institutional Review Board (UMCIRB) and its staff, who have responsibility for overseeing your welfare during this research, and other ECU staff who oversee this research.
- The Principal Investigator and her research coordinator

How will you keep the information you collect about my child secure? How long will you keep it?

Names will be on the questionnaires but will only be used for matching pre- and post-camp questionnaires. Each questionnaire has a cover page with no identifying information. Results will be reported anonymously and in aggregate format. The questionnaires, consent and assent forms will be maintained by the researcher in a locked file cabinet for 3 years from completion of the study, at which time they will be shredded. No one other than the persons named in the preceding response will have access to the data.

UMCIRB Number: 11-0353

Page 2 of 3

Consent Version 7/8/2011
UMCIRB Version 2010.05.01

UMCIRB
APPROVED
FROM 2.13.11
TO S. G. D.

Parent/Guardian Initials

Unique Identifier: Garner Connection with Nature 2011

Title of Study: Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes

What if I decide I do not want my child to continue in this research?

If you decide you no longer want your child to be in this research after it has already started, you may stop at any time. Your child will not be penalized or criticized for stopping.

Who should I contact if I have questions?

The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at 252-342-8763 on weekdays between 8:00 a.m. and 5:00 p.m. Eastern time. If you have questions about your child's rights as someone taking part in research you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 on weekdays between 8:00 a.m. and 5:00 p.m. Eastern time. If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971.

I have decided that my child may take part in this research. What should I do now?

The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop my child's participation in this study at any time.
- By signing this informed consent form, I am not giving up any of my child's rights.
- I have been given a copy of this consent document, and it is mine to keep.

Parent/Guardian's Name (PRINT)

Signature

Date

Child's Name (PRINT)

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

Person Obtaining Consent (PRINT)

Signature

Date

UMCIRB Number: 11-0353

Page 3 of 3

Consent Version 7/8/2011
UMCIRB Version 2010.05.01

UMCIRB
APPROVED
FROM 7-13-11
TO 8-30-12

Parent/Guardian Initials

APPENDIX E

DISCLOSURE AND ASSENT FORM

For Campers 12 Years and Older

(Original and Amended)

Unique Identifier: Garner Connection with Nature 2011

East Carolina University



1907-2007
CENTENNIAL

Assent Form

Things You Should Know Before You Agree To Take Part in this Research

IRB Study # 11-0353

Title of Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Person in charge of study: **Margaret Ann Garner**

Where they work: **Ms. Garner is a graduate student at East Carolina University**

Study contact phone number: **252-342-8763**

Study contact e-mail address: **garnerma10@students.ecu.edu**

People at East Carolina University study ways to make people's lives better. These studies are called research. This research is trying to find out what helps young people your age care about nature and protecting the environment.

Your parent(s) needs to give permission for you to be in this research. You do not have to be a part of this research if you don't want to, even if your parent(s) has already given permission.

You may stop being in the study at any time. If you decide to stop, no one will be angry or upset with you.

Why are you doing this research study?

The reason for doing this research is to understand what helps young people care about the environment and which activities or programs may help young people connect with nature and want to take care of it.

Why am I being asked to be in this research study?

We are asking you to take part in this research because you are enrolled in the Tremont Discovery Camp

How many people will take part in this study? A total of about 140 young people at 2 camps will take part in this study, including about 70 young people from this camp.

What will happen during this study?

You will be asked to complete two questionnaires, one on the first evening of camp and one on the last evening of camp. The questions will ask about your outdoor experiences and how you feel about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all you will be asked to do.

The study will take place this summer at Tremont Discovery Camp and at the Smoky Mountain Adventure Camp and will last until participating campers at each camp session have completed each of the two questionnaires.

UMCIRB Number: 11-0353

Page 1 of 2

Tremont Assent, Version 5/20/2011
UMCIRB Version 2010.05.01

UMCIRB
APPROVED
FROM IS 31-11
TO 5-20-12

Camper Initials

Who will be told the things we learn about you in this study?

Only the person in charge of this study, and her teacher, will have access to the information collected. Your answers will not be revealed to your parents, teachers, fellow campers, or camp directors or counselors.

What are the good things that might happen?

Sometimes good things happen to people who take part in research. These are called "benefits." There is little chance, however, that you will receive any direct benefit from being in this research.

What are the bad things that might happen?

Sometimes things we may not like happen to people in research studies. These things may even make them feel bad. These are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any questions that would embarrass or threaten you. Your name will be on the questionnaires but will only be used to match your first questionnaire with your second questionnaire. Each questionnaire has a cover page that does not have your name on it (please do not remove the cover page!). The questionnaires will be collected by the person in charge of the study as soon as you complete them. No person other than the person in charge of the study will see your completed questionnaires.

Will you get any money or gifts for being in this research study?

You will not receive any money or gifts for being in this research study.

Who should you ask if you have any questions?

If you have questions about the research, you should ask the person in charge of the study listed on the first page of this form. If you have other questions about your rights while you are in this research study you may call the Institutional Review Board at 252-744-2914.

If you decide to take part in this research, you should sign your name below. It means that you agree to take part in this research study.

Sign your name here if you want to be in the study

Date

Print your name here if you want to be in the study

Signature of Person Obtaining Assent

Date

Printed Name of Person Obtaining Assent

UMCIRB Number: 11-0353

Tremont Assent, Version 5/20/2011
UMCIRB Version 2010.05.01

Page 2 of 2

UMCIRB
APPROVED
FROM S. 31/11
TO S. 30/12

Camper Initials

East Carolina University



1907-2007
CENTENNIAL

Assent Form

Things You Should Know Before You Agree To Take Part in this Research

IRB Study # 11-0353

Title of Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Person in charge of study: **Margaret Ann Garner**
Where they work: **Ms. Garner is a graduate student at East Carolina University**
Study contact phone number: **252-342-8763**
Study contact e-mail address: **garnerma10@students.ecu.edu**

People at East Carolina University study ways to make people's lives better. These studies are called research. This research is trying to find out what helps young people your age care about nature and protecting the environment.

Your parent(s) needs to give permission for you to be in this research. You do not have to be a part of this research if you don't want to, even if your parent(s) has already given permission.

You may stop being in the study at any time. If you decide to stop, no one will be angry or upset with you.

Why are you doing this research study?

The reason for doing this research is to understand what helps young people care about the environment and which activities or programs may help young people connect with nature and want to take care of it.

Why am I being asked to be in this research study?

We are asking you to take part in this research because you are enrolled in the Smoky Mountains Adventure Camp.

How many people will take part in this study? A total of about 140 young people at 2 camps will take part in this study, including about 70 young people from this camp.

What will happen during this study?

You will be asked to complete two questionnaires, one on the first evening of camp and one on the fifth evening of camp. The questions will ask about your outdoor experiences and how you feel about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all you will be asked to do.

UMCIRB Number: 11-0353

Camper Initials

UMCIRB
APPROVED
FROM 5-31-11
TO 5-30-12

Unique Identifier: Garner Connection with Nature 2011

The study will take place this summer at the Smoky Mountain Adventure Camp and at Tremont Discovery Camp and will last until participating campers at each camp session have completed each of the two questionnaires.

Who will be told the things we learn about you in this study?

Only the person in charge of this study, and her teacher, will have access to the information collected. Your answers will not be revealed to your parents, teachers, fellow campers, or camp directors or counselors.

What are the good things that might happen?

Sometimes good things happen to people who take part in research. These are called "benefits." There is little chance, however, that you will receive any direct benefit from being in this research.

What are the bad things that might happen?

Sometimes things we may not like happen to people in research studies. These things may even make them feel bad. These are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any questions that would embarrass or threaten you. Your name will be on the questionnaires but will only be used to match your first questionnaire with your second questionnaire. Each questionnaire has a cover page that does not have your name on it (please do not remove the cover page!). The questionnaires will be collected by the person in charge of the study as soon as you complete them. No person other than the person in charge of the study will see your completed questionnaires.

Will you get any money or gifts for being in this research study?

You will not receive any money or gifts for being in this research study.

Who should you ask if you have any questions?

If you have questions about the research, you should ask the person in charge of the study listed on the first page of this form. If you have other questions about your rights while you are in this research study you may call the Institutional Review Board at 252-744-2914.

If you decide to take part in this research, you should sign your name below. It means that you agree to take part in this research study.

Sign your name here if you want to be in the study

Date

Print your name here if you want to be in the study

Signature of Person Obtaining Assent

Date

Printed Name of Person Obtaining Assent

UMCIRB Number: 11-0353

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SMAC Assent, Version 5/20/2011
UMCIRB Version 2010.05.01

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APPROVED
FROM 5/31/11
TO 5/30/12

Camper Initials

Unique Identifier: Garner Connection with Nature 2011

East Carolina University



Assent Form

Things You Should Know Before You Agree To Take Part in this Research

IRB Study #11-0353

Title of Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Person in charge of study: **Margaret Ann Garner**

Where they work: **Ms. Garner is a graduate student at East Carolina University**

Study contact phone number: **252-342-8763**

Study contact e-mail address: **garnerma10@students.ecu.edu**

People at East Carolina University study ways to make people's lives better. These studies are called research. This research is trying to find out what helps young people your age care about nature and protecting the environment.

Your parent(s) needs to give permission for you to be in this research. You do not have to be a part of this research if you don't want to, even if your parent(s) has already given permission.

You may stop being in the study at any time. If you decide to stop, no one will be angry or upset with you.

Why are you doing this research study?

The reason for doing this research is to understand what helps young people care about the environment and which activities or programs may help young people connect with nature and want to take care of it.

Why am I being asked to be in this research study?

We are asking you to take part in this research because you are enrolled in the Tremont Discovery, High Teen Adventure, or Field Ecology Adventure Camps.

How many people will take part in this study? A total of about 155 young people at 2 camps will take part in this study, including about 85 young people from this camp.

What will happen during this study?

You will be asked to complete two questionnaires, one on the first evening of camp and one on the last evening of camp. The questions will ask about your outdoor experiences and how you feel about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all you will be asked to do.

UMCIRB Number: 11-0353

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Tremont Assent, Version 7/8/2011
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FROM 7/13/11
TO 8/26/12

Camper Initials

Unique Identifier: Garner Connection with Nature 2011

The study will take place this summer at the **Tremont Camps** and at the Smoky Mountain Adventure Camp and will last until participating campers at each camp session have completed each of the two questionnaires.

Who will be told the things we learn about you in this study?

Only the person in charge of this study, and her teacher, will have access to the information collected. Your answers will not be revealed to your parents, teachers, fellow campers, or camp directors or counselors.

What are the good things that might happen?

Sometimes good things happen to people who take part in research. These are called "benefits." There is little chance, however, that you will receive any direct benefit from being in this research.

What are the bad things that might happen?

Sometimes things we may not like happen to people in research studies. These things may even make them feel bad. These are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any questions that would embarrass or threaten you. Your name will be on the questionnaires but will only be used to match your first questionnaire with your second questionnaire. Each questionnaire has a cover page that does not have your name on it (please do not remove the cover page!). The questionnaires will be collected by the person in charge of the study as soon as you complete them. No person other than the person in charge of the study will see your completed questionnaires.

Will you get any money or gifts for being in this research study?

You will not receive any money or gifts for being in this research study.

Who should you ask if you have any questions?

If you have questions about the research, you should ask the person in charge of the study listed on the first page of this form. If you have other questions about your rights while you are in this research study you may call the Institutional Review Board at 252-744-2914.

If you decide to take part in this research, you should sign your name below. It means that you agree to take part in this research study.

Sign your name here if you want to be in the study

Date

Print your name here if you want to be in the study

Signature of Person Obtaining Assent

Date

Printed Name of Person Obtaining Assent

UMCIRB Number: 11-0353

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Tremont Assent, Version 7/8/2011
UMCIRB Version 2010.05.01

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APPROVED
FROM 7-13-11
TO 8-30-12

Camper Initials

Unique Identifier: Garner Connection with Nature 2011

East Carolina University



Assent Form

Things You Should Know Before You Agree To Take Part in this Research

IRB Study #11-0353

Title of Study: **Connection with Nature: The Effects of Organized Camp Experiences on Children's Environmental Attitudes**

Person in charge of study: **Margaret Ann Garner**
Where they work: **Ms. Garner is a graduate student at East Carolina University**
Study contact phone number: **252-342-8763**
Study contact e-mail address: **garnerma10@students.ecu.edu**

People at East Carolina University study ways to make people's lives better. These studies are called research. This research is trying to find out what helps young people your age care about nature and protecting the environment.

Your parent(s) needs to give permission for you to be in this research. You do not have to be a part of this research if you don't want to, even if your parent(s) has already given permission.

You may stop being in the study at any time. If you decide to stop, no one will be angry or upset with you.

Why are you doing this research study?

The reason for doing this research is to understand what helps young people care about the environment and which activities or programs may help young people connect with nature and want to take care of it.

Why am I being asked to be in this research study?

We are asking you to take part in this research because you are enrolled in the Smoky Mountains Adventure Camp.

How many people will take part in this study? A total of about **155 young people at 2 camps will take part in this study, including about 70 young people from this camp.**

What will happen during this study?

You will be asked to complete two questionnaires, one on the first evening of camp and one on the **last evening of camp, or after the second week of camp if the camp session lasts more than two weeks.** The questions will ask about your outdoor experiences and how you feel about protecting the environment and learning more about nature and the environment. Each questionnaire will take about 15 minutes to complete. That is all you will be asked to do.

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Camper Initials

Unique Identifier: Garner Connection with Nature 2011

The study will take place this summer at the Smoky Mountain Adventure Camp and at the Tremont Discovery, **Teen High Adventure, and Field Ecology Camps** and will last until participating campers at each camp session have completed each of the two questionnaires.

Who will be told the things we learn about you in this study?

Only the person in charge of this study, and her teacher, will have access to the information collected. Your answers will not be revealed to your parents, teachers, fellow campers, or camp directors or counselors.

What are the good things that might happen?

Sometimes good things happen to people who take part in research. These are called "benefits." There is little chance, however, that you will receive any direct benefit from being in this research.

What are the bad things that might happen?

Sometimes things we may not like happen to people in research studies. These things may even make them feel bad. These are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any questions that would embarrass or threaten you. Your name will be on the questionnaires but will only be used to match your first questionnaire with your second questionnaire. Each questionnaire has a cover page that does not have your name on it (please do not remove the cover page!). The questionnaires will be collected by the person in charge of the study as soon as you complete them. No person other than the person in charge of the study will see your completed questionnaires.

Will you get any money or gifts for being in this research study?

You will not receive any money or gifts for being in this research study.

Who should you ask if you have any questions?

If you have questions about the research, you should ask the person in charge of the study listed on the first page of this form. If you have other questions about your rights while you are in this research study you may call the Institutional Review Board at 252-744-2914.

If you decide to take part in this research, you should sign your name below. It means that you agree to take part in this research study.

Sign your name here if you want to be in the study

Date

Print your name here if you want to be in the study

Signature of Person Obtaining Assent

Date

Printed Name of Person Obtaining Assent

UNCIRB Number:11-0353

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SMAC Assent, Version 7/8/2011
UNCIRB Version 2010.05.01

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FROM 7-13-11
TO 8-30-12

Camper Initials

APPENDIX F

DISCLOSURE AND ASSENT SCRIPT

Read to Children Under the Age of 12

(Original and Amended)



Assent Script

For Children Aged 7-11

Hi, and welcome to Tremont [Smoky Mountains Adventure Camp]!

My name is Margaret, and I am a student at East Carolina University. At East Carolina, we study ways to make things better, things like schools, and parks,...and even summer camp! These studies are called research. I'm doing research here at Tremont/[Smoky Mountains Adventure Camp] this week to try and find out what makes young people your age care about nature and protecting the environment, and I'd like to invite you to help me, if you are willing to. You don't have to if you don't want to, and if you don't want to it won't change your camp experience in any way. I have already asked your parents for their permission for you to help me, but even if they said yes, you can still say no. If you decide you want to participate in my research, and then change your mind, you can stop at any time; no one will be angry or upset with you if you want to stop.

If you are willing to help with my research, here's what I'd like you to do: I'd like for you to answer the questions on two questionnaires, one that I'll give you tonight, and one that I'll give you towards the end of the week. The questions will ask about your outdoor experiences, how you feel about protecting the environment, and how you feel about environmental learning. Each questionnaire will take about 15 minutes to complete. That is all you would need to do.

I am going to be doing this research here, and also at the Smoky Mountains Adventure Camp [Tremont], about 40 miles from here. If you participate, you'll be one of about 140 people participating, and about 70 of them will be here at Tremont [Smoky Mountains Adventure Camp].

Now, you might be wondering what's going to happen to these questionnaires, who's going to see them and the answers you write in them. Actually, not many people will see them. I will collect the questionnaires as soon as you have finished them. I will not show them to anyone, except the people at East Carolina who are in charge of overseeing my research and making sure it is done right. Your parents won't see your answers, your fellow campers won't see them, and the staff here at camp won't see them. You will have to put your name on the questionnaires, but that is only so I can compare your first questionnaire with your second questionnaire. When I finish my research, I have to keep the

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Assent Script, Version 5/20/2011

 Camper Initials

CENTENNIAL
ASSENT SCRIPT
5/20/11
ECS

Unique Identifier: Garner Connection with Nature 2011

questionnaires for 3 years, but they will be kept in a locked cabinet. When the three years are up, I will shred them. No one will ever see them again.

What will you get out of participating? Well, you may not get any direct benefits; you won't be paid or given any gifts for participating, but your participation may help us learn what kinds of activities and programs you enjoy and benefit from and that might provide benefits in the future.

You might be wondering if there are any reasons you might NOT want to participate. Sometimes in research studies things we may not like happen to people, things that may even make them feel bad. In research, these are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any kinds of questions that would embarrass you or make you feel threatened. Remember, you always have the right to change your mind and stop participating.

If you have any questions, please ask me. I want to be sure you understand everything and are comfortable with participating if you decide to.

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Assent Script, Version 5/20/2011

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COPIES
APPROVED
FROM: S. J. L. L.
TO: S. J. L. L.

Camper Initials



Assent Script
For Children Aged 7-11

Hi, and welcome to Tremont [Smoky Mountains Adventure Camp]!

My name is Margaret, and I am a student at East Carolina University. At East Carolina, we study ways to make things better, things like schools, and parks,...and even summer camp! These studies are called research. I'm doing research here at Tremont/[Smoky Mountains Adventure Camp] this week to try and find out what makes young people your age care about nature and protecting the environment, and I'd like to invite you to help me, if you are willing to. You don't have to if you don't want to, and if you don't want to it won't change your camp experience in any way. I have already asked your parents for their permission for you to help me, but even if they said yes, you can still say no. If you decide you want to participate in my research, and then change your mind, you can stop at any time; no one will be angry or upset with you if you want to stop.

If you are willing to help with my research, here's what I'd like you to do: I'd like for you to answer the questions on two questionnaires, one that I'll give you tonight, and one that I'll give you towards the end of the week. The questions will ask about your outdoor experiences, how you feel about protecting the environment, and how you feel about environmental learning. Each questionnaire will take about 15 minutes to complete. That is all you would need to do.

I am going to be doing this research here, and also at the Smoky Mountains Adventure Camp [Tremont], about 40 miles from here. If you participate, you'll be one of about **155 people participating, about 85 of them will be here at Tremont [70 of them will be here at Smoky Mountains Adventure Camp].**

Now, you might be wondering what's going to happen to these questionnaires, who's going to see them and the answers you write in them. Actually, not many people will see them. I will collect the questionnaires as soon as you have finished them. I will not show them to anyone, except the people at East Carolina who are in charge of overseeing my research and making sure it is done right. Your parents won't see your answers, your fellow campers won't see them, and the staff here at camp won't see them. You will have to put your name on the questionnaires, but that is only so I can compare your first questionnaire with your second questionnaire. When I finish my research, I have to keep the

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Assent Script, Version 7/8/2011

Camper Initials

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APPROVED
FROM 7/12/11
TO 8/30/12

Unique Identifier: Garner Connection with Nature 2011

questionnaires for 3 years, but they will be kept in a locked cabinet. When the three years are up, I will shred them. No one will ever see them again.

What will you get out of participating? Well, you may not get any direct benefits; you won't be paid or given any gifts for participating, but your participation may help us learn what kinds of activities and programs you enjoy and benefit from and that might provide benefits in the future.

You might be wondering if there are any reasons you might NOT want to participate. Sometimes in research studies things we may not like happen to people, things that may even make them feel bad. In research, these are called "risks." We do not know of any risks involved in this study because the questionnaires do not contain any kinds of questions that would embarrass you or make you feel threatened. Remember, you always have the right to change your mind and stop participating.

If you have any questions, please ask me. I want to be sure you understand everything and are comfortable with participating if you decide to.

UMCIRB Number: 11-0353

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TO 8/30/12

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APPENDIX G

RESEARCH SITE PERMISSION

Camp

UMCIRB
East Carolina University
Brody School of Medicine
Old Laupus Library, Room 1L-09
Greenville, North Carolina 27834

Dear Review Board Members:

We have reviewed the proposal submitted by Margaret Ann Garner to conduct a study with our summer campers. The purpose of the study is to examine how children attending two different camps, the [redacted] Camp and the Tremont Discovery Camp, respond to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues in natural area settings. In addition, early-life experiences in the outdoors will be considered as a possible predictor of pro-environmental responses from participants at both camps.

As we understand it, camp attendees will be administered a pre-visit questionnaire as soon as practicable after their arrival at camp, prior to their engaging in any substantive camp activities. A post-visit questionnaire will be administered in the evening of the fifth day of camp. Prior to administering the pre-visit questionnaire, the researcher will obtain written informed consent from each participant's parent or guardian, and verbal or written assent from the campers, as appropriate considering the ages of the campers. Parental consent will be solicited by the researcher when campers are dropped off at camp. Camper assent will be solicited by the researcher prior to distribution of the questionnaires. The questionnaires will be distributed and collected by the researcher; the campers will complete the questionnaires. Completion of questionnaires is voluntary and non-participation in no way affects camper participation in camp activities. Campers will receive the same services at camp whether or not they agree to participate. There will be no incentives offered to induce participation and no consequences for refusal to participate. Camper names will be on the questionnaires but will only be used by the researcher to match pre- and post-camp questionnaires. Results will be reported anonymously and in aggregate format. The questionnaires will take approximately 15 minutes to complete.

We believe that the study has potential benefits for our camp and have given Ms. Garner our approval to conduct the study at the [redacted] Camp.

Sincerely,



Director,

[redacted]

[redacted] Camp

UMCIRB
East Carolina University
Brody School of Medicine
Old Laopus Library, Room 1L-09
Greenville, North Carolina 27834

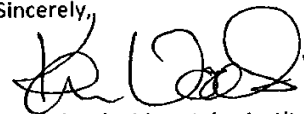
Dear Review Board Members:

We have reviewed the proposal submitted by Margaret Ann Garner to conduct a study with our summer campers. The purpose of the study is to examine how children attending two different camps, the Tremont Discovery Camp and the Smoky Mountains Adventure Camp, respond to questions related to connection with nature, environmental stewardship, interest in environmental learning and discovery, and knowledge and awareness of environmental and ecological issues in natural area settings. In addition, early-life experiences in the outdoors will be considered as a possible predictor of pro-environmental responses from participants at both camps.

As we understand it, camp attendees will be administered a pre-visit questionnaire as soon as practicable after their arrival at camp, prior to their engaging in any substantive camp activities. A post-visit questionnaire will be administered in the evening of the final full day of camp. Prior to administering the pre-visit questionnaire, the researcher will obtain written informed consent from each participant's parent or guardian, and verbal or written assent from the campers, as appropriate considering the ages of the campers. Parental consent will be solicited by the researcher when campers are dropped off at camp. Camper assent will be solicited by the researcher prior to distribution of the questionnaires. The questionnaires will be distributed and collected by the researcher; the campers will complete the questionnaires. Completion of questionnaires is voluntary and non-participation in no way affects camper participation in camp activities. Campers will receive the same services at camp whether or not they agree to participate. There will be no incentives offered to induce participation and no consequences for refusal to participate. Camper names will be on the questionnaires but will only be used by the researcher to match pre- and post-camp questionnaires. Results will be reported anonymously and in aggregate format. The questionnaires will take approximately 15 minutes to complete.

We believe that the study has potential benefits for our camp and have given Ms. Garner our approval to conduct the study at the Tremont Discovery Camp.

Sincerely,



Great Smoky Mountains Institute at Tremont
Tremont Discovery Camp