THE EFFECT OF PLACE ATTACHMENT ON ENVIRONMENTAL VALUES IN OKLAHOMA STATE PARK VISITORS

By

KEVIN JORDAN FINK

Bachelor of Arts in Psychology
Truman State University
Kirksville, Missouri
2005

Bachelor of Science in Justice Systems
Truman State University
Kirksville, Missouri
2005

Master of Science in Educational Psychology: Research, Evaluation, Measurement, & Statistics
Oklahoma State University
Stillwater, Oklahoma
2007

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Dissertation Approved:

Dr. Lowell Caneday

Dissertation Adviser

Dr. Donna Lindenmeier

Dr. Diane Montgomery

Dr. Tom Shriver

Outside Committee Member

Dr. Mark E. Payton

Dean of the Graduate College

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- Wallace Stegner (1992)

"Man is a part of nature, and his war against nature is inevitably a war against himself."

- Rachel Carson (1962, p. 2)

CHAPTER I

INTRODUCTION

Since the settlement of North America, humans have had a relationship to with this continent for sustenance, subsistence, and recreation. From Native Americans to European settlers, these relationships included behaviors like hunting, agriculture, and industrialization (Denevan, 2003; Merchant, 2007). The way in which Americans used and managed (and misused and mismanaged) resources necessitated a resurgent spotlight regarding environmental issues. Environmental advocates, in their most basic philosophies, promoted balancing human-human and human-nature relationships.

This philosophy overrode that of human exploitation and domination over nature and people (Hawken, 2007). According to Paul Hawken (2007), the environmental movement and the activists who comprise the environmental movement are a decentralized social movement consisting of environmental activism, social justice concerns, and protection of cultural diversity. It is a social movement in which involved persons seek to lessen human impacts and modifications incurred on the natural environment and on each other (Hawken, 2007; Stern, 1992; Zelezny & Schultz, 2000).

Environmentalists promote peace and equality among each other through the protection of human rights as defined by the Universal Declaration of Human Rights (Hawken, 2007; Visser, 2009). These fundamental rights include the right to education, security, a clean environment, protection from exploitation, and transparency among others. Protecting these fundamental rights, according to Hawken (2007), in a capitalist society is vastly important as extracting and producing goods for consumption oftentimes becomes more important than protecting the persons and natural resources affected by the extraction and production. For example, mountaintop removal used in the East and upper North East to mine for coal and other minerals negatively affects natural resources and surrounding communities. According to MountainJustice.org (2010), mountaintops are clear-cut of timber and then exploded after which companies sift through the materials and haul coal and minerals away. Communities are often affected by fly rock (airborne rock waste), noise, and slurry (waste materials often containing mercury and other poisons), which leach into water sources and are consumed by fish and humans (Kennedy, Jr., 2005; MountainJustice.org, 2010).

In some way, much of what is consumed or experienced by humankind impacts the environment through recreation, enjoyment of, development, extraction, and more. An aspect of the environmental movement is that of resource protection. Currently, there are two similar yet dichotomous resource management philosophies not including unregulated use. These dual philosophies protect the commons, or public lands, from exploitation and are best examined by comparing the ideologies of Gifford Pinchot and John Muir, two prominent yet different resource advocates of the 19th and 20th centuries (Faber & O'Connor, 1989; Hardin, 1968).

Gifford Pinchot, one-time United States Forest Service Chief and founder of modern forestry, believed that America's natural resources be managed through *wise-use* conservation practices (McCarthy, 2002; Merchant, 2007). Pinchot wrote in *The Fight for Conservation*, "the first fact about conservation is that it stands for development;" and that conservation practices were a "provision for the future, but it means also and first of all the recognition of the right of the present generation to the fullest necessary use of all the resources," and, finally, that conservation "means the greatest good to the greatest number for the longest time" (Johnson, 2003, p. 201). Pinchot's belief in wise-use practices justified his movement of the Division of Forestry from the Department of the Interior to the Department of Agriculture; Pinchot believed that the forests should be managed as a crop (Merchant, 2007).

The crop mentality furthered Pinchot's intention to sustainably develop and utilize America's forests and other natural resources without deforestation and resource exhaustion (McCarthy, 2002). Sustainable development for Pinchot and the Forest Service meant utilizing each resource (e.g., recreation, timber, water, and minerals)

within a locale for the use and benefit of the surrounding community without exhausting the resource. During the 1980s, a revived wise-use movement in the American West occurred. Persons involved spoke for the privatization of property and against intrusion from government agencies and political regulations (McCarthy, 2002; Wilson, 1997). Perhaps they believed, as many do, that private property was better protected because of individual gains rather than gains for all through the creation and use of public property. The Wise-Use group demanded that they be allowed to maintain their private property and culture and to accrue the economic gains (McCarthy, 2002; Wilson, 1997). For various reasons, the movement failed to gather support from Americans (McCarthy. 2002).

Conversely, a group of traders, environmental and human rights organizations, and timber users successfully banded together in 1993 to form the Forest Stewardship Council (FSC) to promote responsible stewardship of the world's forests (FSC, 2010; Visser, 2009). The FSC and the FSC-US chapter realized the damage caused by water and air pollution, human rights violations, biodiversity, and habitat destruction to the entire ecosystem (FSC, 2010; Visser, 2009). The group created a certification system to coordinate and maintain sustainable forestry in the different areas of the United States and the world based on 57 standards and criteria. Thus allowing industry to extract and produce while also maintaining some protection for natural resources.

While Pinchot's conservation practices promoted a wise-use strategy, John Muir believed that the world was interlinked (everything affected everything) and that its resources needed to be saved for the enjoyment and health of future generations by preserving it (Faber & O'Connor, 1989; Hawken, 2007). Muir pronounced his

preservation ethic through his campaigns, his nature hikes, and through his writings. Muir was an avid writer, which helped him gain access to powerful figures such as Gifford Pinchot and President Theodore Roosevelt. Muir often campaigned for preserving resources and did so in the western forests to protect it from logging and grazing. To aid in his campaign, Muir founded the Sierra Club in 1892 in an effort to preserve the natural resources of the Sierra Nevada.

Muir's preservation ethic opposed Pinchot's wise-use strategy when San Francisco petitioned to have the Tuolumne River in the Hetch Hetchy Valley dammed in Yosemite National Park (Cronon, 2003). In 1906, an earthquake occurred near San Francisco, igniting fires that decimated much of the city (SFPUC, 2006; USGS, 2010). The earthquake and subsequent fire led to 498 deaths in San Francisco, as well as destroying almost five square miles of the city (SFPUC, 2006; USGS, 2010). When the city began to rebuild, city officials realized that San Francisco and other outlying cities needed a source to provide more power and water. City officials applied for permits to dam and flood the Hetch Hetchy Valley (House Committee on Public Lands, 1913; Miller, 2001; SFPUC, 2006).

Muir, and a number of preservationists, fought for the protection of the valley. To Muir (1909), the Hetch Hetchy Valley was the:

> Most attractive and wonderful valley within the bounds of the great Yosemite National Park and the best of all the camp-grounds. People are now flocking to it in ever-increasing numbers for health and recreation of body and mind… It is one of God's best gifts, and ought to be faithfully guarded (p.469).

Meanwhile, Pinchot was avidly advocating that the valley be dammed (Cronon, 2003). He stated at the 1913 Congressional hearing:

> As we all know, there is no use of water that is higher than the domestic use. Then, if there is, as the engineers tell us, no other source of supply that is anything like so reasonably available as this one; if this is the best, and, within reasonable limits of cost, the only means of supplying San Francisco with water, we come straight to the question of whether the advantage of leaving this valley in a state of nature is greater than the advantage of using it for the benefit of the city of San Francisco. Now, the fundamental principle of the whole conservation policy is that of use, to take every part of the land and its resources and put it to that use in which it will best serve the most people, and I think there can be no question at all but that in this case we have an instance in which all weighty considerations demand the passage of the bill (House Committee on Public Lands, 1913, para. 1).

Eventually, the Valley was dammed and flooded, but Cronon (2003) wrote that the fight concerning the damming of the Valley was "the battle cry of an emerging movement to preserve wilderness" (p.16) and America's natural resources.

Environmentalism

Environmental philosophy, as it related to North Americans, was rooted in the European discovery of the New World. The Pilgrims and Puritans traveled to and successfully inhabited the New World during the early 1600s (Merchant, 2007). The Pilgrims arrived hoping to settle and trade while seeking religious freedom. Though, the Puritans arrived in North America seeking religious freedom also, they sought the natural

resources available for economic benefit. Puritans, though, believed they were instructed by God to "subdue nature" (Merchant, 2007, p. 28).

For the new North American settlers, the forests and wilderness areas represented evil, temptation, and areas of terror (Cronon, 1995; 2003). These early European settlers viewed the woods in Biblical terms as wild and uncivilized areas to lose oneself (Cronon, 1995; Merchant, 2007). Pilgrims and Puritans, alike, fenced their houses in and cleared forests because of what they feared beyond their property; as well as clearing the woods for settlement, timber trade, and agriculture (Merchant, 2007). Eventually, romantic perceptions emerged and people believed that if the devil lay in the woods, God must as well (Cronon, 1995; 2003). Foreign ideas, such as those of German travelers, diffused into the New World ideology as well (Merchant, 2007). Wilderness and the outdoors were seen as awe-inspiring and majestic, places for sublime experiences – "the mountain as cathedral" (Cronon, 1995, p. 75). More people began sharing Muir's belief that the wilderness and outdoors were important for human health and wellness and re-creation of mind and spirit (Cronon, 2003; Merchant, 2007).

Even as perspectives of the North American wilderness and land changed, settlers still needed to utilize the land for subsistence. For example, settlers in Virginia responded to European demand for smoking tobacco and Virginia experienced an economic boon (Merchant, 2007). Unfortunately, settlers learned of the disadvantages of overplanting a monocrop for one's livelihood. Tobacco, a nutrient sapping crop, was planted so prominently that famine occurred during the 16th and 17th centuries and eventually, the soil turned against the tobacco crop itself (Merchant, 2007). In response, settlers continued to clear new areas for tobacco plantations.

Though monocrops and clear-cutting damaged the environment, another major development that negatively affected the environment was the inception of mass transit (Merchant, 2007). Forests were logged to build steamboats in the early 19th century while timber, coal, and other minerals were utilized for trains in the 1830s. Large swaths of land were cut and developed along these transportation corridors. Historian Frederick Jackson Turner (1894) believed that unregulated expansion throughout the 1800s had eliminated the vast expanses of the American Frontier.

Expansionism was most noticeable during the early 19th century. For instance, in 1803, the United States purchased the Louisiana Territory, which almost doubled the size of America and then expanded again in 1819 (Florida), 1845 (annexation of Texas) and 1846 (Oregon territory) (Jackson, 1986; Merchant, 2007). Merchant (2007) noted that many laws passed in the late 1800s encouraged settlement of the West. Examples of settlement-encouraging laws included the Timber Culture Act (1873), Free Timber Act (1878), Desert Lands Act (1887), and even the Log Cabin Law of 1841 and the Homestead Act of 1862, which granted squatters' rights (Merchant, 2007, p. 137). These acts encouraged expansion and settlement by inexpensively selling acreage for settlement and cultivation while allowing open access to forests and minerals for cutting and extraction.

As development continued, a growing opposition occurred. Transcendentalists were 19th century persons who mourned the loss of nature (Merchant, 2007). Transcendentalism became popular during the 1830s. For many prominent thinkers and philosophers, nature was seen as a source for spiritual awakening, love, and truth (Merchant, 2007). Transcendentalist ideals could be seen in paintings by the Hudson

River School artists who drew and painted romanticized nature. This philosophy informed preservationist thought of the early 20th century in activists like John Muir.

Again, even as development and expansion were emphasized, opposition amassed that held the beauty and naturalness of an undeveloped landscape highly. Partly because of these changing views, the 19th century was dubbed the *Age of Ecology* by historian David Worster (1977) as North Americans came to appreciate the interrelationship between human and nature (Hawken, 2007). Though followers of transcendental-thought mourned the loss of a natural landscape, science and philosophy became more prominent during the 1880s when conservation – preservation ideologies became prominent in using and managing natural resources (Faber & O'Connor, 1989; Hawken, 2007; Merchant, 2007).

As *American Progress* and *Manifest Destiny* philosophies were touted (Merchant, 2007), environmental groups spoke out against development, expansion, and increasing pollution of air and rivers and landscapes. Air pollution became a major concern for Americans in the late 1800s. As industrialization progressed, air pollution in the forms of soot, ash, and smoke increased. People became aware of the health hazards related to air pollution (e.g., pneumonia, bronchitis) as well as the environmentally degrading effects (e.g., dirty water, trees dying) (Merchant, 2007). Pollution reform erupted in the form of activists aiming for legislative change, especially by women's groups (Merchant, 2007).

Merchant (2007) noted that women were instrumental in pollution reform during the late 1800s and early 1900s. Women were concerned with protecting their homes and families. The early 20th century was ripe for a growing number of environmentally-friendly groups and creation, and reform, of land management policies. The Forest

Service, Sierra Club, and National Park Service were all created during this time period (Thapa, 1999) and their philosophies were influenced by the writings of Ralph Waldo Emerson, David Thoreau, Horace Greeley and the art of Carleton Watkins and Albert Bierstadt from the Transcendentalist and Hudson River schools of thought (Hawken, 2007). As World War I broke out, interest in land, water, and wildlife waned as concern for production and economic recovery increased (Faber & O'Connor, 1989).

Modern environmentalism, according to Hawken (2007), Hays (1982, 1987), and Thapa and Graefe (2003), was revitalized post-World War II as numerous issues arose that created renewed interest in the environment. For instance, production of chemicals for warfare purposes led to the discovery of pesticides, which later led to environmental and human health concerns (Carson, 1962). Also, after World War II, mass production and worker efficiency became less important. Rather, quality of life, worker satisfaction, and natural resource management issues were prioritized (Eckersley, 1992; Faber & O'Connor, 1989; Grendstad & Wollebaek, 1998; Hays, 1982, 1987; Merchant, 2007).

More income and free time increased use in the outdoors and in public areas (Hays, 1982). Knowledge of environmental degradation became widespread with the 1962 publication of Rachel Carson's *Silent Spring*, which detailed the effects of pesticides on the environment, the human body, and unethical practices of business (Faber & O'Connor, 1989; Hawken, 2007; Thapa, 1999; Thapa & Graefe, 2003). Eventually, Americans shifted management of resources away from chemical controls toward experiments with biological controls (e.g., introducing natural predators to pest populations) (Hays, 1982; Merchant, 2007; Perkins, 1982). As well as detailing the degradation caused by insecticides, Hawken (2007) wrote that Carson brought together a

"broad cross section of the population into the environmental dialogue" (p. 51) and reignited human rights, public health, and environmental issues for a post-World War II generation.

Such, environmental dialogue transpired as environmental science courses became popular (Flippen, 2003) and as conferences, which focused on the environment, occurred with increasing frequency. The decade of "mega-summits," Visser (2009, p. 87) dubbed, met to examine sustainability in terms of human rights, food, poverty, development, and environmental issues. Such conferences eventually brought forth documents like *Our Common Future* in 1987, which detailed the idea of sustainable development (Visser, 2009).

Environmental legislation and citizen activism grew in number and in power during the 1970s (Merchant, 2007). The National Environmental Policy Act and the Environmental Protection Agency were created in 1970 (Palmer, 1997). Earth Day began in 1970 and coincided with changing environmental views aided by more open dialogue as well as increased agricultural (e.g., eco-labeling, organic farming), scientific, technological (green-tech, for instance), and monetary investment (e.g., socially-responsible investment funds) and emphasis (Faber & O'Connor, 1989; Thapa, 1999; Thapa & Graefe, 2003; Visser, 2009). Interestingly, technology was also responsible for the homocentric and anthropocentric views of nature. Merchant (2007) wrote that as settlers in the Great Plains subdued nature with technological advancement (e.g., the windmill, John Deere plow) "attitudes toward nature became increasingly profit-oriented, managerial, and scientific" (p. 104), which led to "an ethic of human domination controlled by development," which lasts to this day.

While the Puritan ethic of human dominion over nature persisted, the resurgent environmental movement of the 19th and 20th centuries questioned this stance (Dunlap & Van Liere, 1978; Weber, 2000). As well as examining the human-nature relationship, scientists, philosophers, and activists examined social issues occurring within human, biological, and environmental ecosystems (Hawken, 2007). Historically, humankind worked directly in nature utilizing it as a resource for subsistence (Merchant, 2007). Today, though, people are utilizing nature for subsistence and for recreational purposes; more so than ever before, people know nature "through the mind, through aesthetic appreciation, and through recreation" (Merchant, 2007, p. 34).

Increasing environmental awareness coincided with an inundation of outdoor recreationists (Dunlap & Heffernan, 1975; Thapa & Graefe, 2003). By physically being in the out-of-doors, environmental degradation was more visible to these users. Researchers speculated that outdoor recreation led to a fundamental shift from consumerism to "conserver"-ism as users saw environmental deterioration firsthand (Dunlap & Heffernan, 1975; Jackson, 1986, p. 1, 1987). Even though recreationists observed negative human impacts, degradation continued (Halpenny, 2010). Even so, researchers hypothesized that through interaction with the outdoors, outdoor recreationists became increasingly attached and committed to the land and its protection (Dunlap & Heffernan, 1975; Jackson, 1986; Jackson, 1987; Leopold, 1949). According to research, most outdoor users and Americans consider themselves environmentalists (Halpenny, 2010; Pieters, Bijmolt, van Raaij, & de Kruijk, 1998; Porritt & Winner, 1988; Stern, Dietz, Abel, Guagnano, & Kalof, 1999; Thompson & Barton, 1994). Even though Americans considered themselves environmentalists, Stern et al. (1999; Dono, Webb, &

Richardson, 2010; Fielding, McDonald, Louis, 2008) differentiated various behaviors between environmental activists (e.g., demonstrating; actively involved in environmental organizations) and supporters (e.g., donating money to organizations; purchasing green goods). Understanding how, and to what extent, individuals developed environmental values may determine whether the pace of environmental change increases or decreases in the future (Stern, 1992).

Dunlap and Heffernan (1975) hypothesized that environmental values developed through use of the outdoors. Therefore, increased numbers of outdoor recreationists led to more environmentally-concerned citizens. According to Dunlap and Heffernan, this newfound concern occurred simply because users were part of the natural world, experiencing it, seeing it, and gaining an appreciation for it.

Education about the outdoors was an important component in development of environmental values and an increased awareness of environmental issues (Christensen, Rowe, & Needham, 2007; Hines, Hungerford, & Tomera, 1986). These educational and recreational opportunities were provided through green spaces, such as local, state, and national parks (Budruk, Thomas, & Tyrrell, 2009; Burgess, Harrison, & Limb, 1988; Christensen, Rowe, & Needham, 2007). When outdoors, education for a recreationist often occurred through interpretive signage, flyers, nature centers, and programming (Dunlap & Heffernan, 1975). Negra and Manning (1997) believed that state parks were a key component for developing environmentally responsible attitudes. In their opinion, state parks were good environments for fostering concern, creating learning and recreational opportunities, as well as provided occasions for user-involved environmental protection. Unfortunately, state park visitations across the country have declined

(Pergams & Zaradic, 2008). Even so, data show much of nature exposure occurs through state park visits (Pergams & Zaradic).

Because state parks, as well as any green space, were highly affected by human use and attitudes toward the resource, researchers believed that understanding how recreationists valued green space was important (Kaltenborn & Bjerke, 2002a; Moore & Graefe, 1994). Determining if outdoor use predicted higher proenvironmental values was vastly meaningful as, today, the American public has become increasingly concerned about an impending ecocrisis; as well as in providing outdoor opportunities to Americans for health benefits (Louv, 2005; Tapps & Fink, 2009; Vorkinn & Riese, 2001). Understanding the human-environment relationship, specifically, how individuals valued the outdoors, allowed researchers and managers an understanding of users in how best to deter future degrading behaviors (Stern, 1992).

Hawken (2007) asserted that humans should compare their relationship to the outdoors (and earth) similar to an immune system in the human body. In this analogy, the earth was a body in which humans (the cells) inhabit. Humans were tasked with the duty to "protect, repair, and restore that organism's capacity to endure" (Hawken, 2007, p. 141). Taking it a step further, the immune system has become compromised with political in-fighting, misinformation, corruption, greed, ego, social inequality, and economic downturns, among other societal problems. It is important to determine what experiences, activities, and knowledge affect human concern toward pro-environmental attitudes and behaviors. If valuing the outdoor and its use predicts proenvironmental values then educators, managers, and researchers have a new line of inquiry in examining interventions and curricula for developing future environmental stewards.

Place Attachment

Scholars hypothesized that individuals developed a sense of environmental stewardship by visiting, learning about, experiencing, and facilitating the development of place attachment through these outdoor experiences (Nabhan & Trimble, 1994; Ryan, 2005; Tanner, 1980; Weber, 2000). Research correlated outdoor visitation and use with increased levels of attachment to place (White, Virden, & van Riper, 2008). These outdoor experiences were instrumental in the development of positive feelings toward place and facilitated the development of place attachment (Budruk, Thomas, & Tyrrell, 2009). The way in which humans used, behaved, and related to the environment developed into the field of environmental psychology.

Environmental psychology grew out of the social sciences and the increased concern of environmental degradation through use (Williams & Patterson, 1996; Williams & Patterson, 1999). Essentially, environmental psychologists focused on the relationships between humans and the environment though the environment was defined broadly (De Young, 1999). An environment can be comprised of a natural resource area or ecosystem, an artificial environment (e.g., a classroom), or a social environment (De Young, 1999; Kaltenborn, 1998; Williams & Patterson, 1996). According to Williams and Patterson (1999), research by environmental psychologists relied on persons within an environment meaning that much of the research occurred at an environmental site rather than in a laboratory.

Environmental psychologists tasked themselves with discovering the meanings an environment created for users. In knowing what a resource meant for a user allowed managers to better create policy (Brown, 2005; Brown & Raymond, 2007; Williams &

Patterson, 1999). In understanding the human-environment interaction, researchers believed that in the future, managers would better understand how to conserve, preserve, or restore a natural resource area (De Young, 1999). Understanding how outdoor users oriented themselves to these resources was important in avoiding user conflict, developing future environmental stewards, and preventing abuse and degradation (Jacob & Schreyer, 1980; Ryan, 2005; Van Liere & Noe, 1981; Williams & Patterson, 1999).

Williams and Patterson (1999) believed that understanding and mapping place meanings allowed administrators to manage the *human system*. In essence, they believed that at a micro (e.g., an individual park) and macro (e.g., National Park System) level, managing individuals was more controllable than managing nature. To prevent environmental degradation and depletion, humans should be managed through education and guided experiences. If outdoor use created opportunities for recreationists to develop proenvironmental values and understand their own responsibilities in protecting their preferred environments then environmental stewardship could be increased through use (Ryan, 2005).

Again, one method in developing environmental values was having (or creating) a connection to specific places (Measham, 2006). Discovering how meanings developed from environmental use required examining the relative importance an environment, and the experiences in an environment, had in creating values for each individual (Fournier, 1991; Williams & Patterson, 1999). Greater emotional meaning and valuing, usually through experience, created an attachment to specific environments (Fournier, 1991; Winter & Lockwood, 2005).

An attachment to specific environments was termed place attachment in the field of environmental psychology (Kaltenborn, 1998; Low & Altman, 1992; Williams & Patterson, 1999). Throughout the 20th century, place attachment was a phenomenon examined in various disciplines such as human geography (Tuan, 1974; Relph, 1976), environmental psychology (Kaltenborn & Bjerke, 2002a; Williams & Patterson, 1999), recreational studies (Williams & Roggenbuck, 1989), as well as the health sciences, sociology, and childhood development fields (Inglis, Deery, & Whitelaw, 2008).

Again, the way in which humans bonded to specific environments was termed place attachment for environmental psychologists and recreation researchers (Low & Altman, 1992). Place attachment was often described as positive cognitive and emotional linkages by an individual to a specific environment or setting (Brown & Perkins, 1992; Hidalgo & Hernandez, 2001; Low, 1992). Essentially, thoughts, emotions, and overt behaviors showed feelings of attachment toward particular environments for a recreationist (Kyle, Graefe, & Manning, 2005; Low & Altman, 1992; Proshansky, Fabian, & Kaminoff, 1983).

Feelings of attachment were endowed upon a place through use (Low & Altman, 1992; Nabhan & Trimble, 1994; Relph, 1976; Ryan, 2005; Tanner, 1980; Tuan, 1980; Weber, 2000; White, Virden, & van Riper, 2008). According to Tuan (1975), feelings of attachment toward place were created socially through group interactions within a particular place. Conversely, Brandenburg and Carroll (1995) believed that place attachment could also be created through person-place interaction only. Further, in creating emotional meanings toward natural resources through repeat visitation and recreational experience, place attachment increased (Cuba & Hummon, 1993).

More recently, researchers became interested in examining how place attachment potentially effected environmental values (Budruk, Thomas, & Tyrrell, 2009; Halpenny, 2010; Inglis, Deery, & Whitelaw, 2008; Vaske & Kobrin, 2001; Vorkinn & Riese, 2001). It was hypothesized that persons more attached to a specific place exhibited more environmentally-friendly value orientations. And, indeed, if "places [enabled] people to create individual environmental values" (Brandenburg and Carroll, 1995, p. 382), then by extension, exposing people to the outdoors may increase future proenvironmental values and stewards who value specific places (Giddens, 1984).

Statement of the Problem

With renewed interest in the health of the environment, humans are more aware of their impact on the Earth than at any other time in history (Faber & O'Connor, 1989; Thapa, 1999). Though environmental awareness has increased, environmental degradation continues. Humans are utilizing more resources than the overcrowded earth can provide.

In 1975, Dunlap and Heffernan hypothesized that an increased involvement in outdoor-related activities likely created users with greater environmental concern and connection with nature. However, Dunlap and Heffernan found a weak relationship between general environmental concern and activity-type in outdoor recreationists. Despite this weak relationship, though, outdoor use was positively correlated with specific environmental concern. Regardless of the weak relationship between activity-type and environmental concern, Pinhey and Grimes (1979) reexamined Dunlap and Heffernan's hypothesis and discovered that active outdoor individuals displayed more environmental concern than individuals who did not regularly participate in outdoor

activities. However, research regarding activity-type and environmental concern by Jackson (1986; 1987) and Thapa and Graefe (2003) found that a positive relationship existed between appreciative recreational activities and proenvironmental values. Appreciative activities included canoeing, photography, bird watching, picnicking as opposed to consumptive and motorized activities, which included hunting, fishing, motor boating, and off-road vehicle use (Dunlap & Heffernan, 1975; Jackson, 1986; Jackson, 1987; Thapa & Graefe, 2003). Van Liere and Noe (1981), due to the conflicting research, did not believe that general environmental concern could be related to specific recreational activities.

Van Liere and Noe (1981) suggested that rather than examining the effects of outdoor activities and environmental concern, researchers should examine other attitudinal variables instead. In 1975, Dunlap and Heffernan suggested that the relationship of environmental concern and outdoor use should be further studied utilizing different attitudinal variables, but little research occurred in this area since the 1970s (Nord, Luloff, & Bridger, 1998; Teisl & O'Brien, 2003). Though past research examined outdoor use in terms of specific activities, over time, research showed that visitors developed feelings of attachment toward place through repeated visitation and recreational experiences (Low & Altman, 1992; Relph, 1976; Tuan, 1974). Previously, research reported mixed results related to the relationship between place attachment and environmental values and behaviors (Vaske & Kobrin, 2001; Vorkinn & Riese, 2001; Stoll-Kleeman, 2001). Even so, in this study, place attachment to Lake Murray State Park was utilized as the attitudinal variable rather than specific activities within the state park.

This study is meant to provide additional information regarding the relationship between attachment to place and environmental values held by outdoor recreationists.

Purpose of the Study

The purpose of this study was to examine the significance of place attachment in proenvironmental values in outdoor users. According to Halpenny (2010), much of past place attachment research focused in regards to specific place attachment and specific proenvironmental behaviors. Though she commented on proenvironmental behaviors, a literature review revealed that less research focused on general environmental attitudes regarding place attachment. For this study, outdoor users were considered state park visitors. Dunlap and Heffernan (1975) initially hypothesized that outdoor users would be more concerned for the environment due to their activity involvement in the out-of-doors. This hypothesis found weak and contradictory support (Dunlap & Heffernan). Researchers believed, though, that place attachment was positively correlated with proenvironmental values (Budruk, Thomas, & Tyrrell, 2009; Thapa & Graefe, 2003; Vorkinn & Riese, 2001). Rather than reexamining the significance of outdoor activity toward environmental values, this study examined the attachment visitors have for their outdoor places and attachment's significance in proenvironmental value orientations.

The secondary objective of this study was to describe characteristics of Lake Murray State Park (LMSP) visitors in terms of their demographics, environmental values, and types of attachment (functional or emotional). This information may provide better understandings of LMSP visitors for the state park manager as well as shed light on the significance of place attachment in proenvironmental value orientations of LMSP users.

Research Questions

1. Is place attachment a significant factor in explaining proenvironmental values among Lake Murray State Park visitors?
2. How are Lake Murray State Park visitors attached to Lake Murray State Park?
3. What are the environmental values of Lake Murray State Park visitors?
4. How are demographic characteristics related to these place attachment and environmental values?

Assumptions

1. State park visitors were considered outdoor recreationists. Outdoor recreation was defined as occurring in a natural environment with recreation as the focus (Jensen & Guthrie, 2006; Van Liere & Noe, 1981). Outdoor recreation was categorized as resource-oriented, intermediate, and user-oriented (Clawson & Knetsch, 1966; Jensen & Guthrie, 2006). Resource-oriented recreation depended almost entirely on the natural resource and occurred within the natural-setting (e.g., rock climbing, hunting, and kayaking). Recreation in these areas occurred in undeveloped areas, such as wilderness regions, forested places, and more. Intermediate recreation occurred in semi-natural settings, but relied more upon artificial structures and facilities, which caused greater impacts upon the resource (e.g., RV-camping and its needed facilities). According to Jensen and Guthrie (2006), state park use was considered intermediate outdoor recreation. User-oriented designations often entailed facility-based recreation like sporting events and fairs. It was clear though, that these were not mutually exclusive categories as

a park may have resource-dependent, intermediate, as well as facility-based recreation opportunities.

2. Because the nature of the study demanded self-reporting, respondents were assumed to have answered honestly in their responses.

Limitations

1. A limitation of this study was that research showed weak support between proenvironmental values and proenvironmental behavior (Schultz & Zelezny, 2003; Stern, 1992; Stern & Dietz, 1994). Therefore, this study did not attempt to examine how proenvironmental value orientations related to environmentally-friendly behaviors.
2. A second limitation of this study was that only visitors of one state park were examined regarding visitor attachment levels and environmental values. Different resources (e.g., amusement parks, wilderness areas, national parks, state parks) attract varying users with different values and experiences within a particular place.
3. A related limitation was in examining a state park located within Oklahoma. Perhaps different visitors and residents of different regions hold different values toward their places and the environment and as well as having much different demographic characteristics (e.g., politics, income).

CHAPTER II

LITERATURE REVIEW

Does recreation in the outdoors affect proenvironmental values? Dunlap and Heffernan (1975) hypothesized that proenvironmental values were correlated with participation in outdoor activities. The researchers believed that exposure to the outdoors provided users the opportunity to experience degradation firsthand, creating an environmentally responsible user. This person developed environmental values and wanted to protect the environment (i.e., involvement would lead to concern).

Outdoor Recreation

According to past research, values were foundational in attitude and behavior formation (Fransson & Garling, 1999; Fulton, Manfredo, & Lipscomb, 1996; Kaltenborn & Bjerke, 2002b; Vaske & Donnelly, 1999). If providing outdoor experiences for youth and adults alike helped users develop environmental concern toward the environment then outdoor use would likely predict environmental stewardship and concern (Measham, 2006; Ryan, 2005). Though researchers believed that outdoor use led to proenvironmental users, concerns have been growing as future generations stay indoors (Louv, 2005; NPS, 2007). Specifically, researchers believed that generations Y and Z were increasingly staying indoors (Malone, 2007; NPS, 2007; Pergams & Zaradic, 2008).

The National Park Service (2007) was concerned that with diminishing outdoor use, these youths were less concerned about the environment and were less competent in responsibly using the outdoors (Burgess, Harrison, & Limb, 1988; Malone, 2007). The connection between the environment and proenvironmentally-oriented persons was that children needed exposure to the environment, otherwise the human-nature connection was lost (Blizard & Schuster, Jr., 2004; Hacking, Barratt, & William, 2007; Louv, 2005; Thomas & Thompson, 2004).

This early relationship was important for children to grow into environmental stakeholders and develop proenvironmental values as adults (Chawla & Flanders Cushing, 2007; Hacking, Barratt, & William, 2007; Tanner, 1980). Adults "must be exposed to natural areas as children if they [were] to care for them as adults" (Pergams & Zaradic, 2008, p. 2295). Understanding how outdoor recreation effected environmental concern for children and adults became important for developing future environmental stewards, future policy, and future curricula (Teisl & O'Brien, 2003).

Though Dunlap and Heffernan (1975) hypothesized that outdoor use was related to proenvironmental values, they also believed that environmental values were predicted based on the types of recreation chosen. For instance, hiking symbolized preservationist attitudes (and appreciative attitudes) as it was less consumptive on the environment than hunting. Hunting, as defined by the authors, symbolized an anthropocentric view. Based on these considerations, they hypothesized that appreciative outdoor recreationists would show more environmental concern. The researchers surveyed Washington state residents who self-reported how many times they participated in five activities (i.e., hiking, fishing, camping, visiting state parks, and hunting). To determine environmental concerns, the

authors asked whether participants supported tax allocations for environmental programs. In this study, the authors found weak support between participation-type in outdoor recreation and general proenvironmental values. The authors supported their hypothesis that appreciative activities were more strongly associated with environmental concern than consumptive activities (Jackson, 1986). Also, outdoor recreationists' environmental concerns were positively associated to concerns for specific outdoor areas (those areas users recreated in) (Jackson, 1986).

Pinhey and Grimes (1979; Jackson, 1986) also used the appreciative-consumptive dichotomy, but asked Louisiana residents whether they believed their coastal region was valuable to the respondent. They further prompted respondents to specify whether their response was due to environmental or recreational reasons. Their research did not replicate Dunlap and Heffernan's (1975) hypothesized appreciative-consumptive findings (Jackson, 1986), but did show a modest correlation (r = .18) that active outdoor recreationists were more likely to be environmentally concerned than users not active in the outdoors. Therefore, Pinhey and Grimes concluded that activity type did not provide much evidence regarding proenvironmental concern, though, with further research, general outdoor use might. Likewise, Geisler, Martinson, and Wilkening (1977) found little evidence that supported activity-type affecting environmental concern (r = -.02 to .15). Their results showed that environmental concern was more related to socioeconomic variables (i.e., age, race, place of residence) than activity-type.

Van Liere and Noe (1981; Jackson, 1986) believed that these low correlations resulted from using poor measures. Rather than replicating the above studies, they modified the methodology by including a general measure of environmental concern, the

New Environmental Paradigm Scale, created by Dunlap & Van Liere (1978). Activities were defined as appreciative, consumptive, and abusive (e.g., snowmobiling) in this study. Again, though, only weak support was found regarding activity-type and general environmental concern. Again, the authors concluded that general outdoor participation, and associated attitudinal variables, may be more useful in examining proenvironmental values than activity-type. These results led the researchers to hypothesize either that outdoor recreation did not affect environmental concern (they rejected this hypothesis) or that the variables mediating recreation and concern were more complicated than originally believed (Jackson, 1986; Van Liere & Noe, 1981).

Teisl and O'Brien (2003) findings mirrored Pinhey and Grimes' (1979) findings. Their research supported the hypothesis that participation in the outdoors was positively associated with environmental concern. One thousand, nine hundred and forty-eight Pennsylvania residents were surveyed. Testing four different models, Teisl and O'Brien examined environmental concern, interest, opinion, and behavior based on participation in forest recreational activities. Teisl and O'Brien reported that in three of the four models, active outdoor recreationists showed increased environmental concern and higher levels of environmental behavior.

Previous research showed contradictory relationships between proenvironmental values and activity-type (Dunlap & Heffernan, 1975; Geisler, Martinson, & Wilkening, 1977; Jackson, 1986; Nord, Luloff, & Bridger, 1998; Pinhey & Grimes, 1979; Van Liere & Noe, 1981). Van Liere and Noe believed that these results indicated that specific activities (i.e., bird watching, climbing, and hiking) were not significant indicators of proenvironmental values. Despite mixed results in examining outdoor recreation and

proenvironmental values, Van Liere and Noe suggested that further research examine other variables related to the outdoors that possibly affected environmental value strength.

For this study, in determining how outdoor use related to proenvironmental values, state park visitors were considered outdoor recreationists. Outdoor recreation was defined as recreation occurring in a natural environment in the out-of-doors (Jensen & Guthrie, 2006; Van Liere & Noe, 1981). Therefore, state park use was considered outdoor recreation (Jensen & Guthrie).

The movement to preserve resources for their natural beauty and recreational opportunities led to the creation of the national and state park systems. Stephen Mather, who assisted in shaping the modern incarnation of the National Park Service, was also responsible for shaping the state park movement (Landrum, 2004). State parks became necessary as state representatives nominated increasing amounts of land for inclusion as national parks. Mather, though, believed that national park designation be reserved only for areas of historic, cultural, and/or landscape significance (Landrum). According to Landrum, Mather did not want lesser lands tarnishing the grandiose nature of the national park system.

Thus, Mather shaped the state park system in order to balance between small neighborhood parks and large, fairly remote national parks (Landrum, 2004). Two major factors, as well as segregation from the national park system, provided the momentum for the state park movement (Landrum). The first factor was the invention and increased use automobiles, which allowed tourists to explore unvisited areas of America (Landrum,

2004; Merchant, 2007). Second, Franklin Roosevelt's New Deal created work for unemployed Americans, which helped state parks mimic the national park system design.

The creation of the Civilian Conservation Corp (CCC) during the first 100 days of Roosevelt's New Deal provided jobs for many out-of-work Americans and allowed Roosevelt to expand the national and state parks system (Landrum, 2004; Merchant, 2007; Schrems, 2007). The CCC, in alleviating unemployment for more than 3 million young men, conserved natural resources through parks and recreational areas development (Merchant).The Federal-Aid Highway Act of 1956, proposed by President Eisenhower, assisted in the development of a national highway system and provided funding for road improvements within national parks and access to public lands (Flippen, 2003; Merchant, 2007).

Landrum (2004) noted that during the CCC-era, many states not only added to their state's park system, but acquired their first park property. Oklahoma was one of these states. Their first state park was Lake Murray, built in 1933 (Landrum, 2004; Schrems, 2007). By 1935, Oklahoma Civilian Conservation Corpsmen were developing seven additional state park sites. Now Oklahoma has 50 human-made state parks.

Environmental Concern

The importance of environmentally concerned individuals should not be underestimated. In the past, nature and wildlife were often sacrificed for agriculture, growth, and development. Since 1961, humanity's ecological footprint more than tripled according to the 2006 Living Planet Index (Visser, 2009). Specifically, humanity's footprint exceeded the Earth's biologically productive areas to meet the human needs in 2003 (Visser). Scientific data from the *Living Planet Report 2006* stated that the United

States led the world with the highest ecological footprint at 9.6 hectares per person compared to the global average of 2.2 hectares per person (Visser).

In an effort to stop environmental degradation for future generations, researchers believed that it was important to develop environmental values (Fransson & Garling, 1999; Stern 1992; Takala 1991). According to research, choices to prioritize environmentally-responsible behaviors stemmed from individual values; values preceded behavioral intention and action (Azjen & Fishbein, 1980; Fulton, Manfredo, & Lipscomb, 1996; Schultz & Zelezny, 2003). Research showed that values were the foundation of attitudes, beliefs, and actions (Fransson & Garling, 1999; Fulton, Manfredo, & Lipscomb, 1996; Kaltenborn & Bjerke, 2002b; Vaske & Donnelly, 1999). Understanding the underlying framework for action may better help researchers, educators, and managers in the future positively form values, attitudes, and action for future generations.

Environmental Ethics, Values, and Behaviors Models

Ethics was often described as how humans ought to or should behave (Palmer, 1997). *Should* behaviors, as described by Palmer, affected human-human relationships as well as human-environment relationships. Examining human relations with the environment was valued because, historically, what humans did to the environment rebounded and affected humans (Cafaro, 2001). Cafaro wrote that "our environmental decisions make us better or worse people and create better or worse societies: healthier or sicker, richer or poorer, more knowledgeable or more ignorant" (p. 4). Therefore, regarding *should* behaviors toward the environment, environmental ethics was defined as "the study of how humans should or ought to interact with the environment" (Palmer, 1997, p. 6). Similarly, Aldo Leopold, author of *The Sand County Almanac*, argued that

individuals needed to become members within the biotic community to appreciate it and protect it (Leopold, 1949).

Researchers asserted that values comprised the foundational layers of an individual's beliefs, while guiding voluntary ethical behaviors (Karp, 1996; Palmer; 1997; Rohan, 2000). Palmer, as well as McFarlane and Boxall (2000), broke values into two types: instrumental (extrinsic, anthropocentric) and noninstrumental (intrinsic, biocentric) values. Instrumental values meant that something was valued because it was useful to humans and society (e.g., drinking water for survival; a lake for boating). Noninstrumental values included those objects that were inherently meaningful (e.g., human life). For example, Lake Murray State Park may be valued by some users for instrumental reasons because of its recreational value (e.g., camping, boating). Other users may intrinsically value Lake Murray State Park because of its historical significance (i.e., first Oklahoma state park), but not because of its recreational value.

More generally, though, values in social science often were defined as shared preferences, desires, likings, or satisfactions that guided behavior and transcended situational contexts (Fulton, Manfredo, & Lipscomb, 1996; Karp, 1996; McFarlane & Boxall, 2003; Roccas & Sagiv, 2010; Rohan, 2000; Rokeach, 1979; Schwartz, 1994; Stern & Dietz, 1994; Vaske, 2008; Vaske & Donnelly, 1999; Vaske, Donnelly, Williams, & Jonker, 2001). Many researchers also regarded values as desirable (positive) in nature (Roccas & Sagiv, 2010; Rokeach, 1973). Core aspects of self-identity were believed to be built upon relatively stable values that persisted throughout life (Karp, 1996; Nordlund, 2009; Roccas & Sagiv, 2010; Rokeach, 1979; Svensson, 1998; Vaske, 2008; Vaske & Donnelly, 1999). Rokeach (1968) believed that values served as an internalized cognitive

map, guiding attitudes, beliefs, and behaviors. Though values were considered relatively stable, experiences and education could provide individuals with an opportunity to reflect upon previous values and form new ones, specifically, toward nature (Halpenny, 2010; Svensson, 1998).

Rohan (2000), who attempted to clarify *value* terminology, defined attitudes as "evaluations of specific entities" (p. 258) while values were defined as "abstract trans-situational guides" (p. 258). For example, Roccas and Sagiv (2010) stated that social justice was a potential value while wanting equal rights for a coworker was an attitude. Previous research indicated that values were stable and often prioritized into a systematic hierarchy, which created an internal value priority system (Rohan, 2000). It was hypothesized that there were a finite number of universal values across cultures (e.g., power, achievement, universalism, etc.). Value priority systems were important because of the relative importance placed on individual values within the hierarchical structure (creating individualized cognitive frameworks) (Roccas & Sagiv, 2010; Rohan, 2000)). These individualized priority systems likely guided attitudes and behaviors by filtering the outside world to be consistent with an individual's internal logic (Roccas & Sagiv; Rohan; Stern & Dietz, 1994). These value priority systems were hypothesized to be affected by personal (e.g., experience, genetics), social, and cultural (e.g., norms, mores) contexts (Roccas & Sagiv; Rohan). Finally, value priority systems which informed conscious beliefs and behaviors were deemed worldviews, which again, affected how individuals viewed and acted in the world in terms of *oughts* and *shoulds*.

Allport (1961) believed that value systems were essential in determining how an individual behaved in the world. Roccas and Sagiv (2010, p. 35) wrote that "letting one's

personal values serve as guides for one's behaviors [was] a form of self-expression." Ibtissem (2010) wrote that values reflected an individual's personality. Recently, researchers began to accept that there was a connection between value priorities and behavioral intentions and actions. For instance, prioritized environmental values were connected to proenvironmental behaviors (Roccas & Sagiv, 2010; Stern & Dietz, 1994; Swami, Chamorro-Premuzic, Snelgar, & Furnham, 2010; Vaske & Donnelly, 1999). Recently, more research studies examined values, norms, and attitudes as precursors to self-reported proenvironmental behaviors (Cordano, Welcomer, Scherer, Poortinga, Steg, & Vlek, 2004; Fielding, McDonald, Louis, 2008; Halpenny, 2010; Karp, 1996; Pradenas, & Parada, 2010; Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franek, 2005).

Stern et al. (1999) wrote that values were instrumental in persuading people to join in social movements. These movements were based in unselfish motives (i.e., other-orientation) in which people behaved altruistically. Further, Stern et al. found that values were correlated with activist and non-activist proenvironmental behavior. Stern and Dietz (1994) also discovered that value orientations affected behavior directly and indirectly in examining environmental values and political action. Poortinga, Steg, and Vlek (2004) wrote that "proenvironmental behavior may well arise from values that transcend self-interest" (p. 71). Fielding, McDonald, Louis (2008) found that general environmental attitudes were significant predictors toward behavioral intentions in joining an environmental activist group. Nordlund and Garvill (2003) also believed that values affected an individual's norms and beliefs. Their research regarding car use found that individuals who had increased ecocentric values were more committed and felt obligated to adopting proenvironmental behaviors. Vaske and Donnelly (1999) found in a path

analytic model that value orientation was significantly related to pro-wildland preservation attitudes and that as this attitude increased so too did pro-wildland preservation voting intentions.

Researchers, in explaining how values potentially affected proenvironmental intention and behavior, created multiple hypotheses and value-behavior models. McFarlane and Boxall (2000; 2003) hypothesized that values influenced behavior indirectly through a hierarchical model: values affected general beliefs (value orientations); then, value orientations affected behavior as mediated by specific attitudes (Nordlund, 2009). Hypothesized pro-behavior models included Schwartz's (1977) norm activation theory and Stern, Dietz, Abel, Guagnano, and Kalof (1999) Values-Beliefs-Norms framework (Cordano et al., 2010; Karp, 2010; Swami et al., 2010).

The norm activation model, proposed by Schwartz (1977), examined proenvironmental behaviors (Cordano et al., 2010; Ibtissem, 2010; Milfont, Sibley, & Duckitt, 2010; Turaga, Howarth, & Borsuk, 2010). Originally, the model was proposed as an altruistic behavior model (Ibtissem, 2010). Even so, the norm activation model (with an environmental focal point) continued to focus on altruistic behaviors (Berenguer; 2010; Ibtissem, 2010; Karp, 1996). Cordano et al. stated that the model was best utilized as an intervention model, in which a negative event or consequence had occurred and an individual intervened with a positive action. Actions, influenced by individual's personal values, were "activated by situational concerns" (Karp, p. 112). These positive behaviors were spurred by an individual feeling a moral obligation and responsibility to act (known as norms) (Ibtissem, 2010; Schwartz, 1977; Thogersen, 2006). Personal norms comprised an internal logic consistent with values and occurred in specific situations that reflected

personal expectations derived from societal mores and/or shared societal beliefs about action (Berenguer, 2010; Thogersen, 2006; Turaga, Howarth, & Borsuk).

In given a situation, two factors preceded norm activation, which led to altruistic behavior. First, an individual was aware of potential negative consequences toward the welfare of others if an act did/did not occur (cost analysis of behavior) (Ibtissem, 2010; Karp, 1996; Turaga, Howarth, & Borsuk, 2010). Second, an individual either felt responsible for causing this negative consequence or felt responsible for preventing the consequence (Ibtissem; Turaga, Howarth, & Borsuk). If an individual's norms included values that led to action, action likely occurred (Berenguer, 2010; Cordano et al., 2010; Milfont, Sibley, & Duckitt, 2010; Stern et al., 1999; Turaga, Howarth, & Borsuk). Simply, values and behaviors were moderated by the awareness of a consequence and the belief that an individual's behavior contributed or alleviated the harm (Schultz et al., 2005). However, norm-activation could be neutralized by denying the consequences of action/inaction or by denying responsibility (Turaga, Howarth, & Borsuk, 2010). If an individual were to act against a personal norm, guilt occurred (Turaga, Howarth, & Borsuk).

The Value-Belief-Norm (VBN) theory hypothesized by Stern et al. (1999), evolved from the norm activation model (Berenguer, 2010; Dono, Webb, & Richardson, 2010; Ibtissem, 2010; Turaga, Howarth, & Borsuk, 2010). According to Stern et al., the VBN theory causally linked norm-activation theory, value structures, and the New Ecological Paradigm value orientation. This model proposed that proenvironmental behavior occurred through a hierarchal model because an individual's norm for helping was activated by 1) personal values, 2) a belief that valued objects were threatened, and

3) a belief that an individual's action could reduce the potential threat (Cordano et al., 2010; Turaga, Howarth, & Borsuk). Simply, behaviors were activated when a person became aware of negative consequences to valued objects, activating an individual's personal norms, which led to proenvironmental action (Stern & Dietz, 1994). Dono, Webb, and Richardson (2010) and Ibtissem (2010) described the VBN framework as a model that hypothesized: values, beliefs, and personal norms led to action.

Jansson, Marell, and Nordlund (2010) wrote that an individual aware of environmental consequences regarding a specific behavior who felt responsible for preventing a negative consequence developed proenvironmental norms, which led to increased likelihood for proenvironmental behavior. They discovered that proenvironmental values and personal norms were significant factors in curtailment behaviors of car use as well willingness to adopt an eco-friendly car. In another study examining the negative influence of personal car use, Nordlund and Garvill (2003) found support that personal norms mediated between values and behavior. Specifically, the author's believed that an increased ecocentric value orientation led to increased environmental awareness regarding problems, which potentially led to proenvironmental behaviors.

Environmental Value Orientations

According to research, value orientations represented an individual's small, specific worldview regarding a certain sphere in life (McFarlane & Hunt, 2006; Poortinga et al., 2004; Vaske, 2008). These worldviews were representative of specific, conscious patterns of beliefs regarding a specific topic (i.e., the environment), founded upon an individual's values (McFarlane & Boxall, 2003; Nordlund, 2009; Poortinga et al., 2004;

Rohan, 2000; Stern & Dietz, 1994; Vaske, 2008; Vaske & Donnelly, 1999; Vaske, Donnelly, Williams, & Jonker, 2001). Specifically, an environmental worldview consisted of prioritized values that oriented a person towards environmentalism (McFarlane & Boxall, 2003; Nordlund, 2009; Stern & Dietz, 1994). Persons with environmental value orientations were often concerned with environmental protection as well as valuing environmentally-responsible behaviors regarding consequences against environmental degradation (Corraliza & Berenguer, 2000; Fransson & Garling, 1999).

Researchers formulated similar, but different variations of environmental value orientations (Vaske & Donnelly, 1999). Such orientations included: homocentric, ecocentric, and egocentric orientations (Merchant, 1992); wildlife orientations (Hendee & Stankey, 1973); anthropocentric and ecocentric orientations (Eckersley, 1992; Grendstad & Wollebaek, 1998; Thompson & Barton, 1994); biospheric, social-altruistic, and egoistic worldviews (Stern & Dietz, 1994); and most recently, the New Ecological Paradigm (Dunlap, 2008).

In examining how humans valued objects, Merchant (1992) created three value orientations: homo-, eco-, and egocentricism. Homocentrics valued the wellbeing of fellow humans; ecocentrics valued the environment (animals, plants, and biosphere); egocentrics valued themselves. Similar in definition to Merchant's (1992) definitions, Stern and Dietz (1994) identified social-altruistic, biospheric, and egoistic value orientations.

Persons with an egoistic value orientation likely protected environmental resources that personally affected the user's own personal interests (Schultz & Zelezny, 2003; Schultz, 2000; Stern & Dietz, 1994). Persons with this value orientation performed

costs-benefit analyses, meaning that if protecting a resource created a large perceived personal deficit, then the person likely did not participate in protecting the resource. Egoists were still considered proenvironmental as long as the harm was not personally hurtful or cost-prohibitive. Social-altruists were similarly oriented as egoists except that they accounted for others in their cost-benefit analysis. For the social altruist, there was a moral obligation to act and that the cost-benefit analysis included the "human group" (Schultz, 2005; Stern and Dietz, 1994, p. 70). Finally, the biospheric orientation mirrored Leopold's (1949) land ethic, which stated that humans acted for the betterment of, and valued, all animals, soil, and rocks. In other words, biospheric individuals protected the biotic community for the sake of the biotic community (Schultz, 2005; Schultz & Zelezny, 2003; Stern & Dietz, 1994).

Hendee and Stankey (1973) addressed wilderness management orientations. These included anthropocentric and biocentric belief patterns. Managers utilizing these two contrasting philosophies were either concerned about human benefits (anthropocentric) or the "natural integrity of wilderness ecosystems" (biocentric) (Hendee & Stankey, 1973, p. 535). The authors provided multiple benefits and consequences for each attitude, but ultimately believed that biocentric managers preserved wilderness areas, supported previously enacted wilderness policy, and protected resources against "knee-jerk" development. These attitudes were similar to those ideologies of Pinchot and Muir previously discussed.

Thompson and Barton (1994) also hypothesized two dichotomous (eco- and anthropocentric) motives concerning environmental stewardship. They suggested value systems similar to those proposed by Palmer (1997) and McFarlane and Boxall (2000).

Thompson and Barton believed that ecocentric individuals valued nature for its intrinsic values while anthropocentric persons valued nature for human-use purposes. Again, a user at Lake Murray State Park might value a pay-for-camping system to protect the area from degradation so that environmental beauty remained for the individual's camping use. Protecting against soil compaction, tree removal, and pollution were environmental attitudes, but the camper only cared for his own, continued camping use (i.e., anthropocentrism). A camper who supported measures to make an area off-limits because he was concerned about the effects of soil compaction on the ecosystem had an ecocentric orientation in this hypothesized dichotomy. One criticism of this scale was that it did not distinguish between concerns for self (ego) versus other human beings (social altruist) in the anthropocentric orientation (Schultz & Zelezny, 1999; Stern & Dietz, 1994).

Grendstad & Wollebaek (1998) also examined ecocentrism and anthropocentrism value orientations. Their beliefs were similar to Thompson and Barton's (1994) view in that anthropocentrics believed that humans were the "aim of history and the endpoint of evolution, with the right and obligation to manage and control nature's resources" (p. 654). Like Leopold's (1949) land ethic, ecocentrics were concerned with all forms of life having equal opportunity for coexistence and were valued for their inner worth. The authors examined two groups, the general public and environmentally-organized individuals, and found that the organized environmentalists were more ecocentric than the general public.

In examining psychology's role in environmental protection, Stern (1992) identified four types of environmental value orientations. One view of the environment

related to anthropocentric-altruism. In this orientation, humans protected the environment because environmental loss harmed humankind. A second orientation, egoism, was that individuals protected the environment to protect against self-harm. This view differed from anthropocentrism-altruism in that the focus was the self. A third orientation examined environmental concern as deeply ingrained beliefs, such as religious beliefs. Finally, a fourth view examined environmental concern as a new worldview, which tapped beliefs "about the nature of earth and humanity's relationship with it" (Dunlap & Van Liere, 1978; Dunlap et al., 2000, p. 427; Dunlap, 2008; Mobley, Vagias, DeWard, 2010; Stern, 1992).

New Ecological Paradigm

During the 1970s, as outlined by Dunlap and Van Liere (1978), the dominant worldview consisted of beliefs regarding the profusion of natural resources and commodities, the economic benefits of mass consumption, the potential for limitless growth, private property, the goodness of mass production, and the separation of humans from the environment (Devall, 1980; Dunlap & Van Liere; Nordlund, 2009; Schultz & Zelezny, 1999). Dunlap and Van Liere argued that limited government interventions in the 60s and 70s contributed toward environmental degrading behaviors due to individual pollution and externalizing business practices. Even so, the authors believed that the Dominant Social Paradigm, as they deemed it, was shifting toward a proenvironmental worldview concerned with how humans related to the environment (Dunlap & Van Liere; Dunlap, 2008; Nordlund, 2009). This new paradigm focused on environmental concern, named the New Environmental Paradigm, and emphasized an individual's responsibility

to care for the environment, limit growth, and protect its resources (Dunlap & Van Liere, 1978; Mobley, Vagias, DeWard, 2010; Nordlund, 2009).

The New Ecological Paradigm (an update of the New Environmental Paradigm) occurred because local environmental degradation became a global concern (Dunlap & Van Liere, 1978; Dunlap, Van Liere, Mertig, & Jones, 2000). For instance, The *Millennium Ecosystem Assessment* (MEA), which included more than 1,300 scientific findings, in 2005 reported that "the earth [was] wearing out and will soon become exhausted, incapable of supporting life as we know it" (Hawken, 2007, p. 173; Visser, 2009). Scientific indicators led scientists to believe that at least 60% of the world's ecosystems were degraded; more than a fourth of the land surface on this planet is cultivated; and, water withdrawals doubled since the 60s (Visser, 2009). Though this information was not yet published when Dunlap and Van Liere created the New Ecological Paradigm, evidence was beginning to accumulate that degradation was occurring.

As technology and research advanced, the relationship between global degradation and human behavior was better understood. The Intergovernmental Panel on Climate Change, comprised of scientists, governments, and people, issued an assessment in 2007, which stated that they were "90% [confident] that human activity [was] causing climate changes" (Visser, 2009, p. 33). The NEP became a set of values against the rightness of humans dominating nature and more toward a human-nature balance.

The purpose of the NEP was to measure proenvironmental orientations and ecological worldviews (Dunlap & Van Liere, 1978; Fielding, McDonald, & Louis, 2008). Dunlap and Van Liere created an environmental concern scale to examine broader, global

environmental issues. At the time, Dunlap and Van Liere (1978) argued that the predominant environmental value scales were too specific and only examined pollution and carrying capacity issues (e.g., the Environmental Concern Scale) (Dunlap, Van Liere, Mertig, & Jones, 2000; Fielding, McDonald, & Louis, 2008; Schultz & Zelezny, 1999; Weigel & Weigel, 1978). Therefore, one advantage of the NEP Scale was that it examined a generalized view of the environment and did not become dated (Milfont & Duckitt, 2010).

Dunlap (2008) and Fransson and Garling (1999) noted that after the development of the original NEP Scale, researchers did not pursue its use. Rather, ecological scales created by Maloney, Ward, and Braucht (1975) and Weigel and Weigel (1978) were still heavily utilized. Maloney, Ward, and Braucht created an ecological attitudes-knowledge scale, measuring verbal commitment (stated willingness for action in regards to environmental issues), actual commitment (actions taken in regards to environmental issues), affect (emotionality in regards to environmental issues), and knowledge (factual knowledge regarding ecological issues).

At the time of its creation, Weigel and Weigel, (1978) reported that Maloney, Ward, and Braucht's (1975) scale relied only on internal consistency data from a single sample. The Environmental Concern Scale was created in response (Weigel & Weigel). This scale focused on pollution and conservation issues. Weigel and Weigel reported acceptable internal consistency (a = .85) and six-week stability (test-retest) (.83). Again, though, general criticism of this scale was that its focus was too specific (i.e., pollution) rather than more general regarding value orientations.

Dunlap (2008) wrote that researchers began using the NEP Scale in the 90s and since, over 500 studies have utilized the New Environmental Paradigm Scale and the revised and updated New Ecological Paradigm Scale. The New Environmental Paradigm Scale was updated to improve its content and remove sexist language (e.g., man to humans) (Cordano, Welcomer, & Scherer, 2003; Hawcroft & Milfont, 2010). Due to dimensionality criticism, the authors expanded the scale from three facets to five and called the scale the New Ecological Paradigm Scale (Thapa, 1999; Thapa & Graefe, 2003). Cordano et al. (2010; Hawcroft & Milfont, 2010; Milfont & Duckitt, 2010) stated that the New NEP was the most widely used measure of general environmental concern. Dunlap et al. (2000) examined the revised NEP against proenvironmental policies ($r = .57$), self-reported proenvironmental behaviors ($r = .31$), and perception of pollution ($r = .45$) and concluded that the revised NEP exhibited some criterion validity.

The New Ecological Paradigm Scale (Dunlap, Van Liere, Mertig, & Jones, 2000), with 15-items, was intentionally more founded in human values and beliefs. It measured environmental values, worldviews, and concerns about humans "as an integral part of the natural environment, rather than as separate from nature" (Dunlap, 2008; Dunlap et al., 2000; Schultz, 2001, p. 331). The New Ecological Paradigm Scale included the original three facets (*existence of ecological limits to growth*, *importance of maintaining balance of nature*, and *rejection of the anthropocentric notion that nature exists primarily for human use*), but added dimensions of *human exceptionalism* (humans are exempt from nature constraints) and *likelihood of ecocrises* (possibility of potential catastrophes) (Dunlap, 2008).

Since its inception, many researchers contended the dimensionality of the New Ecological Paradigm Scale. Dunlap (2008) maintained that both the original and revised scales (New Ecological Paradigm) were unidimensional (Cordano, Welcomer, & Scherer, 2003; Hawcroft & Milfont, 2010). A summated score of 15 (Likert scale one to five) represented an anthropocentric worldview while a score of 75 represented a proecological worldview (Manoli, Johnson, & Dunlap, 2007). According to Hawcroft and Milfont, many researchers utilized the scale as a unidimensional index. Again, higher scores were associated with pro-ecological worldviews and lower scores were representative of anthropocentric views.

Dunlap and Van Liere (1978) first utilized the New Environmental Paradigm Scale with two samples in a Washington state survey. Their research supported a proenvironmental orientation. The authors surveyed an environmentalist group, which scored higher than the surveyed non-environmentalist group. In both samples, Cronbach's alphas were .81 and .76, respectively. Dunlap and Van Liere rotated both samples' scores and verified a unidimensional structure, with each explaining 69.2% and 63.3% of the variance. Finally, the scores were correlated with measurement scales of: support funding of environmental organizations ($r = .47$), support environmental regulations ($r = .58$), and pro-environmental behavior ($r = .24$). Hawcroft and Milfont (2010) noted that the above results were similar for the updated, New Ecological Paradigm Scale. The revised NEP had an internal consistency of .83 and explained 31.3% of the total variance (Dunlap et al., 2000).

Poortinga, Steg, and Vlek (2004) also utilized the scale as a unidimensional index (Cronbach's alpha = .76) in examining value orientation and household energy use.

Mobley, Vagias, and DeWard (2010) treated the NEP as a unidimensional scale as well to investigate environmental behavior based on the NEP, environmental literature, and sociodemographic variables. Internal consistency, as reported by Mobley, Vagias, and DeWard, was .89. In adding the aggregated NEP score into a regression model, the authors found that the explanatory power for demographics, environmental literature, concern, and worldview (NEP) was 33.4% ($p < .000$) in explaining environmental behavior. DeChano (2006) also utilized the scale as unidimensional in an examination of worldview differences across four countries. Cordano, Welcomer, and Scherer (2003), in investigating the reliability and validity data of the NEP and revised NEP, found that when treated as a unidimensional index, the original NEP had an internal reliability of .73 while the revised had an internal reliability of .79.

Schultz and Zelezny (1999), in their study, found that the internal consistency of the NEP for an American population was .81. Their research provided evidence that altruistic-biospheric values were positively correlated to the NEP while egoistic values were negatively correlated (Schultz & Zelezny; Stern, Dietz, & Guagnano, 1995; Turaga, Howarth, and Borsuk, 2010). For instance, ecocentric value orientation (Thompson & Barton, 1994) was positively correlated to the New Environmental Paradigm Scale ($r = .44$, $p < .001$) while an anthropocentric view was negatively correlated ($r = -.20$, $p < .001$). These findings were consistent with the proecological nature of the NEP scale.

Conversely, other researchers found that the scale is multidimensional (Budruk, Thomas, & Tyrrell, 2009; Castro & Lima, 2001; Manoli, Johnson, & Dunlap, 2007; Thapa, 1999; Thapa & Graefe, 2003). Thapa (1999), and later Thapa and Graefe (2003), in examining how environmental attitudes related to environmental behavior, found that

the New Ecological Paradigm Scale contained three factors. The three factors that emerged were *ecocentric, technocentric,* and *dualcentric* orientations. These factors explained 49% of the total variance with Cronbach's alphas of .79 (ecocentric), .71 (dualcentric), and .55 (technocentric) (Thapa, 1999). *Ecocentrism* was consistent with previous discussions with values similar to Leopold's (1949) land ethic (Thapa, 1999; Thapa & Graefe, 2003). *Technocentric* values were similar to anthropocentric values (and Dominant Social Paradigm) in that humans could harness and control nature (Thapa, 1999; Thapa & Graefe, 2003). *Dualcentric* values were balanced between eco- and technocentric values (Thapa, 1999; Thapa & Graefe, 2003). Thapa and Graefe (2003) found the same three factors explained 51% of the variance with moderate to high Cronbach's alpha values for each dimension (Ecocentric, .81; Dualcentric, .58; Technocentric, .70).

Budruk, Thomas, and Tyrrell (2009) also found a three factor solution for the New Ecological Paradigm Scale. In their study, the investigators hypothesized that proenvironmental attitudes were affected by place attachment. They named the three factors (with Cronbach's alpha): *Balance of Nature* (a = .71), *Anthropocentrism* (a = .69), and *Ecological Limits* (a = .60). Notably, the authors believed that the scale could be utilized in multicultural contexts; their study occurred in India.

Castro and Lima (2001), post-exploratory factor analysis and varimax rotation, found that the revised NEP represented three factors. The first factor was named *Fragility of Nature* and examined how fragile nature might be and how human abuses contributed to its fragility (a = .58). The second factor, *Human Capacity*, represented the capacity of humanity to solve environmental issues (a = .58). Finally, the third factor, *Limits*, tapped

beliefs about humanity and nature's limits in terms of room, resources, and capacity to control nature (a = .42).

In a study examining proecological viewpoints of elementary school children, Manoli, Johnson, and Dunlap (2007) found a multidimensional structure. During a three year, three phase study the researchers revised and removed items that children did not understand, performed an exploratory factor analysis and then confirmed their hypothesized factor structure. Three factors emerged for the NEP Scale for Children; *Rights of Nature*, *Human Exceptionalism*, and *Eco-Crisis*. Even so, the authors noted that for an adult sample, a one-factor solution may still be desired.

Fransson & Garling (1999) and Dunlap, Van Liere, Mertig, & Jones (2000) reported that the scale exhibited predictive, construct, and content validity as seen above. The New Ecological Paradigm was also shown to be a significant predictor of behavioral intention regarding environmental activist behaviors, though identity issues mediated the relationship (Fielding, McDonald, & Louis, 2008). The authors found significant enough results and stated that "it is likely that higher levels of environmental concern motivate individuals to take action" (p. 324). For more information regarding the original and revised scales, Hawcroft and Milfont (2010) performed a meta-analysis of 139 samples across 36 countries and reported results data for these studies (i.e., mean, standard deviation, Cronbach's alpha, sample size, sample origin). One issue to note, though, was that past researchers were not adequately identifying whether they used the New Environmental Paradigm Scale or the New Ecological Paradigm Scale (Hawcroft & Milfont).

Sociodemographic indicators also correlated inconclusively with proenvironmental worldviews. Gender, age, education, and environmental organization membership were often highly correlated with environmental values. For instance, research showed that women report more biocentric orientations, as do younger individuals, and members of environmental organizations (McFarlane & Hunt, 2006; Stern & Dietz, 1994; Vaske, Donnelly, Williams, and Jonker, 2001; Zelezny & Schultz, 2000). On the other hand, other studies reported inconsistent results when examining demographic variables as related to environmental values. Fransson and Garling (1999), Gardner and Stern (1996), Hines, Hungerford, and Tomera (1986), McFarlane and Hunt (2006), and Stern, Dietz, and Kalof (1993) all reported demographics variables (e.g., age and education) were often non-significant or weak when correlated with environmental worldviews.

Though demographic factors were inconsistent, factors that potentially affected the development of proenvironmental value should be pursued. For instance, previous studies showed that adults with proenvironmental value orientations were exposed as children to environmental experiences (Chawla & Flanders Cushing, 2007; Hacking, Barratt, & Scott, 2007). These early experiences "[predisposed] people to take an interest in nature for themselves and later for its protection" (Chawla & Flanders Cushing, 2007, p. 440; Hungerford & Volk, 1990). According to Hungerford and Volk, early experiences likely led to interest in a related specific topic or issue. As an individual matured and learned more about an issue, he or she was likely to take ownership of the issue, which eventually empowered the individual toward action.

Research showed, too, that children were concerned with local environmental issues (Hicks & Holden, 2007). Providing experiences (environmental and educational) better prepared children as environmental stakeholders with proenvironmental values. These opportunities for value development and experience were often limited by overprotective parents (Malone, 2007). Though children showed interest and concern for the environment, lack of opportunities in the natural world stagnated a child's ability to develop environmental values. Adults, too, were affected by their loss of connection to the natural world. Schultz (2001) believed that people living in larger cities tended toward anthropocentric value orientations concerning the environment.

Children, though, were only one segment of the population that may not develop proenvironmental attitudes. If adults lacked the experiences as children to develop proenvironmental values, how can adults possibly expect to care for the earth and its resources? As previous research showed, experiences in the out-of-doors were an important facet in developing environmental concern. Recent research efforts examined whether place attachment through outdoor experience predicted proenvironmental value orientations in adults (Budruk, Thomas, & Tyrrell, 2009; Vorkinn & Riese, 2001).

Place Attachment

Place attachment is an environmental psychological phenomenon in which a person emotionally and psychologically bonds to a place (i.e., state park, wilderness area). Halpenny (2010) defined place attachment as a space where a person developed meanings and/or values based on individual or group experiences within the place-setting. This person-place bond was exhibited through behaviors, cognitions, and feelings (Low & Altman, 1992; Nordlund, 2009; Scannell & Gifford, 2010; Williams & Stewart,

1998). Place attachment was partly developed by the emotional connection a person had to a physical setting; the meanings and memories created by an experience; and also by the setting itself, which represented its physical characteristics, created backdrops for social relationships, and were places where an individual's personal set of values and beliefs were formed or refined (Scannell & Gifford, 2010; Smaldone, Harris, Sanyal, Lind, 2005).

In psychological terms, place attachment was defined as a positive cognitive and emotional link by an individual to a certain environment or setting (Brown & Perkins, 1992; Halpenny, 2010; Hidalgo & Hernandez, 2001; Low, 1992). Place, according to Brandenburg and Carroll (1995, p. 384), was "an essential aspect of human existence" as humans came to value places as specific as a home or as global as the Earth. These emotional states were filtered through cognitive schemes based on experiences and behavior within the setting or place (Low & Altman, 1992; Scannell & Gifford, 2010). Again, essentially, place attachment was the interaction of thought, emotion, and behavior creating positive attachments toward a place during and after involvement (Kyle, Graefe, & Manning, 2005; Low & Altman, 1992; Proshansky, Fabian, & Kaminoff, 1983; Scannell & Gifford, 2010).

Attachment to place research began with concepts of topophilia (Tuan, 1974), rootedness (Relph, 1976), sense of place (Hay, 1988), and place attachment (Low & Altman, 1992). As an early conceptualization, Tuan (1974) labeled human connection to place, topophilia, which was literally the human love of space. This space was imbued with personal meaning through its use (Tuan, 1974). Accordingly, topophilia was a subjective concept. Individuals grew affectionate toward different places because of

individualized experiences, personal norms, and beliefs. Specifically, “no two social groups make precisely the same evaluation of the environment,” which created different levels of meanings and importance for various individuals and groups (Tuan, 1974, p. 5).

As no two persons likely evaluated a place in the same manner, topophilia was an intensely personal phenomenon. Developing an attachment for a specific place occurred for various personal reasons. An individual gained an appreciation of place through aesthetic beauty, physical touch, culture, physical features, memories of experiences, and activities that occurred within a specific place (Tuan, 1974). It was hypothesized that people also bonded to place because of historical, cultural, or personal significance (Schreyer, Jacob, & White, 1981; Stokowski, 2002; Svensson, 1998; Tuan, 1975).

> “Each place has its own dynamism, its own patterns of movement, and these patterns engage the senses and relate them in particular ways, instilling particular modes of awareness, so that unlettered… each place has its own mind, its own personality, its own intelligence” (Abram, 1996, p. 182).

A woman could be attached to Devil’s Tower National Monument, for instance, because her earliest outdoor memories occurred there with her family. Experiences through involvement or activity created or strengthened a person-place bond as well as the personal meaning which developed and was imprinted upon the place. On the other hand, for Native Americans, the Tower has deep cultural and spiritual significance, which could also be a source of attachment. For visitors and descendants, places possessed emotional, symbolic, and spiritual meaning (Williams & Patterson, 1999).

Rootedness evolved from the concept of topophilia. Rootedness was a sense of belonging to a place (Godkin, 1980). To human geographers, rootedness implied “being

at home in an unself-conscious way" (Tuan, 1980, p. 4). Rootedness, as defined, was distinguishable from topophilia in that rootedness included belonging, security, homeliness, and non-judgment within its meaning (Hay, 1998; Tuan, 1980). Rooted individuals were often unself-conscious and felt un-judged when in their *place* (Proshansky, Fabian, & Kaminoff, 1983). Rootedness was further distinguished because it was defined as developing through a prolonged period of settlement, such that rootedness often implied where one lived (Moore and Graefe, 1994). Further, Relph (1976) and Hummon (1992) wrote that rootedness identified a strong, local attachment to the home and its surrounding area, which occurred through extended living within the community.

Sense of place, like topophilia and rootedness, was defined as an "emotional or affective bond between an individual and a particular place" (Williams, Patterson, Roggenbuck, & Watson, 1992, p. 31). Scannell and Gifford (2010) described it as need fulfillment through an emotional tie universal among humans. Essentially, sense of place was another description of how an individual felt and attached to place (Shamai, 1991). Like topophilia and rootedness, sense of place required interaction with an environment through use (Shamai, 1991; Stokowski, 2002). Unlike rootedness, the concept of sense of place did not require an individual to call place home.

Tuan (1977, p. 6) described sense of place as "undifferentiated space [that became] place as we [got] to know it better and [endowed] it with value," built through participation at the site, not living within it. Steele (1981, p. 12) wrote that sense of place was, at its simplest, a combination of setting (physical and social) and the reactions a person had regarding it. These reactions were emotional, behavioral, or both; meaning,

that individuals showed affection through positive emotions and through multiple visitations.

The concept of sense of place often incorporated separation between self and place in building an appreciation toward place (Tuan, 1975; 1980). He believed that an individual developed an attachment toward place by being active within it and then leaving (1975; 1980). Afterward, the person reflected upon their experiences and memories, whereby, Tuan hypothesized, that sense of place was created through the interaction of memories and reflection. Reflection was an important and recurring theme in recreational literature. Emotional fulfillment occurred post-activity/experience/trip, during the reflection of the activity/experience/trip (Clawson & Knetsch, 1966).

Person-place bonds were also conceptualized in the literature as community attachment (Kasarda & Janowitz, 1974), place identity (Cuba & Hummon, 1993; Proshansky, Fabian, & Kaminoff, 1983), place dependence (Schreyer, Jacob, & White, 1981; Stokols & Shumaker, 1981), and place attachment (Williams & Roggenbuck, 1989; Low & Altman, 1992). Place attachment, like its conceptual predecessors, occurred because experiences occurred within a setting; personal meanings were created by those experiences; and the socialization that occurred during these experiences (Stedman, 2002; Taylor, Gottfredson, & Brower, 1985). Proshansky, Fabian, and Kaminoff suggested that place was a background for socialization experiences such that place attachment may be confused with attaching to the social experience rather than the place itself (Hidalgo and Hernandez, 2001; Stokowski, 2002). Tuan (1975) wrote that physical places were centers of socially constructed meaning, which allowed humans to endow value and affective meanings toward place (Williams and Patterson, 1996). In studying place attachment in

residents of Santa Cruz de Tenerife, Hidalgo and Hernandez stated that though social attachments did occur, people also attached to physical spaces.

For recreation researchers, place was space endowed with meaning by recreationists and likely provided users and groups with security, self-concept, and values (Low & Altman, 1992; Relph, 1976; Steele, 1981; Tuan, 1980). Value and meaning were imprinted upon a place through activity and direct interaction with it (Brandenburg & Carroll, 1995; Kaltenborn & Bjerke, 2002a). For recreationists and state park users, these direct experiences were likely recreational in nature (e.g., hiking, rock climbing, photographing) (Tuan, 1975; Warzecha & Lime, 2001). Though direct experience imprinted value, meaning was also created through an individual's passive senses (e.g., sights, smells, touch) (Inglis, Deery, & Whitelaw, 2008; Tuan, 1975; Warzecha & Lime, 2001). In creating these emotional meanings for natural resources, place attachment increased (Cuba & Hummon, 1993).

Neither size, nor tangibility, of place affected one's ability to become attached (Halpenny, 2010; Hidalgo & Hernandez, 2001; Kaltenborn & Bjerke, 2002a; Low & Altman, 1992; Steele, 1981; Tuan, 1975; Williams et al., 1992). In the past, researchers examined attachment within cities (Hummon, 1992), communities, neighborhoods, and homes (Ahrentzen, 1992; Hidalgo & Hernandez, 2001; Scannell & Gifford, 2010). More recently, recreational researchers studied place attachment in outdoor areas and natural resource areas (Budruk, White, Wodrich, & van Riper, 2008; Buttimer, 1980; Vaske and Kobrin, 2001; Williams et al., 1992; Williams & Patterson, 1999).

As more research was conducted involving place attachment and natural resource areas, managers shifted away from traditional strategies and practices (Kyle, Graefe, Manning, & Bacon, 2004a). Valuing resources from a commodity and consumption

perspective was no longer the sole purpose of park management practices. Perhaps users preferred solitude and naturalness (i.e., permitting) rather than allowing any, and all, visitors to utilize the area. Therefore, place attachment in users became important for management decisions in studying how users valued their resources (Kyle et al., 2004a; Williams & Stewart, 1998).

For instance, place attached users were believed to be more involved in public meetings. Weber (2000, p. 239) wrote that place became "a catalyst for self-governance. It [mobilized] citizens to care enough to participate" in management decisions. Purposeful creation of place attachment in users was important for land and resource managers. It established connections between the resource and the user in terms of values, attitudes, and behaviors (Brandenburg & Carroll, 1995; Warzecha & Lime, 2001; Williams et al., 1992). Also, by understanding how individuals attached to place, users were able to articulate what was important, how they valued the resource, and offered some control and input toward management decisions (e.g., planning, fee changes, and conflict control) (Bricker & Kerstetter, 2000; Bricker & Kerstetter, 2002; Kyle, Absher, & Graefe, 2003; Proshansky, Fabian, & Kaminoff, 1983; Warzecha and Lime).

Place Dependence

Place attachment, in recreation and environmental psychology literature, was defined as an integration of place identity and place dependence (Proshansky, Kaminoff, & Fabian, 1983; Schreyer, Jacob, & White, 1981; Williams & Roggenbuck, 1989). For recreational purposes, place settings were important in terms of how place supported an activity or behavior (functional meaning) and the emotional importance an individual attached to place (emotional/symbolic meaning) (Moore & Graefe, 1994). Using these

components, Williams and Roggenbuck (1989) conceived of a place attachment measure that accounted for functional (place dependence) and emotional meanings (place identity).

Functional meaning was the value given to a place by an individual in terms of how the resource physically supported the user's activities and needs (Fournier, 1991; Williams & Roggenbuck, 1989). Essentially, functional attachment represented the physical characteristics of the resource (Williams & Vaske, 2003). Functional meanings were important in recreational settings because recreational activities were likely unique and only satisfied by certain resources and facilities (e.g., rapids for kayaking or vertical rock for climbing) (Kyle, Graefe, & Manning, 2005). Recreationally, certain features had to be present, which provided meaningful experiences for the user.

Functional meaning was also called place dependence, derived from research by Stokols and Shumaker (1981). These valuations were subjective in terms of an individual's "perceived strength of association between him- or herself and specific places" (Stokols & Shumaker, 1981, p. 457). Individuals based these associations upon needs met by a particular place and their satisfaction in the outcomes of the experience (Stokols & Shumaker, 1981). Individuals made value judgments about how goals and activities were met based on the physical characteristics available, and also in how these needs were met (i.e., quality). According to Stokols & Shumaker and Halpenny (2010), place dependence developed because of positive experiences and satisfactory outcomes within an area as compared to potential alternative sites with similar features (i.e., why people prefer one lake over another for boating). Because of the type of meaning, dependence was often related to resource specificity (Smaldone, 2005), activity

specialization (Bricker & Kerstetter, 2002), and mode of experience (Hinch & Walker, 2003), in which the features of a place were prioritized.

Place Identity

Emotional meaning comprised one's affective attachment to place and how place contributed to cognitive aspects of self (Payton, Fulton, & Anderson, 2005). Cognitive elements comprising one's identity (i.e., place identity) were often explanatory in predicting how individuals behaved (Jun, Kyle, Absher, & Theodori, 2010). These cognitive elements created value for a person because of what the place eventually symbolized for the individual (Fournier, 1991; Williams & Roggenbuck, 1989). Significance ranged from personal (favorite childhood vacation spot) to nationally symbolic (Lincoln Memorial) (Budruk, White, Wodrich, & van Riper, 2008; Williams & Vaske, 2003). Williams and Vaske (p. 831) noted that using a resource came "to symbolize the user's sense of identity," which contributed to emotional person-place bonds. These cognitive and emotional meanings developed over time through multiple experiences, memories, information gathering, and/or other significant events occurring within a place (Manzo, 2005; Scannell & Gifford, 2010; Vaske & Kobrin, 2001).

Within the construct of place attachment, the cognitive meanings which created emotional attachment were known as place identity (Proshansky, Fabian, & Kaminoff, 1983). According to Proshansky, Fabian, and Kaminoff, place identity emerged from self-identity theory. Self-identity theorists believed that individuals developed their identities by distinguishing oneself from other human-beings. As a child grew and developed, Proshansky, Fabian, & Kaminoff wrote, that child learned to label what he/she was and what he/she was not as compared to others and their relationships. For

instance, the authors provided an example of a child distinguishing himself from his mother. The child learned who he was by his relationship with his mother (e.g., age, sex, responsibilities), which helped define identity elements. In their relationship, the mother was significant because the child identified what and who she was, what and who he was, and their commonalities and differences.

Creating an identity of self by distinguishing oneself from others was a fundamental component, but Proshansky, Fabian, & Kaminoff (1983) believed that humans also developed self-identity by distinguishing self from objects and places. Defining oneself through their physical environment was established in psychological literature (Korpela, 1995). In the same manner of defining oneself by relationships with other humans, individuals also conceived of themselves by the "physical things and settings that also [satisfied] and [supported their] existence" (Proshansky, Fabian, & Kaminoff, 1983, p. 57). Individuals defined themselves through their "beliefs, preferences, feelings, values, goals, and behavioral tendencies and skills relevant to [the] environment" (Proshansky, Fabian, & Kaminoff, 1983, p. 57). These identity elements motivated individualistic behaviors as individuals often act in a consistent manner with the elements that made-up the self (Jun et al., 2010). The environment allowed individuals to express themselves and support their own sense of self (Kyle, Graefe, & Manning, 2005). For instance, a woman who defined herself as an Oklahoma rock climber who strongly identified herself with a local crag in Lawton.

Though place dependence was often tied to the activity or physical characteristics of the resource, feelings of attachment reached beyond the usefulness of a place in satisfying recreationists' needs related to an activity (Cuba & Hummon, 1993). Place

identity incorporated rational and internally logical cognitions about the environment that often represented the self. These cognitions included memories, values, attitudes, experiences, and preferences (Cuba & Hummon, 1993; Korpela, 1989; Proshansky, Fabian, & Kaminoff, 1983). Cuba and Hummon (1993, p. 112) believed that place identity answered "who am I" with "where am I" and "where do I belong?" Williams and Patterson (1999, p. 148) noted that "the places we frequent help to communicate to ourselves and others 'who we are.'" Individuals utilized the environment to create, define, and maintain the self and in turn, the environment came to be valued (Jun et al., 2010; Korpela, 1989). Hammitt, Backlund, and Bixler (2006) wrote that "this bond supersede[d] belongingness in that the individual [found] it nearly impossible to imagine a meaningful existence, a meaningful notion of self, outside the place" or what the place represented (p. 23).

According to Proshansky, Fabian, and Kaminoff (1983), multiple experiences within a place facilitated the creation of values, beliefs, and attitudes in accordance with a particular place (Scannell & Gifford, 2010). Repeated exposure was shown to be a powerful predictor of place identity (Backlund & Williams, 2004). Through attachment to place via direct experiences, an individual expressed and defined him/herself by his/her environmental choices and values (Halpenny, 2010; Proshansky, Fabian, & Kaminoff, 1983; Schultz, 2000). Understanding the relationships between self and place were important in terms of environmental value orientations because a self-aware individual more likely integrated their values with self and expressed themselves consistently through their choice in place and their behaviors (Jun et al., 2010; Proshansky, Fabian, & Kaminoff, 1983).

Much of place attachment research focused on Williams and Roggenbuck's (1989) Place Attachment Scale, which incorporated place dependence and place identity measures as subcomponents. Recently, White, Virden, and van Riper (2008) wrote that this place attachment scale was adequately operationalized and validated (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Warzecha & Lime, 2001; Williams & Vaske, 2003). Reliability and validity data accumulated, which showed support for the existence of the place attachment variable and its two indicators: place dependence and place identity (Williams & Roggenbuck, 1989). An important note; dependence and identity did not always positively correlate (Moore & Graefe, 1994).

The scale was used frequently in the past two decades. Through many studies, researchers examined the dimensionality of place attachment regarding fee increases (Kyle, Absher, & Graefe, 2003), activity involvement (Kyle, Graefe, Manning, & Bacon, 2003), crowding on the Appalachian Trail (Kyle, Graefe, Manning, & Bacon, 2004b), social bonding (Kyle, Graefe, & Manning, 2005), and judgments regarding environmental conditions (Kyle, Graefe, Manning, & Bacon, 2004a). Previous predictors of place attachment also examined temporal components such as length of residence (Hay, 1998; Kaltenborn & Williams, 2002; Kasarda & Janowitz, 1974; Riger & Lavrakas, 1981; Tuan, 1975), age (Hay, 1998), and stage in the lifespan (Hay, 1998). Williams and Vaske (2003) also performed construct validity tests on Williams and Roggenbuck's (1989) scale. Their results showed that the scale was internally consistent, demonstrated convergent validity (e.g., prior visits, location familiarity, and is location special?), and also that the measurement was sensitive to the subtleties of different survey

locations. These authors also reconfirmed the two-dimensional aspects of the Place Attachment Scale, which included dependence and identity.

SUMMARY

Though value and behavior research has indicated that mediating factors exist between environmental values leading to environmentally-responsible behavior, currently concerns are growing about the health of the environment and the impacts of human behaviors upon it. In better understanding how environmental values are affected, researchers can begin to connect proenvironmental values to environmentally-responsible behaviors to negate negative human impacts. To understand how outdoor recreationists valued the environment, the New Ecological Paradigm Scale was utilized (Dunlap et al., 2000).

Likewise, to determine how environmental values were explained, place attachment was measured in regards to a state park in Oklahoma (Williams & Roggenbuck, 1989). Previous studies provided contradictory evidence in how outdoor recreation and preferred outdoor activities explained environmental values. Therefore, researchers began to examine other variables of interest, such as place attachment.

CHAPTER III

METHOD

Previous researchers examined outdoor users and their environmental views by activity-type (Dunlap & Heffernan, 1975; Geisler, Martinson, & Wilkening, 1977; Jackson, 1986; Nord, Luloff, & Bridger, 1998; Pinhey & Grimes, 1979; Van Liere & Noe, 1981). After determining activity-type produced mixed results, Van Liere and Noe suggested that other variables should be examined. In accordance, this study examined the significance of the psychological variable, place attachment, in proenvironmental value orientations (i.e., NEP). Rather than examine activity-type of self-reported outdoor users, onsite visitors at Lake Murray State Park were examined and deemed outdoor users by the researcher. State park visitor attachment and environmental worldviews were measured using an adapted Place Attachment Scale (Williams & Vaske, 2003) and the New Ecological Paradigm Scale (Dunlap, Van Liere, Mertig, & Jones, 2000), respectively.

Visitors were approached and sampled onsite at Lake Murray State Park. Responses to the measurement scales were entered into SPSS Statistics v.18.0 and regressed to explain how place attachment affected environmental values orientations. The confirmatory factor analysis was conducted using AMOS 18. A principal component analysis was conducted using SPSS.

Study Site

The research was conducted at Lake Murray State Park, located near Ardmore, Oklahoma. Lake Murray is accessible from the I-35 corridor in Carter County in south-central Oklahoma. According to TravelOK (2010), Lake Murray State Park was one of Oklahoma's oldest state parks. Lake Murray State Park was built in the 1930s by employees of the Civilian Conservation Corps (CCC), a New Deal agency that provided pay for unemployed young men during the Depression (VisitArdmore, 2010; Whitecotton, 2007).

According to the Whitecotton (2007), Lake Murray State Park was named after former Oklahoma Governor William Murray. Bryant, Jr. (2007) wrote that Murray was notable as an attorney, orator, editor and publisher of a newspaper. He was an advocate of the tribal nations and was involved in a failed attempt to gain statehood for the Indian Territory. He was president of the convention. This led to Oklahoma statehood in 1907. He eventually became Governor of Oklahoma in 1930. Governor Murray's former summer retreat, Tucker Tower, became the nature center at Lake Murray.

The area that comprises Lake Murray State Park is composed of 12,496 acres with a 5,728 acre man-made lake. Interestingly, all of the lakes in the state of Oklahoma were man-made. Lake Murray State Park, though, was specifically created as an inexpensive recreational area for Oklahomans and was the only state park that provided camping facilities for African American youths (TravelOK, 2010; Whitecotton, 2007). The facilities at Lake Murray State Park contain a lodge, multiple cabins, and RV/tent campsites, as well as a nature center. The state park contains an 18-hole golf course, restaurant, an ATV area, hiking trails, and horseback riding trails (VisitArdmore, 2010;

TravelOK, 2010). Table 1 and Table 2 provide three-year visitation data as well as the visitations for summer 2009 by month.

Table 1

3-Year Lake Murray Visitation

	Fiscal Year 2008	Fiscal Year 2009	Current Fiscal Year
Total Visitation	2,341, 055	2,228,083	1,122,674
Out-of-State Visitation	710,194	665,085	385,825

Table 2

Lake Murray Summer Visitation 2009

	June 2009	July 2009	August 2009	September 2009
Total Visitation	495,080	472,641	208,209	115,162

Participants and Survey Procedures

Sampling began during the third week in July 2010 and ended Labor Day weekend, which was the first weekend of September 2010. The researcher was in the field collecting data for eleven days total. Having the proper sample size increases the precision of statistical estimation (Thompson, 2004). The probability of correctly rejecting the null hypothesis is affected by sample size, alpha, and effect size. Power analysis, a priori, provided the researcher some control over how likely a test detected effects (Cohen, Cohen, West, & Aiken, 2003; Keith, 2006). In preventing Type I error

(alpha), power decreases. To control Type I and Type II error, it was important to determine the sample size a priori. As sample size increased, power increased (Cohen et al., 2003).

Effect sizes are utilized as the strength of the relationship between independent and dependent variables (Vaske, 2008). According to Keith (2006), if prior research was unavailable, researchers calculated effect sizes using medium effects for social science research ($f^2 = 0.13$). Utilizing an online sample size calculator, a standard alpha (a = 0.05), a medium effect size ($f^2 = 0.13$), a standard power (0.80), and two (*identity* and *dependence*) to ten predictors (attachment and demographic categories) were calculated; for the multiple regression analysis the minimum sample size was 77 individuals (two predictors) to 134 individuals (ten predictors).

According to Thompson (2004), a "rule of thumb" (p. 24) for a sample size which utilizes exploratory factor analyses is ten to twenty individuals per survey question (Thompson). Because the NEP includes 15 questions, the smallest preferred sample size is 150 individuals while a large sample size is 300 individuals. The final sample response for this study was n = 172 individuals with two incomplete, unusable responses (n = 170).

During the initial planning process, Lake Murray State Park was segmented into 18 sites (see Figure 1). These sites included tent camping with trail access (8 camp areas, 450 sites), a nature center (Tucker Tower), as well as beach and dock areas. Stratified sampling was utilized such that visitors from each section were equally represented. It was estimated that to survey a representative sample of visitors, nine visitors needed to be surveyed per site. This methodology was later modified due to lower than expected attendance rates between July 2010 and Labor Day weekend 2010 (See Chapter IV).

Lake Murray State Park visitors were approached and recruited at the state park during the summer months of 2010 through face-to-face interaction at 12 sites. In previous studies, researchers requested the participation of every sixth visitor encountered (Babbie, 1995; Budruk, Thomas, Tyrrell, 2009; Ward, 1990). This systematic sampling method assured that respondents were selected at random (Vaske, 2008; Warde, 1990). For this study, because approximately 18 areas needed representation and for the sake of time, every fourth individual/group encountered was approached to participate in this study. If a group was encountered, the adult (over 18 years old) whose birthday was closest to the sampling date was asked to participate (Budruk, Thomas, & Tyrrell, 2009). If an individual or group chose not to participate, then the next encountered person (or group) was asked to participate in the study. Once an individual participated, then the fourth individual/group encountered was asked to participate. This procedure was later modified due to lower than expected attendance rates between July 2010 and Labor Day weekend 2010 (See Chapter Four).

All respondents were treated ethically per Oklahoma State's Institutional Review Board guidelines (see Appendix A & Appendix B). The researcher approached potential individuals following the approved script (see Appendix F). The researcher also provided each respondent with a business card (see Appendix E) and showed school identification (if requested) in an effort to provide the researcher with legitimacy in the mind of the respondent. Once the subject chose to participate, he or she was provided with a Participant Information Sheet (see Appendix G). A copy could be retained by the participant, though most did not choose to keep a copy. The researcher verbally stated to the respondent that by completing and returning the survey packet, which included the

demographics survey, the Place Attachment Scale (*PAS)*, and the New Ecological Paradigm Scale (*NEP*), the participant understood the research aims, their rights, and consented to participate in the study. (See Appendices H, I, J).

The researcher was available to answer any questions, but allowed the participant to respond without researcher bias as a researcher's presence can affect participant responses (Dillman, 2007). The presence of a researcher, according to Dillman (2007), likely created a situation in which the respondent attempted to determine the most socially desirable response. For this study, a participant determining the most socially desirable response was less of a concern because "surveys are more likely to produce socially desirable answers for questions about potentially embarrassing behavior" (Dillman, 2007, p. 226). The information in this study was not considered embarrassing. If a question regarding the meaning or interpretation of a question arose, the researcher responded with "Please, answer the question based on your interpretation of the question."

Upon completion of the survey packet, the packet was placed in a separate backpack compartment to eliminate respondents viewing other responses. The researcher answered any follow-up questions and thanked the respondent for their participation.

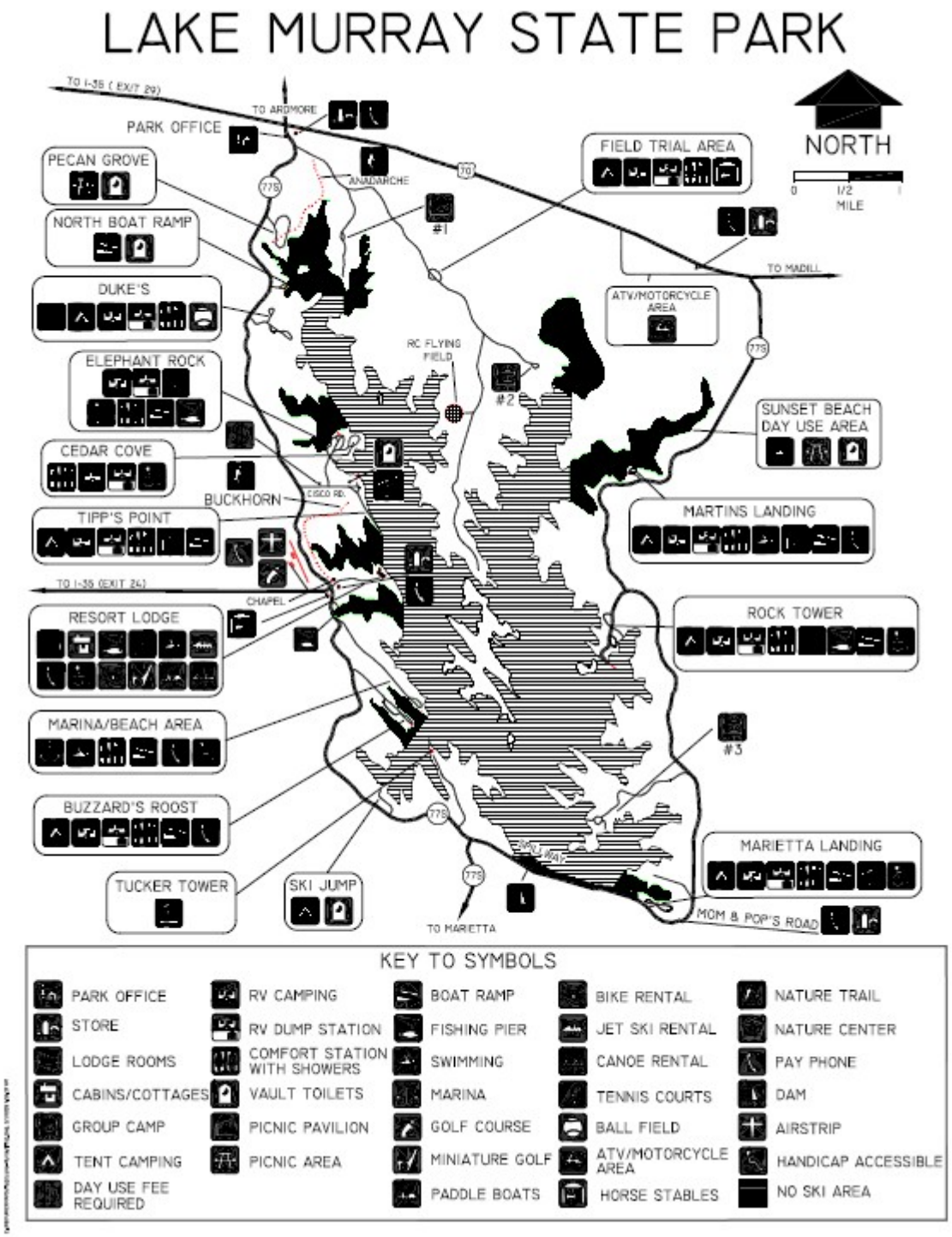

Figure 1: Facilities Map of Lake Murray State Park

Variables and Instrumentation

Data were collected utilizing three self-report surveys including the demographic survey, the Place Attachment Scale (*PAS*; adapted by Williams & Vaske, 2003), and the New Ecological Paradigm Scale (*NEP*; Dunlap, Van Liere, Mertig, & Jones, 2000). Self-responses regarding attachment to Lake Murray State Park were measured using the Place Attachment Scale (Williams & Vaske, 2003; see Appendix I) while the New Ecological Paradigm Scale (Dunlap, Van Liere, Mertig, & Jones, 2000; see Appendix J) was utilized to measure a respondent's environmental worldview. Information regarding sex, age, gender, political affiliation, income, and other sociodemographic indicators were collected utilizing the demographic survey (see Appendix H).

Place Attachment Scale

Place attachment was measured using the self-report PAS (Williams & Vaske, 2003), which was modified from the original place attachment scale proposed by Williams and Roggenbuck (1989). This scale has comprised two indicators (*place dependence* and *place identity*) (Budruk, Thomas, & Tyrrell, 2009; Moore & Graefe, 1994).

The *place dependence* dimension consisted of six items developed from Williams and Vaske (2003) Place Attachment Scale. Respondents indicated their level of agreement on a 5-point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Each question was modified so that it was specific to Lake Murray State Park. An example of a *place dependent* question included: "Lake Murray State Park is the best place for what I like to do" (Question 7).

The *place identity* dimension was measured from six items developed from Williams and Vaske (2003) place attachment scale. Respondents indicated their level of agreement on a 5-point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Again, the questions were modified to be place specific. An example of a *place identity* question included: "I identify strongly with Lake Murray State Park" (Question 3).

Though not originally published by Williams and Roggenbuck (1989), Williams and Vaske (2003) reported that internal consistency and the two subscales have been consistently shown through past research. In their own study, Williams and Vaske confirmed a two-dimensional scale utilizing confirmatory factor analysis (CFA) with Cronbach's alphas that ranged from .84 – .94 (place identity) and .81 – .94 (place dependence). Finally, the researchers statistically showed, utilizing two phases with two different place areas, that the dimensions could differentiate between different areas in attachment strength (i.e., successfully reflected personal attachment strengths to multiple areas). These findings were similar to the partial model tested by Hammitt, Kyle, and Oh (2009).

New Ecological Paradigm Scale

A self-report survey designed to measure environmental worldviews by Dunlap, Van Liere, Mertig, and Jones' (2000) NEP Scale was used. The NEP Scale contained 15 items, which measured five hypothesized facets: *reality of limits to growth*, *antianthropocentrism*, *balance of nature*, *rejection of human exceptionalism*, and *potential ecocrises* (Dunlap et al., 2000; Fielding, McDonald, & Louis, 2008; Thapa, 1999; Thapa & Graefe, 2003). According to Dunlap et al. (2000; Fielding, McDonald, &

Louis, 2008), agreement with the odd-numbered items indicated a proenvironmental value while disagreement with the even-numbered items indicated a proenvironmental value orientation (reverse-scored). Higher overall scores were associated with pro-ecological worldviews and lower scores were representative of anthropocentric views.

Cordano et al. (2010; Hawcroft & Milfont, 2010; Milfont & Duckitt, 2010) stated that the new NEP was the most widely used measure of general environmental concern. Past research utilized the scale as a unidimensional measure (Cordano, Welcomer, & Scherer, 2003; DeChano, 2006; Dunlap, Van Liere, Mertig, & Jones, 2000; Hawcroft & Milfont, 2010; Mobley, Vagias, & DeWard, 2010; Poortinga, Steg, & Vlek, 2004; Schultz & Zelezny, 1999; Thapa, 1999; Thapa & Graefe, 2003), but researchers concluded that the scale was multidimensional (Budruk, Thomas, & Tyrrell, 2009; Schultz et al., 2005). Respondents indicated their level of agreement on a 5-point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Example items included: “Humans are severely abusing the environment” (Question 5), “The so-called ‘ecological crisis’ facing humankind has been greatly exaggerated” (Question 10), “Humans have the right to modify the natural environment to suit their needs” (Question 1).

A more in-depth analysis of reliability and validity data for the NEP is included in Chapter Two. In particular, this is included in the discussion of the New Ecological Paradigm.

Demographics Survey

Each participant completed a brief demographic survey. Respondents were asked to provide their age, sex, ethnic origin, race, highest completed educational level, level of

personal income in the past 12 months, political affiliation, type of visitor (day or overnight), and special event status (e.g., did you visit the park for a holiday weekend) (Census, 2010).

Analyses

Confirmatory factor analysis was performed with AMOS v.18. Place attachment and the demographic indicators were regressed using SPSS Statistics v.18.0. Survey data was entered into SPSS Statistics v.18.0 as it was collected. Missing data were not a pervasive problem during the survey process. The researcher actively observed respondents as they completed the surveys. If the researcher noticed missing data during or immediately after, the researcher re-approached the individual or verbally asked the respondent to complete the survey process. If the scales included missing data, these individuals were excluded from the analysis. The number of included respondents for each statistical procedure was reported in Chapter IV.

Descriptive Statistics

Descriptive statistics were utilized to determine the demographic characteristics of the sample as well as used as independent variables in the regression analysis. These indicators were dummy-coded (0 or 1) (Field, 2009) (see Table 3).

Table 3

Example of Participant Dummy-coding for Politics – Liberal

	Liberal	Mod-Lib.	Moderate	Mod-Cons.	Conservative
Participant 1	1	0	0	0	0

Place Attachment

Place identity and *place dependence* were summated and standardized to the Likert scale by dividing by the amount of items included in the subcomponent. This created composite scores for each predictor. Cronbach's reliability tests were performed on both dimensions.

New Ecological Paradigm

Researchers who employed the New Ecological Paradigm Scale reported mixed results in the dimensionality of the scale. To confirm the structure of the scale, confirmatory factor analysis (CFA) was utilized to determine if the scale was unidimensional (Dunlap et al., 2000; Thompson, 2004). Hammitt, Kyle, and Oh (2009) wrote that confirmatory factor analytic techniques can be utilized to examine the item-fit regarding the theoretical construct.

Confirmatory analytic techniques were utilized to determine if the scale was unidimensional. As noted previously, though other researchers contended one dimension to three dimensions, the authors of the NEP Scale repeatedly wrote that the scale was unidimensional. As of 2005, Schultz et al. (2005) reported that no CFA had been performed on the NEP Scale and at the time of this study, no research was known that had performed a CFA on the full NEP Scale as well. Because a CFA had yet to be performed on the full scale, this research study examined the NEP Scale as a unidimensional measure.

Exploratory factor analysis (EFA) was utilized because the CFA did not indicate a unidimensional scale. Due to inconsistently reported dimensionalities in previous research studies, the NEP Scale was factor analyzed using principal components factor

analysis to determine the underlying dimensions of the scale (Thompson, 2004). Principal components analysis was the SPSS v.18.0 Statistical Package default method and is most often used with exploratory factor analysis (Russell, 2002; Thompson). This technique was utilized in creating patterns of the variables, maximized explained variance, but optimized the factors by calculating the fewest factors that still explained a significant amount of the variance (Wuensch, 2010). This method worked by extracting the first factor explaining the most variance, followed by the second factor with the second most variance, followed by the third, and so forth (Thompson).

Thompson (2004) wrote that researchers should use exploratory factor analytic techniques if there is no specific expectation regarding the number of underlying factors or goodness of fit indices are not indicated during confirmatory factor analysis (CFA). Exploratory factor analysis should be used if the factor analysis is an intermediate step. For this study, the analysis yielded multiple factors used in a regression analysis to determine how place attachment measures affected these various components.

For the principal components analysis, two methods were utilized to determine the number of factors: eigenvalues greater than 1.0 and the Scree Plot (Thompson, 2004).

Relationships between Place Attachment, Environmental Views, and Demographics

Regression analyses were performed in examining the place attachment predictors (*identity* and *dependence*) effect on each environmental value dimension. Models one and three examined *Place Identities* affect on the NEP components. Models two and four examined *Place Dependence* and its affect on the NEP Scale. Models five through twelve incorporated both place measures on the NEP Scale; sociodemographic indicators on the NEP Scale; a full model with sociodemographic indicators and the place measures on the

NEP Scale; and finally, the sociodemographic indicators were regressed on the Place Attachment Scale. Multiple regression was useful for this type of research because it allowed for the integration of multiple predictors, including categorical predictors (e.g., gender, age, political affiliation), and was useful for non-experimental research in that no treatments were manipulated (Berry & Feldman, 1985; Keith, 2006).

CHAPTER IV

RESULTS

This study investigated whether Lake Murray State Park visitors were attached to this state park and examined if the attachment variable was significantly associated with explaining proenvironmental values (Vaske, 2008). The research questions included:

1. Was place attachment a significant factor in explaining proenvironmental values among Lake Murray State Park visitors?
2. How were Lake Murray State Park visitors attached to Lake Murray State Park?
3. What were the environmental values of Lake Murray State Park visitors?
4. How were demographic characteristics related to these two variables?

Procedural Modifications

The procedures reported in Chapter III were modified as obstacles arose in the data collection process. For practical purposes, concessions were made to allow for a large enough sample size to be collected. These modifications were as follows:

Days: Data Collection

Originally, the researcher planned to survey park visitors during varying weekdays and weekends.

Unfortunately, visitor attendance was greatly reduced during the weekdays (Monday through Friday). On two separate weekdays (July 11th, 2010 and July 13th, 2010), the researcher visited Lake Murray State Park. Only one participant response was collected during this two-day period (July 13th, 2010). In personal communications with park staff, the park manager and camp hosts recommended camping and collecting data during the weekend (Friday through Sunday) as attendance greatly increased during these days.

Weekend visitation was more pronounced and the researcher was more easily able to locate populated areas to survey park visitors. Due to the lack of response during the weekdays, data collection procedures were modified to weekend collection only. Substantial data collection occurred during a period of seven weeks from July 30th, 2010 to September 4th, 2010.

Participation: Data Collection

Originally, every fourth participant was to be approached for inclusion in the study (refer to Chapter III). Practically, though, this procedure severely limited data collection. In personal conversations with the park manager and five camp hosts (Martin's Landing, Buzzard's Roost, Elephant Rock, Tipp's Point, and Marietta's Landing), all agreed that summer attendance was lower than in previous years (see Table 4). All speculated that the heat and/or economy were factors in lower attendance. Excessive heat may well have been a factor in lower attendance. During the first four weekends of data collection, temperatures reached triple digits in Oklahoma.

Due to lower than expected response rates (n = 18) during the first weekend, the IRB procedure was modified so that every individual or group encountered was surveyed, thereby creating a census procedure. As before, only one adult individual per group was

surveyed, which was determined by the adult individual with the birthday closest to the research date. Single individuals encountered were surveyed as normal. Approval by the IRB was received, Friday, August 6th, 2010 and was implemented the 13th of August onward. During the first two weekends (July 30th, August 6th), 37 responses were collected. Once the procedure was modified, collection became more pronounced and in-line with researcher expectations.

Overall, 180 visitors were approached for inclusion within the study. Eight park visitors outright declined to participate. Response rate approximated 96% (n = 172). Total response rate accounting for two unusable surveys collected was 94% (n = 170). The sample size for both the confirmatory and exploratory factor analysis (EFA) was sufficient for analysis (n = 163).

Table 4

Lake Murray Summer Visitation 2010

	July 2010	August 2010	September 2010
Total Visitation	354,481	145,746	109,404

Sites: Data Collection

Originally, 18 sites would be visited creating a stratified sample, meaning that the each of the18 sites would have fairly equal representation (refer to Chapter III). For data collection purposes, though, this procedure created insurmountable problems. A number of the 18 original sites did not receive enough foot traffic for one data collector to accommodate. Meaning, if more than one researcher was on-site to survey more popular

areas while a second collector surveyed less popular areas then the site numbers would be more equally stratified. Unfortunately, the researcher was unable to spend time waiting in an unpopulated area while a smaller number of sites attracted the majority of visitors.

Therefore, of the 18 original sites, 12 were surveyed more heavily (see Table 5). Other areas had little or no foot traffic during visits (i.e., Duke's campgrounds, Pecan Grove Picnic Area, the Beach areas, and Tucker Tower). Because of this, these sites were visited briefly during a number of weekend trips, but not surveyed if there were no visible visitors present. The researcher chose not stay for extended periods once it was determined that no visitors were on-site.

Participants

All participants were treated according to Oklahoma State University Institutional Review Board guidelines. Respondents were approached by the researcher on-site at Lake Murray State Park during the course of seven weekends. The researcher introduced himself by providing each group or individual a business card (see Appendix E) and proceeded with an introduction of self and the study (see Appendix F). If a respondent agreed to participate, a copy of the Participant Information Sheet was provided for the participants' own records (see Appendix G). Participants consented to the study parameters by completing and returning the survey packet only. Following IRB suggestion, participants were not required to sign a consent document allowing respondent anonymity.

Thirty percent of respondents (n = 51) identified themselves as *45 – 55* years of age while 22.9% responded as *35 – 44* years of age (n = 39) (see Table 6). Eighty-six participants identified themselves as *males* (50.6%) while 84 identified themselves as

female (49.4%) (see Table 6). The majority of respondents identified themselves as *white* (86.5%); followed by *American Indian, Alaska Native* (5.3%); *Black, African American, or Negro* (1.8%); then *Asian Indian* (1.2%); one individual identified himself as *Polish* (.6%); five individuals did not report their race (2.9%); finally, three individuals identified themselves as multiple races (1.8%). Most individuals were identified as having no *Hispanic, Latino, or Spanish origin* (*n* = 156; 91.8%); a small percentage of respondents identified their origin as *Mexican, Mexican American, or Chicano* (*n* = 9; 5.3%); finally, a smaller group identified themselves as having *Other Origins than Hispanic, Latino, or Spanish* (*n* = 5; 2.9%) (see Table 7).

Regarding educational status, 38% of visitors obtained a high school equivalent degree (*n* = 65). No visitor self-reported having *less than a high school* degree (*n* = 0). Over a quarter of the respondents reported obtaining a *Bachelor's degree* (*n* = 43) closely followed by an *Associate's degree* (*n* = 38; 22.4%). Advanced degrees accounted for 14.1% of responses: *Master's* (*n* = 14; 8.2%), *Professional* (*n* = 4; 2.4%), and *Doctorate* (*n* = 6; 3.5%) (see Table 8).

Twenty-four percent of respondents reported earnings of *$50,000 to $74,999* (*n* = 41). Approximately 21% reported earnings of *$25,000 to $49,999* (*n* = 35). In total, 23.6% individuals reported earnings of more than $100,000 dollars (*n* = 40), while 14.7% of the participants reportedly earned *less than $25,000* (*n* = 25) (see Table 8).

Politically, individuals identified themselves with the highest frequency as *Conservative* (*n* = 61; 35.9%). Approximately 21% of respondents self-reported as *Moderate-Conservative* (*n* = 35) and 36 individuals reported he or she was affiliated as a *Moderate* (21.2%). Fifteen individuals reported he or she was *Moderate-Liberal* (8.8%)

and 20 reported they politically identified themselves with *Liberals* (11.8%). Three individuals chose not to respond (1.8%).

Twenty-four of the 170 surveyed individuals identified themselves as *day visitors* (14.1%) while 146 (85.9%) visitors classified themselves as *overnight visitors*. Finally, 44 individuals (25.9%) were visiting the state park in conjunction with a special event (e.g., birthday, anniversary, holiday), while 126 visitors (74.1%) did not identify their trip as a special event.

Table 5

Visitors per Surveyed Site

Site	Surveyed	Percentage
ATV	16	9.4%
Buzzard	22	12.9%
Cedar Cove	21	12.4%
Duke's	0	0%
Elephant Rock	22	12.9%
Golf Course	0	0%
Group Camps 1, 2, 3	0	0%
Lodge	1	.6%
Marietta's Landing	15	8.8%
Marina Beach Area	5	2.9%
Martin's Landing	22	12.9%
Pecan Grove	1	.6%
Rock Tower	22	12.9%
Sunset Beach Area	2	1.2%
Tipp's Point	22	12.9%
Tucker Tower	0	0%
Total	170	100%

Table 6

Demographic Information (Age x Gender)

Age	Gender		Total
	Male	Female	
18 – 24	10	3	13
25 – 34	18	19	37
35 – 44	16	23	39
45 – 54	28	23	51
55 – 64	8	12	20
< 65	6	4	10
Total	86	84	170

Table 7

Demographic Information (Race x Origin)

	Origin			
Race	No, not Hispanic, Latino, or Spanish in Origin	Yes, Mexican, Mexican American, Chicano	Yes, Other Hispanic, Latino or Spanish Origin	Total
Unclassified	0	3	2	5
White (1)	139	6	2	147
1, 2	1	0	1	2
1, 3	1	0	0	1
Black, African American, or Negro (2)	3	0	0	3
American Indian / Alaska Native (3)	9	0	0	9
Asian Indian	2	0	0	2
Polish	1	0	0	1
Total	156	9	5	170

Table 8

Demographic Information (Education x Income)

	Income						
Education	Less than $25,000	$25,000 to $49,999	$50,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	More than $125,000	Total
High School Equivalent	10	15	17	13	5	5	65
Associate's	6	8	8	8	4	4	38
Bachelor's	7	7	15	6	4	4	43
Master's	2	2	1	2	5	2	14
Professional Degree	0	3	0	0	0	1	4
Doctorate	0	0	0	0	1	5	6
Total	25	35	41	29	19	21	170

Findings

Missing Data

The researcher attempted to minimize missing data during the collection process. During collection, many participants preferred the researcher read the survey to the individual. This allowed the researcher to encourage each participant to answer each survey item. Some individual visitors preferred to complete the survey without the assistance of the researcher. The researcher briefly examined the responses to determine if any items had been missed after the individual responded to the complete survey packet. If an item was unanswered and noticed, the researcher re-approached the participant and either requested they complete the missing items or the researcher read the incomplete questions to the participant.

This procedure was adopted after inputting data from the first weekend of data collection. During this weekend, one particular respondent at Tipp's Point was quite enthusiastic and seemed invested in the study. She also had a unique European perspective. Her conversation with the researcher indicated that she would have distinctive responses to the items, but she failed to complete any questions from the Place Attachment Scale. Because this mistake was discovered after the weekend, the researcher determined that her survey packet was unusable. Only one other response packet was deemed unusable when the researcher and respondent (*survey site:* Lodge) failed to notice that he did not complete the New Ecological Paradigm Scale.

Overall, for the two questionnaires, 11 items were missing a response from a potential 4590 total item responses (i.e., 170 participants x 27 survey items). Throughout the analyses process, 15 individuals were removed due to multiple responses or missing

data. According to Vaske (2008), missing or multiple responses were handled with various techniques including: deleting the respondent, deleting the scale item, utilizing sample means, and other techniques determined inappropriate for this response pool. The researcher chose to delete the respondent; therefore, those participants who did not provide complete responses were excluded using the "exclude cases listwise" function. Vaske (2008) believed that the listwise deletion process was appropriate as long as more than 85% of the data was complete for most items. The response completion rate for this study was more than 85% completed (155 ÷ 170).

Vaske (2008) noted that data could be misinterpreted if randomness was not accounted for because patterns of missing data were more problematic than the quantity of missing data. Therefore, the missing data was examined for randomness to determine if there were patterns in how participants answered the survey items. Little's MCAR test was utilized to determine if the missing data were random or patterned (SPSS 19.0, 2010). The null hypothesis for this statistic was that data were randomly missing ($p <$ .05). In rejecting a null hypothesis, the data were likely nonrandom. For this study, however, the data was missing at random and the null was not rejected ($p = .445$).

Place Attachment

Reliability analysis utilizing Cronbach's alpha indicated reliable constructs for *Place Identity* (PI) and *Place Dependence* (PD) ($a = .904$ and $a = .897$, respectively). Cronbach's alpha was utilized to examine inter-item correlations to determine the internal consistency of the two subcomponents within the place attachment construct. According to Vaske (2008), a scale with internal reliability greater than .65 was considered adequate in recreation and parks research. Therefore, the two place subscales in this study

indicated good internal reliability. In calculating the *Place Identity* scale, two participants were excluded for missing data (n = 168). Only one person was excluded in calculating the *Place Dependence* subcomponent (n = 169).

The last item (item 12 in the full scale) was re-coded per previous research studies (Halpenny, 2010). It was later removed from the *Place Dependence* measure as analysis showed that the internal consistency of the scale dramatically increased without item twelve. Prior to deletion, internal consistency for the PD scale was .762. Upon deletion of the last item (item 12) alpha increased to .897. The researcher hypothesized that item 12, "the things I do at Lake Murray State Park, I would enjoy doing just as much at a similar site," created issues for respondents in that it was the only negatively worded question for this particular scale. Participants that showed higher resource dependence often agreed with this question even though a negative response would have been more consistent; likely, participants were confused by the wording.

Removing item 12 had precedent. Previous research studies eliminated the item prior to data collection, possibly due to its confusing nature (Budruk, Thomas, & Tyrell, 2009; Kyle et al., 2004b; Williams & Vaske, 2003). During analysis, Williams and Vaske (2003) found that item 12 should be removed in one sample of their multi-sample study. Halpenny (2010) also removed the item during the analysis phase, which created better internal consistency for her scale. Therefore, following Vaske's (2008) reasoning and previous research procedures, there was sufficient evidence for the removal of the item and it was removed from analysis.

Mean PI and PD scores appeared lower than hypothesized. Mean *Place Identity* was 3.625 while mean *Place Dependence* was 3.305 (see Table 9). This finding,

however, was not entirely surprising. Many individuals indicated off-handedly that this was their first visit to Lake Murray State Park.

New Ecological Paradigm

Prior to analysis, the seven even-items in the NEP Scale were re-coded so that agreement with the all items indicated a pro-environmental attitude (Budruk, Thomas, & Tyrell, 2009; Dunlap et al., 2000; Dunlap, 2008; Fielding, McDonald, & Louis, 2008; Hawcroft & Milfont, 2010). Again, as a unidimensional structure, and utilizing a Likert scale of one (*Strongly Disagree*) to five (*Strongly Agree*); a score of 15 equated to an anthropocentric worldview while an individual with a proenvironmental view scored a maximum of 75 (Manoli, Johnson, & Dunlap, 2007). According to the authors, a score of 45 was interpreted as neutral regarding the two dichotomous views measured by the scale. Finally, as previously indicated, missing data were excluded from analysis.

Table 9

Item and Scale Means, Standard Deviations, and Reliabilities

	Mean	SD
Place Identity (*n* = 168)		
1. Lake Murray State Park means a lot to me.	4.100	.801
2. I am very attached to Lake Murray State Park.	3.760	1.112
3. I identify strongly with Lake Murray State Park.	3.750	1.019
4. I have a special connection to Lake Murray State Park.	3.470	1.183
5. Visiting Lake Murray State Park says a lot about who I am.	3.390	1.100
6. I feel like Lake Murray State Park is a part of me.	3.270	1.151
	m = 3.625	*a* = .904
Place Dependence (*n* = 169)		
7. Lake Murray State Park is the best place for what I like to do.	3.760	1.116
8. No other place can compare to Lake Murray State Park.	3.140	1.165
9. I get more satisfaction out of Lake Murray State Park than from visiting any other state park.	3.460	1.154
10. Doing what I do at Lake Murray State Park is more important to me than doing it in any other place.	3.200	1.120
11. I would not substitute any other place for the type of recreation I do at Lake Murray State Park.	2.980	1.115
	m = 3.305	*a* = .897

CFA

Utilizing AMOS v.18, a confirmatory factor analysis of the unidimensional structure of the NEP Scale was tested. As noted earlier, even though multiple research studies indicated that the New Ecological Paradigm Scale was multidimensional, the authors of the scale believed that for an adult population the structure was one-dimensional. Therefore, following the suggestion of the scale's authors, a one-dimensional CFA was hypothesized and tested.

Prior to analysis, though, the graphical representation needed to be identified. According to Byrne (2010), identifying a model provided researchers information regarding whether there was a "unique set of parameters consistent with the data" (p. 33). Essentially, the identification procedures (prior to analysis) checked that estimated fit values could be drawn from the raw data. In performing a confirmatory factor analysis, over-identified models were necessary. Over-identified models indicated that there were more data points than estimable parameters, which resulted in positive degrees of freedom.

The equation $p\ (p + 1) / 2$, where p equals observed variables, was used to calculate the data points. Therefore, in this research study, $p = 15$ (i.e., NEP1, NEP2, etc.) and 120 data points existed (15 (15+1) / 2). To determine if a model was identified, regression coefficients (excluding 1.0), variances, and covariances were calculated. In the proposed model, 14 regression coefficients, 16 variances (15 error variances, one factor variance), and zero covariances were determined. In the proposed model, 30 parameters were estimated. To determine degrees of freedom, the parameters (30) were subtracted from the amount of data points (120), which equaled 90 degrees of freedom. This manual

calculation was confirmed by the AMOS output. The proposed model was over-identified, a desirable and necessary condition.

In determining whether the data fit the proposed model in a confirmatory factor analysis, goodness-of-fit indices were calculated between the hypothesized unidimensional model and the sample data. Byrne (2010) noted that when performing a confirmatory factor analysis, hypothesis testing differed from traditional methods and understandings. In confirmatory factor analyses, the null hypothesis "being tested [was] that the postulated model [held] in the population," meaning that the researcher "hopes not to reject H_0" (p. 70). Essentially, this meant that the graphical model was representative of the population. In rejecting the null hypothesis, for instance, the hypothesized structure would not be representative. Therefore, to confirm a one-dimensional structure for the NEP Scale, the researcher did not want to reject the null hypothesis.

Of note for confirmatory factor analysis was that the null hypothesis indicated that the model represented the sampled population. Therefore, rejecting the null was not desirable to confirm an underlying structure. In confirmatory factor analysis, it was important that the hypothesized model represented theoretical constructs or measurement scores in attempting to show that the model indeed represented these facets. In answering *research question #3*, "what were the environmental values of Lake Murray State Park visitors," the proposed measurement instrument needed to be confirmed as a unidimensional structure prior to summating the fifteen items (post-reverse coding of the even-numbered scale items), which determined individual's environmental values and comprised the measurement scale.

In determining whether the hypothesized structure existed, goodness-of-fit statistics were examined regarding the hypothesized unidimensional scale (see Table 10). The *CMIN* statistic, according to Byrne (2010), represented a Likelihood Ratio Test, which represented the X^2 statistic. Essentially, the X^2 statistic tested for adequate fit. A non-significant X^2 was desired, again, because to represent the hypothesized fit, the null hypothesis should not be rejected. The chi-square statistic for the NEP Scale indicated that the model was not fitting well when constrained to a one-dimensional construct as the statistic was significant ($p < .001$). For this index, according to Byrne, a higher probability indicated a closer fit between the hypothesized model and the perfect fit. For instance, Byrne noted that a "probability of less than .001" suggested that the data represented an unlikely event "occurring less than one time in 1,000 under the null hypothesis" (p. 76).

A noted issue of the chi-square statistic was that it was subject to sample size (Byrne, 2010; Paswan, 2009). Therefore, researchers were encouraged to examine other fit indices, which controlled for sample size effects in determining the accuracy of proposed model along with utilizing the chi-square statistical procedure. In determining the underlying structure, Paswan (2009, p. 5) recommended examining the chi-square statistic, one goodness-of-fit statistic (CFI or NFI), and one "badness-of-fit" statistic (RMSEA).

The Normed Fit Index (NFI) is considered a classic fit criterion though it also is affected by small sample sizes (Byrne, 2010; Hu & Bentler, 1999). Though AMOS determined that 163 participants was enough to analyze, the researcher believed that it represented a smaller than desired sample size. In this case, the CFI (Comparative Fit

Index) was utilized, which accounted for sample size effects. For both statistics (NFI and CFI), fit scores ranged from zero to 1.00. The cutoff value for a well-fitting model was .95 (Byrne, 2010; Hu & Bentler, 1999). Therefore, fit scores lower than this criterion indicated an unrepresentative model. As indicated in Table 10, both NFI and CFI indices were well below the .95 cutoff criteria. This again indicated that a unidimensional construct was not representative of the underlying structure of the NEP Scale (White, Virden, & van Riper, 2008).

The final goodness-of-fit or "badness-of-fit" statistic (Paswan, 2009, p. 5) examined was the root mean square error (RMSEA) index and its 90% confidence internal. MacCallum and Austin (2000) recommended this statistic be routinely used because RMSEA was sensitive to model misspecification due to sampling error. The authors also recommended utilizing confidence intervals allowing for better precision and estimation and that interpretation of the statistic yielded consistently appropriate "conclusions regarding the model quality" (Byrne, 2010, p. 81). Byrne summarized various cutoff criteria utilized by researchers and concluded that values indicating good fit were less than .05 and as high as .08. Values beyond .08 indicated mediocre to bad fit (values greater than .10).

In examining the RMSEA index for the NEP Scale, the value .094 indicated a mediocre to bad fit regarding the one-dimensional structure of the scale. The confidence interval provided a range of potential scores the true RMSEA could fall between. In examining this interval, it was clear that the hypothesized model did not fit the data well (see Table 10).

Paswan (2009) noted that factor loadings helped researchers in determining if individual indicators shared common high proportions of common variance in the one-dimensional NEP Scale. Paswan (2009) indicated that loadings should be greater than .5 in specifying validity. Most, but not all regression weights were significant (see Appendix K).

Table 10

Fit Indices for the NEP Scale (n = 163)

	CMIN (X^2)	*Df*	*p*	*NFI*	*CFI*	*RMSEA*	*LO90*	*HI90*
Model	219.729	90	< .001	.629	.733	.094	.079	.110

EFA

The confirmatory factor analysis yielded results that indicated that the hypothesized one-dimensional nature of the NEP Scale did not provide an adequate fit of the underlying structure. Therefore, an exploratory factor analysis (EFA) was performed. This was performed to examine the underlying dimensionality of the scale for this sample.

In determining the underlying scale structure, principal component factor analysis with Varimax rotation in SPSS v.18.0 was employed. Principal components factor analysis (PCA), as a technique, attempts to maximize the overall variance of the scale utilizing the smallest number of explanatory components (Brown & Raymond, 2007). DeCoster (1998) and Fabrigar, Wegener, MacCallum, and Strahan (1999) believed that researchers should utilize PCA when reducing the data to interpretable components,

which may not utilize all of the items from the scales for the purpose of further analysis. Thompson and Daniel (1996) noted that principal component extraction was appropriate as long as the researcher was explicit in stating this technique for potential future replicability studies and meta-analysis.

Varimax rotation was employed in an effort to make the structure of the underlying scale more decipherable (Fuqua, 2008; Thompson, 2004). According to Thompson, the Varimax rotation technique maximizes the differences between components in creating a simple structure for interpretation. Using this rotation method, each component maximized its variance loadings. Thompson reported that rotation was not unethical, but rather necessary in interpreting components by creating more simplistic underlying patterns through inter-correlation. If a simple structure was not created (too many variables cross-loading), Thompson recommended rotation as well.

In determining the extent of the number of components to retain for interpretation, Thompson (2004), Fuqua (2008), and Wuensch (2010) specified decision rules and steps in extracting and interpreting components. Wuensch (2010) suggested that prior to extraction the correlation matrix of the variables be examined. Any variables that did not correlate moderately or highly with other variables should be deleted prior to analysis. Once extraction occurred, Bartlett's test of sphericity and KMO statistical tests provided data regarding whether the scale was appropriate for factor analyzing. Fuqua (2008) noted that KMOs greater than .40 (.70, ideally) indicated that factor analyzing was appropriate. This was confirmed as well by rejecting Bartlett's test. Once these tests were examined, Costello and Osborne (2005) recommended examining item communalities (.40 or greater being adequate in social science research), variable loadings on the

component matrix (greater than .32), and finally, in examining cross-loadings among variables in the component matrix.

In retaining components, one commonly used method is the Kaiser rule in which components with eigenvalues greater than 1.0 were retained (prior to rotation) (Fuqua, 2008; Hayton, Allen, & Scarpello, 2004; Thompson, 2004). This rule was often utilized with other methods because of its subjective nature with components being just above or below 1.0. The Scree Plot test was also utilized in which a graphic representation showed the components accounting for the greatest variance (in descending order) until components became too small and trivial for analysis.

First, in examining the correlation matrix for the full NEP Scale, five items did not correlate on any other variable (less than .30). Items seven and nine were removed, as well as the re-coded items two, twelve, and fourteen. Again, these five items were removed from analysis prior to extraction. Costello and Osborne (2005) noted that the general rule in performing a factor analysis was at least a ratio of ten participants per one scale item. This ratio was maintained (10-items < 167 participants). Again, the authors noted that stronger data in the social sciences exhibited communalities of .40 to .70, with .8 or greater being desired though unlikely. Variables that exhibited cross-loadings and low communalities made data interpretation difficult (Costello & Osborne). Variables with low communalities likely represented unique information not related to other scale items and should be removed (Costello & Osborne; Wuensch, 2010). During subsequent research studies, though, the authors recommended that a researcher consider adding more items to tap these specific dimensions.

The components were allowed to extract with no limitations using the principal component analytic technique and Varimax rotation. Three components emerged, but in examining the components, only one variable loaded on component three without cross-loading (NEP 11). A two-component solution was examined. Item 11 was removed due to low communality and cross-loading in the three component solution (h^2 = .215) (Budruk, Thomas, & Tyrrell, 2009; Costello & Osborne, 2005). Item 10R was removed from further analysis as well due to a low communality score (h^2 = .390) and cross-loading with both components (Budruk, Thomas, & Tyrrell). Removing cross-loaded items was not without precedent (Budruk, Thomas, & Tyrrell) as these authors removed item six due to heavy cross-loadings on their three component solution; though, Budruk, Thomas, and Tyrrell did not remove item five which cross-loaded on component one and three.

Following Costello and Osborne (2005) recommendations, items with cross-loadings and low communalities were removed from analysis. The final component structure extracted was a two-component structure (n = 167). The Bartlett's test of sphericity, X^2 (28) = 297.060 (p < .001) and the KMO Sampling Adequacy test, .766, indicated that factor analyzing the scale was appropriate.

After removing the five non-correlating variables and the two variables with low communalities from the analysis, two components were extracted with eigenvalues greater than 1.0. The two components accounted for 55.754% of the variance. Component 1 was labeled *Eco-Concern* (items 1, 3, 5, 13, and 15). These items focused specifically on the delicacy and need to protect nature. Component 2 was labeled *Anti-Anthropocentrism* (items 4R, 6R, and 8R) and high agreement with these reverse-coded

questions indicated anti-anthropocentric attitudes (see Appendix M). In essence, agreement with *Anti-Anthropocentrism* values represented a respondent's disbelief that human intervention and/or development could protect nature from human-caused eco-issues. Due to the reverse-coding, high agreement with any item indicated a more pro-environmental attitude. Therefore, *Strong* or general *Disagreement* to *Anti-Anthropocentric* items indicated anthropocentric attitudes (i.e., anti-anti-anthropocentric).

According to Costello and Osborne (2005), components should have no fewer than three items. See Table 11 for a summary of these coefficients and communalities. Also, the components were not overwhelming correlated with one another, though, based on the values that emerged it was not unexpected that the components would be somewhat correlated with each other (r = .321) (see Table 12). Although, the possibility exists that a person hold proenvironmental values and believe the environment is in crisis, but that solutions exist within human potential and intervention (i.e., anthropocentric attitudes).

Wuensch (2010) suggested that after an extraction, the researcher should examine extractions with one less and one extra component. A one- and a three-component solution were examined. The one-dimensional component suffered from multiple, extremely low communalities (less than .10) on items 4R, 6R, and 8R. The coefficients on the component matrix were also low for two items (NEP 6R, NEP 4R). Conversely, the three-component solution suffered from multiple cross-loadings amongst items (NEP 8R and 15) with only two items loading on third component, violating Costello and Osborne's (2005) suggestion that no fewer than three items should load on a component. Therefore, the two component solution was retained.

Reliability analysis utilizing Cronbach's alpha indicated adequate construct reliability for *Eco-Concern* and *Anti-Anthropocentrism* (a = .784 and a = .594, respectively). Cronbach's alpha was utilized to examine inter-item correlations to determine the internal consistency of the two components within the NEP Scale. Though, the internal reliability for the *Anti-Anthropocentrism* scale was lower than Vaske's (2008) recommendation for parks and recreation literature, previous researchers utilizing the NEP Scale retained components and/or factors with similar alphas (Budruk, Thomas, & Tyrrell, 2009; Castro & Lima, 2001; Thapa, 1999; Thapa & Graefe, 2003). Therefore, the two components in this study were retained. In calculating the components, one participant was excluded from *Eco-Concern* (n = 169) and two participants were excluded from *Anti-Anthropocentrism* due to missing data (n = 168).

Table 11

Summary of Principal Components Analysis for the NEP Scale

NEP Scale	1	2	h^2
NEP 1	.685	.063	.473
NEP 3	.719	-.056	.520
NEP 4R	-.071	.762	.585
NEP 5	.781	-.033	.611
NEP 6R	.010	.750	.562
NEP 8R	.304	.691	.569
NEP 13	.701	.109	.503
NEP 15	.758	.248	.636
Sums of Squared Loadings	2.897	1.564	
Percentage of Variance	36.206	19.547	

Table 12

Component correlations

Component	1	2
1	.947	.321
2	-.321	.947

Environmental Values

Though academic at best since the CFA disconfirmed the unidimensional structure, treating the NEP Scale as a unidimensional scale yielded scores from 24.00 to 75.00. As a unidimensional structure, an extreme anthropocentric environmental view would yield a score of fifteen while a proenvironmental view would score at most a seventy-five. The mean for the NEP Scale was approximately 51.35; the median was 51.00; finally, the most occurring scores (modes) were 47.00 and 53.00. The standard deviation for the sample was approximately 8.34. Again, the CFA disconfirmed the one-dimensional structure of the NEP Scale, but these scores provided a picture regarding the underlying environmental attitudes of Lake Murray State Park visitors.

Post-exploratory factor analysis, two components emerged for the NEP Scale. These two values incorporated an ecocentric as well as anthropocentric dichotomy in that persons who scored highly on *Eco-Concern* (component 1) were more ecocentric in their views (e.g., “humans are severely abusing the environment;” “if things continue on their present course we will soon experience a major ecological catastrophe”). Persons who scored highly on the non-reversed scored items for the *Anti-Anthropocentrism* were less confident in human interventions impeding impending environmental issues (e.g., human ingenuity will insure earth is livable; “the earth has plenty of natural resources”). Therefore, lower scores on the reverse-coded component indicated anthropocentric intervention values in that human progress will hinder down negative environmental consequences (see Table 13). These individuals believed that human capacity would remedy any environmental issues and that the planet was healthy and plentiful. This component was similar to Thapa’s (1999) second factor, *technocentric*, which he

described as “almost arrogant in its assumption that man is supremely able to understand and control events to suit his purposes” (p. 432; O’Riordan, 1981, p. 1). Disagreement with *Anti-Anthropocentrism* items paralleled factors like *anthropocentrism* (“humans were the dominant or central force in nature; Budruk, Thomas, & Tyrrell, 2009, p. 829) and *anthropocentric-concern* (“belief that it is right, appropriate and necessary for nature and all natural phenomena and species to be used and altered for human objectives”)(Milfont & Duckitt, 2004, p. 300).

Table 13

Anti-Anthropocentrism Frequency Distribution

	NEP 4R	NEP6R	NEP8R
Strongly Disagree	19	68	12
Mildly Disagree	61	75	34
Unsure	44	14	32
Mildly Agree	31	7	61
Strongly Agree	13	6	31

These components were summated and divided by the items which loaded on the component, which was the technique recommended for exploratory research (DiStefano, Zhu, & Mindrila, 2009; Hair, Black, Babin, Anderson, & Tatham, 2006; Tabachinck & Fidell, 2001). For the regression analysis this summation process was appropriate as both scales (Place Attachment and the NEP) utilized the same Likert scale-type (DiStefano, Zhu, & Mindrila). The component *Eco-Concern* was calculated by adding items 1, 3, 5, 13, 15 and dividing by five. This was done to maintain the interpretability of the scores

by keeping it aligned with the scale metric (*1 – Strongly Disagreed* to *5 – Strongly Agreed*) (DiStefano, Zhu, & Mindrila). The second component summed the items 4R, 6R, and 8R divided by three in creating interpretable scores (*1 – Strongly Disagreed* to *5 – Strongly Agreed*) (DiStefano, Zhu, & Mindrila).

For *Eco-Concern*, the mean score was 3.693 (n = 169). The mode score was 4.20, which accounted for more than 14% of the responses. Regarding the *Anti-Anthropocentrism*, the mean score 2.675 (n = 168). The mode for the *Anti-Anthropocentrism* view was 2.670, which accounted for more than 22% of the responses. Almost 64% of the responses were accounted for with persons responding between 1 and 2.67.

Correlations between the subcomponents of place and environmental concerns were detailed in Table 14.

Regressing Place Attachment and the NEP

For the regression analysis, the two components extracted from the NEP Scale were summated and divided by the number of items, which aligned the scores with its Likert scale (DiStefano, Zhu, & Mindrila, 2009). This helped interpret the scores. To utilize component scores, DiStefano, Zhu, and Mindrila recommended two types of methods with multiple techniques within each method. Non-refined methods were more simplified like summating scores, weighting scores, and utilizing cut-offs. Refined methods involved creating standardized linear combinations for the observed variables. The authors wrote that refined methods "aim to maximize validity" (p. 4).

Though utilizing refined methods may have been desired, these techniques were only applicable when scales were subjected to exploratory factor analyses. Therefore,

these techniques were unusable as the Place Attachment Scale was not factor analyzed. As noted previously, the structure of this scale has been tested many times and an exploratory factor analysis would have been redundant. Because of this restriction, non-refined methods were chosen; specifically, utilizing the average-summated score method for both the NEP Scale and the Place Attachment Scale, which was previously described.

Ten regression models were examined for significance on the NEP Scale. Individual components were placed into the model sequentially and examined as to how they affected the NEP subcomponents. The eleventh and twelfth models examined how the sociodemographic indicators affected the subcomponents of the Place Attachment Scale.

Table 14

Correlations among Place Identity (PI), Place Dependence (PD), Eco-Concern (EC), & Anti-Anthropocentrism (AA)

	PD	PI	EC	AA
PD	1			
PI	.728**	1		
EC	.144*	.146*	1	
AA	-.065	-.129*	.209**	1

** Correlation is significant at the 0.01 level (1-tailed)

* Correlation is significant at the 0.05 level (1-tailed)

Regression Models 1, 3: Place Identity (PI) and 2, 4: Place Dependence (PD)

Models 1 through 4 included the place attachment subcomponents individually entered into models explaining *Eco-Concern* and *Anti-Anthropocentrism*. Model 1 examined the significance of *Place Identity* (PI) on *Eco-Concern* (EC). *Place Identity* (*n* = 166), when entered into the equation, did not yield significance in explaining *Eco-Concern* [$F(1, 165) = 3.685$; $p = .057$]. Beta scores were also insignificant (b = .142, β = .148, $p = .057$).

Model 2 examined the significance of *Place Dependence* (PD) on *Eco-Concern* value scores. *Place Dependence* (*n* = 167) did not yield significance in predicting *Eco-Concern* values [$F(1, 166) = 3.627$; $p = .059$]. Beta scores were also insignificant (b = .129, β = .146, $p = .059$).

Model 3 examined PI and its affect on *Anti-Anthropocentric* values. *Place Identity* (*n* = 165) was also non-significant when entered into the regression equation. *Place Identity,* in explaining, *Anti-Anthropocentrism* yielded – [$F(1, 164) = 3.493$; $p = .063$]. Beta scores were also insignificant (b = -.132, β = -.144, $p = .063$).

Model 4 examined PD regarding *Anti-Anthropocentrism*. *Place Dependence* (*n* = 166) was also non-significant in predicting *Anti-Anthropocentrism* [$F(1, 165) = 1.347$; $p = .247$]. Beta scores were also insignificant (b = -.077, β = -.090, $p = .247$).

Regression Models 5 and 6: Place Identity, Dependence, and Environmental Values

Model 5 incorporated both place attachment subcomponents in the regression analysis for *Eco-Concern* (*n* = 165) while Model 6 did the same for *Anti-Anthropocentrism* (*n* = 164) subscales. Both independent variables were entered into the

model for *Eco-Concern* utilizing the Stepwise method. Variables were entered into the equation when the Stepwise method yielded no variables entered into the regression equations. Stepwise enters variables sequentially based on the correlation and significance of both variables (Vaske, 2008). These variables are entered and removed based on their significance in explaining the regression equation.

Both Attachment subcomponents were non-significant in predicting *Eco-Concern*. To examine the model and beta coefficients, both independent variables were entered so that all variables were entered into the model simultaneously (Vaske, 2008).

Again, the model entering PI and PD was non-significant for *Eco-Concern* [$F(2, 163) = 2.075$; $p = .129$]. The standardized beta coefficient for PI was non-significant (b = .084, β = .087, $p = .440$). The beta coefficients for PD were also non-significant (b = .072, β = .082, $p = .468$).

Using the Stepwise method, neither PI nor PD was entered into the regression equation explaining *Anti-Anthropocentrism* ($n = 164$). Entering both independent variables for *Anti-Anthropocentrism* yielded [$F(2, 162) = 1.840$; $p = .162$]. The beta coefficients for PI were non-significant (b = -.169, β = -.184, $p = .111$). The beta coefficients for PD were also non-significant (b = .046, β = .054, $p = .638$).

Regression Models 7 and 8: Sociodemographic Indicators and Environmental Values

Model 7 included all demographic indicators. Utilizing the Stepwise method for entering independent variables, two indicators were significant for *Eco-Concern* values [$F(2, 156) = 10.510$, $p = .000$]. The two indicator variables that affected *Eco-Concern* included *Conservative* (b = -.447, β = -.259, $p = .001$) political affiliation and an income

between *$100,000 to 124,999* (b = -.587, β = -.228, *p* = .003). Both of these indicators were negatively related to *Eco-Concern* values.

The beta values (not *standardized* β) showed the negative relationship between *Eco-Concern* and the included independent variables. Because *Conservative* was negatively associated with *Eco-Concern*, as one increased, the other would decrease. For example, if a person identified him-, herself, as a *Conservative,* then *Eco-Concern* would decrease as it was negatively associated in this sample. Regarding this sample, individuals whom classified themselves as *Conservative* were less concerned about the environment. For this sample, as well, it appeared that individuals reporting higher income had a negative relationship to *Eco-Concern* values as well.

Even though past conventional belief was that more affluent individuals likely held eco-centric beliefs, previous research indicated that income did not significantly affect environmental attitudes or behaviors (Dunlap & Mertig, 1995; Hirsh, 2010; Kennedy, Beckley, McFarlane, & Nadeau, 2009). For instance, Kennedy et al. noted that affluent individuals often chose to drive to work rather than ride public transportation while low-income individuals were unable to afford environmental products. Perhaps, regarding the current study, more affluent individuals preferred, and could afford, motorized activity (generally regarded as environmentally-harmful) at this specific site.

The correlation of the model was $R = .345$, showing how strongly the two predictors were related to the *Eco-Concern* values (Fielding, 2009). The *R-squared* statistic can be thought of as model fit (similar to the CFA fit indices discussed previously), in that a larger R^2 shows how much of the variance is explained by the model and not residual or error (Fielding, 2009). For this model, $R^2 = .119$. Therefore, this

model explained approximately 11% of *Eco-Concern* values. This model did not account for much variability in how *Eco-Concern* worldviews were created.

Model 8 examined how the sociodemographic indicators explained *Anti-Anthropocentrism* (n = 157). For this model, the categorical variable *income* between *$50,000 to 74,999* (b = -.329, β = -.175, p = .027) and *age 55 to 64* (b = .435, β = .196, p = .028) were significant. The older participants were *Anti-Anthropocentric* (AA) in their values toward the environment while, again, middle-income-earners more agreed with anthropocentric attitudes. This mirrored the previous results in regards to *Eco-Concern* as individuals with more money were less likely to hold *Eco-Concern* values. Again, research was indicative that income was inconclusive as a predictor of environmental values (Dunlap & Mertig, 1995; Hirsh, 2010; Kennedy, Beckley, McFarlane, & Nadeau, 2009).

Perhaps as individuals age, they become more aware of their behavioral impacts on the environment. From observation, many of the older visitors preferred lower impact recreational activities at Lake Murray State Park (though their behaviors were also environmentally degrading). These individuals seemed more intent on camping in their RVs and sitting at the lakeside. Younger individuals, oppositely, preferred to RV and motorboat at the lake. Also, perhaps older individuals know more and become more concerned about future generations having access to the same environments and experiences that the older individual did. Aminrad, Zakari, and Hadi (2011) reported that when looking at Iranian university students, there were statistically significant differences in more general concern for the environment and older respondents. Though this study examined a unique population of university students (and generalizability should be

cautioned), they reasoned that general life experience and learning may have contributed to more concerns with older populations. Perhaps, the same was seen with the sample. Older individuals had more life experiences and more time to learn from literature, media, and personal experience.

This model was significant [F(2, 155) = 4.486, p = .013]. The model explained approximately 6% of the *Anti-Anthropocentrism* (R^2 = .055). The variables were not strongly correlated with AA (R = .234).

Regression Models 9 and 10: Sociodemographic Indicators, Place Identity, and Dependence and Environmental Values

Model 9 included all sociodemographic indicators as well as the two Place Attachment subcomponents in examining *Eco-Concern* values. Utilizing the Stepwise method for entering independent variables *Female* (b = .250, β = .149, p = .047), *Place Dependence* (b = .142, β = .161, p = .033), *Conservative* (b = -.415, β = -.238, p = .002), and *$100,000 to 124,999* (b = -.646, β = -.245, p < .001) were significant in explaining *Eco-Concern* values. The regression model for these four variables was [F(4, 151) = 7.687, p = .000]. This model explained approximately 17% of the *Eco-Concern* variance (R = .411, R^2 = .169).

Similar to previous findings (see Chapter II) gender seemed to affect proenvironmental attitudes. Females, more often, held proenvironmental values while males did not in the literature (Caro, Pelkey, & Grigione, 1994; Hirsh, 2010; Merchant, 2007). *Place Dependence*, as well, positively affected *Eco-Concern* in this sample. Likely, individuals who relied upon Lake Murray State Park were interested in maintaining the resource and environment for their continued use while also

knowledgeable and concerned about environmental issues. One future explorative study might examine whether individuals connect personal behavior in a specified place (i.e., a state park) to a generalized environment (i.e., the Earth). This finding could also be interesting if future research examined the type of activity participation. Potentially, the individuals who indicated higher environmental concern were campers, fishermen, or RV camping only. Affiliation and income negatively affect the dependent variable, previously considered.

For Model 10, in examining *Anti-Anthropocentric* values, all sociodemographic indicators as well as the two *place attachment* subcomponents were included. Utilizing the Stepwise method for entering independent variables income between *$50,000 to 74,999* (b = -.342, β = -.182, p = .022) and age *55 to 64* (b = .456, β = .185, p = .020) were significant in explaining *Anti-Anthropocentric* values. The regression model for these two variables was [$F(2, 152) = 4.886$, p = .009]. This model explained approximately 6% of the variance (R = .246, R^2 = .060). These findings were similar to Model 8. Refer to the discussion in Model 8 for hypotheses regarding these findings.

Regression Models 11 and 12: Sociodemographic Indicators and Place Attachment

Sociodemographic indicators were also examined in how these affected *Place Identity* and *Place Dependence*. The first regression analysis examined how the sociodemographic indicators affected *Place Identity* (n = 157). Utilizing the Stepwise method, *Yes, Other Hispanic, Latino, or Spanish origin* (b = -1.138, β = -.173, p = .026) and *Less than $25,000* (b = -.611, β = -.240, p = .002) were significant in the regression

model [F (2, 155) = 6.980, p = .001] explaining *Place Identity*. This model explained about 8% of the variance for PI (R = .287, R^2 = .083).

It appeared that those individuals who identified themselves as *Yes, Other…* did not identify with Lake Murray State Park for their recreational needs. Personally, for these individuals, the elements were not present (or strong enough) at the park to create emotional significance for the visitor. This emotional significance was important in forming *place identity* (Williams & Vaske, 2003). The park (and the recreation it supported) or the type of visitor that utilized the park may create an atmosphere detrimental to non-white-dominant, non-Hispanic cultures. Also, a larger sample size was preferred with this group.

Again, those who were categorized as *Less than $25,000* apparently did not have the experiences that created *place identity*. Williams and Patterson (1999) noted that places represented who we are to others. Perhaps Lake Murray State Park and its recreational services and opportunities did not represent the type experiences necessary for this population to identify with this particular place. Perhaps with both of these groups, neither experienced the park enough to identify with Lake Murray (Backlund & Williams, 2004; Proshansky, Fabian, & Kaminoff, 1983; Scannell & Gifford, 2010).

The second regression analysis examined how the sociodemographic indicators affected *Place Dependence* (n = 158). Utilizing the Stepwise method, six indicator variables were significant in explaining *Place Dependence* for this sample. The six variables include *Special Event* (Yes) (b = -.571, β = -.265, p = .000), *Yes, Other Hispanic, Latino, or Spanish origin* (b = -1.766, β = -.249, p = .001), *Less than $25,000* (b = -.791, β = -.288, p = .000), *High School Equivalent* (b = .303, β = .151, p = .039),

$75,000 to 99,999 (b = -.494, β = -.198, p = .011), and *More than $125,000* (b = -.487, β = -.171, p = .026) in the regression model [$F(6, 152) = 6.563$, p = .000].

It appears that individuals who were *Yes, Other…* in origin were less dependent on Lake Murray State Park for their recreational needs. Perhaps other parks better suited their outdoor needs. Lake Murray seemed to focus on motorized camping and boating. Perhaps these individuals had other lakes they preferred for these activities or they did not prefer these types of activities for their outdoor recreation and could easily substitute hiking or camping elsewhere.

Individuals who were attending the state park for a *Special Event* also appeared not to be dependent upon the state park for their recreational needs. Perhaps, visitors traveled during the holiday seasons and did not always return to Lake Murray.

Again, those with higher incomes were less dependent upon Lake Murray as a place. Perhaps this group preferred to travel to different parks and areas to satisfy their outdoor recreational needs. Again, though, perhaps these groups consisted of first time visitors as well. As for groups with *Less than $25,000*, perhaps this group contained first-time users or that the type of outdoor recreational activities they preferred did not depend on a lake atmosphere, such as for motorboating.

This model accounted for about 21% of the variance in explaining *place dependence* for this sample (R = .454, R^2 = .206).

CHAPTER V

DISCUSSION

The purpose of this study was to determine if place attachment in park users explained environmental values. To examine this primary research question, Lake Murray State Park visitors in Oklahoma were surveyed on-site using three survey measures. One survey measured a visitor's place attachment (Williams & Vaske, 2003) to Lake Murray State Park. A second survey measured a park visitor's environmental values (Dunlap, Van Liere, Mertig, & Jones, 2000). Finally, in an effort to determine the demographics of visitors using Lake Murray State Park as well as how these sociodemographic indicators affected place attachment levels and one's environmental values, a demographic survey was provided and answered by visitors.

Though the hypothesis seemed simple, a number of steps were taken to analyze it. First, the New Ecological Paradigm Scale was examined as a unidimensional measure using confirmatory factor analysis (CFA) to disconfirm the structure of the scale as hypothesized by the NEP Scale creators. Once the one-dimensional nature of the scale was disconfirmed for this particular sample, a principal component analysis (PCA) was conducted. The analysis revealed two subcomponents. The first subcomponent represented concern for the environment, limited resources of the planet, and the negative consequences of human actions.

The second subcomponent represented a human-centered value. Higher agreement with this component seemed representative of a value that human interventions would not be enough to avoid negative environmental issues. Disagreement with this component represented a value that humans could control future environmental issues through technology, development and the inherent strength of nature.

Finally, the various variables and indicators were regressed through a series of analyses that revealed *Place Identity* and *Place Dependence* were not significant in explaining *Anti-Anthropocentric* values toward the environment, though income (*$50,000 to 74,999*) and age (*55 – 64*) were significant. Gender (specifically, *Female*), *Place Dependence*, political affiliation (*Conservative*) and income (*$100,000 to 124,999*) were significant for *Eco-Concern*.

Summary of Study

This study examined the effect that place attachment potentially had on environmental values in outdoor recreationists. To examine this type of population, state park visitors at Lake Murray State Park near Ardmore, Oklahoma were surveyed. Each participant completed the Place Attachment Scale, the New Ecological Paradigm Scale, and a demographic survey.

Collection of data occurred on-site at Lake Murray State Park during the course of seven weeks. The majority of the collection occurred during weekends. Only consenting adults older than 18 years participated in this study. One-hundred seventy survey packets, which included the three measures and a Participant Information Sheet, were completed. Sample sizes for the various statistical analyses were different as persons with missing data or multiple responses were excluded from analysis.

Discussion of Findings

The following discussion examined the four research questions posed for this study. These questions included examining the relationships between place and environmental values as well as how the demographic indicators affected each variable.

The second research question posed for this study was how were park visitors attached to the state park? Again, the mean PI and PD scores appeared lower than originally hypothesized. Mean *Place Identity* was 3.63 while mean *Place Dependence* was 3.31. These scores were standardized to the Likert scale utilized for the survey measures (1 – *Strongly Disagree* to 5 – *Strongly Agree*). Park visitors, in terms of the Likert scale, fell between 3 (*No Opinion*) and 4 (*Agree*). This meant that the mean scores for the park visitors reflected that they had positive, but minor attachment to the park as it related to their identity and what they liked to do at the park.

It appeared that visitors identified more highly with the concept of the park than the resources available within the park. For instance, visitors reported that the park itself meant "a lot to me" (m = 4.100), that they were "very attached" (m = 3.760), and "identified with" the park (m = 3.750) (see Table 9). Conversely, while Lake Murray was the "best place for what I like to do" (m = 3.760), many felt that other parks compared just as well to Lake Murray (m = 3.140) and that they "would not substitute any" other parks for the type of recreation that the individual preferred at Lake Murray (m = 2.980). It was possible that the higher score for Lake Murray being the "best place for what I like to do" correlated with place identity or simply that Lake Murray was less expensive or closer than other parks offering similar resources. As the mean scores for both subcomponents illustrated, visitors were positively, but weakly attached to the state park.

These findings were surprising as they differed from previous research literature. For instance, Budruk, Thomas, and Tyrrell (2009) found that participants had higher PI (m = 4.22) and PD (m = 3.69) scores among Indian green-space users. However, the researchers utilized a smaller area located within the seventh largest city in India and reported that city users appeared to visit multiple times per day. This indicated that the green-space was closer to users who could visit during work breaks and/or lived close to the park boundaries. Many visitors utilizing Lake Murray State Park were not residents in Ardmore. Rather, they traveled from other areas in Oklahoma, Texas, Kansas, and Arkansas. Therefore, they may have had less overall attachment to the park because visiting Lake Murray was a more specialized event, a weekend getaway rather than being able to visit daily. The Indian visitors, who lived within the city-limits that contained the green-area, were able to visit more often and likely had higher attachment to their park than the visitors sampled in this study because of proximity.

Halpenny (2010) found that the place attachment scores were likely affected by a large number of first-time users. She reported that almost one-fifth of the participants were first-time users, which probably accounted for lower PD (m = 2.90) and PI (m = 3.80) scores. Halpenny noted that first time users may be considered park collectors (Urry, 2003) who were considered one-time tourists or infrequent visitors. These types of visitors traveled park-to-park collecting experiences and memories rather than bonding with specific places and were more likely to visit and not return.

Though the researcher for this study did not track whether visitors were first-time Lake Murray State Park visitors, potentially 20 or so individuals expressed that they were not confident in participating in the study because the day of their participation was their

first visit to Lake Murray. In consideration of future research, determining the type of visitor (i.e., first-time, repeat-visitor) will be highly important as previous research studies indicated that multiple experiences within a specific setting related to development of place attachment (refer to Chapter II). For park staff, as well as researchers, it becomes important to track new visitors (e.g., advertising, for instance) and repeat visitation in terms of park purpose, why users visited (i.e., cultural, recreational, historical), and what would create higher return visitation.

The third question posed for this research study was, 'what were the environmental values of Lake Murray State Park visitors?' Though this question appeared simple, the measurement scale utilized created a less clear picture of the users' values. In creating the New Ecological Paradigm (NEP) Scale, Dunlap et al. (2000) and Dunlap (2008) wrote that the scale was unidimensional, though five facets were utilized to create the 15 questions for the scale. According to Dunlap et al. (2000), the five facets tapped into an overall environmental worldview. If utilized as a unidimensional measure, then it summed from 15 (anthropocentric values) to 75 (proenvironmental values) and a score of 45 was considered neutral. Prior to summation, the even-items were reverse-coded.

Again, as an academic exercise, the NEP Scale when treated unidimensionally for this sample and yielded scores from 24.00 to 75.00. The mean for the NEP Scale was approximately 51.35; the median was 51.00; finally, the most occurring scores (modes) were 47.00 and 53.00. Therefore, while individuals had extreme anthropocentric and ecocentric values, the majority of the sample consisted of individuals who were neutral in terms of these two values of the environment.

Research utilizing the 15-item NEP Scale has yielded uni- and multi-dimensional factors. Therefore, prior to determining the environmental values held by Lake Murray State Park users, the measurement scale was tested for unidimensionality, which was disconfirmed. The factor analysis to determine the dimensionality of this scale for this sample proved difficult.

Though the principal component analysis (PCA) yielded a two-component structure, seven items were removed due to low communalities and/or excessive cross-loadings with items. Ray (2007) noted that researchers have previously supported five participants per item, but small communalities as well as cross-loading items may be alleviated by increasing the sample size (e.g., Cliff & Pennell, 1967; Kline, 1998; MacCallum, Widaman, Zhang, & Hong, 1999; Pennell, 1968; Thompson, 2004). In conducting the PCA of the NEP Scale, participant to item ratio was more than 10:1 for this study. Even so, increasing the sample size to 20 participants or more for every one item would likely create a better structure for subsequent research studies using the NEP Scale by reducing cross-loadings and low communalities.

Dunlap et al. proposed that the NEP Scale measured proenvironmental (higher scores) or anthropocentric (lower scores) values by tapping into ideas of *eco-crisis, anti-anthropocentrism, balance of nature, human exceptionalism,* and *limits to growth*. These were facets that comprised an overall proenvironmental worldview. The two-component solution for this sample yielded a similar designation in that one component, *Eco-Concern,* was built upon items like “we are approaching the limit of the number of people the earth can support,” “humans are severely abusing the environment,” and “if things continue on their present course, we will soon experience a major ecological

catastrophe." This component combined the facets of *balance of nature*, *eco-crisis*, and *limits to growth* hypothesized by Dunlap et al. (2000). Conversely, the second component, *Anti-Anthropocentrism*, was labeled as such by items like "human ingenuity will insure that we do NOT make the earth unlivable," "the earth has plenty of natural resources if we just learn how to develop them," and "the balance of nature is strong enough to cope with the impacts of modern industrial nations" (see Appendix M). This component seemed *anthropocentric* and tapped the *human exceptionalism* dimension in that individuals believed that human were fundamentally more worthwhile than non-humans (Lautensach, 2009) and that human intervention could prevent harm through the development of new technology, for instance (Dunlap et al.).

This two-dimensional scale differed from that hypothesized by Dunlap et al. (2000). It appeared that the NEP Scale was tapping multiple dimensions and not the overall proenvironmental value espoused by the authors of the scale. A follow-up study regarding the dimensionality and validity of the scale should explored to determine the constructs that are being tapped the NEP Scale.

Relationship of Place Attachment and Environmental Worldviews

The first research question examined in this study was to determine if place attachment was a significant factor in predicting proenvironmental values among park visitors at Lake Murray State Park when controlling demographic variables. The results indicated that neither *Place Identity* nor *Place Dependence* were significant in explaining *Eco-Concern* or *Anti-Anthropocentrism* values. Furthermore, combining the two place attachment subscales in a regression model examining both environmental values as dependent variables yielded non-significant results.

For this sample, it appeared that place attachment was not related to an individual's environmental values. These results were surprising as previous research indicated that moderate, positive levels of *Place Dependence* and *Place Identity* positively affected proenvironmental values (Budruk, Thomas, & Tyrrell, 2009). Furthermore, researchers found that higher levels of *Place Identity* were associated with increased environmental concern (Budruk, Thomas, & Tyrrell; Kyle et al., 2004a; Stedman, 2002; Vaske & Kobrin, 2001; Vorkinn & Riese, 2001).

Again, the researcher hypothesized that the place attachment subscales would positively affect proenvironmental values due to the fact that as one became more attached through personal connection and dependence on resources, an individual would want to protect those resources for self and others. The results above may speak to a number of issues. First, again, many users (not specifically counted) expressed that at the time of their inclusion in the study they were visiting Lake Murray State Park for the first time. Most of these visitors stated that they enjoyed the park and would likely return in the future. It was probable that being their first time at the park (and perhaps surveyed on their first days within the park) individuals were not connected personally or functionally to the resource.

Again, researchers believed that individuals developed attachment to place through their experiences and use (Fournier, 1991; Low & Altman, 1992; Nabhan & Trimble, 1994; Relph, 1976; Ryan, 2005; Tanner, 1980; Tuan, 1980; Weber, 2000; White, Virden, & van Riper, 2008; Winter & Lockwood, 2005). For first-time visitors of Lake Murray State Park, the users did not have *any* experiences in this new environment to create strong levels of attachment to place. Place attachment in these visitors would

likely increase through repeat visitation and more recreational experiences within the state park boundaries (Backlund, 2003; Cuba & Hummon, 1993). According to Nabhan and Trimble (1994), Ryan (2005), Tanner (1980), and Weber (2000), individuals could develop proenvironmental values by visiting, learning about, experiencing, and increasing place attachment through outdoor experiences. Therefore, without strong emotional bonds toward Lake Murray due to lack of experiences and visitation to the park, these users had not developed concerns of stewardship toward the park through their attachment to the park.

Second, from personal observation and discussion with the visitors included in this study, many visitors spoke highly of protecting the park and the environment, but often their campsites were littered with empty cans, food wrappers, among other refuse. Granted, past literature showed weak associations between proenvironmental values and behaviors (Bamberg, 2003; Cordano, Welcomer, & Scherer, 2003; Milfont, 2009), but another possibility was the participants were exhibiting socially-desirable responses to the researcher in conversation (Edwards, 1957; Milfont, 2009). Essentially, socially-desirable responses (SDR) are an individual's tendency to respond positively to an item or set of items that create a positive view of the respondent. This may lead to underreporting of poor behaviors, thoughts, attitudes (e.g., underage drinking) or over-reporting of positive behaviors, thoughts, or attitudes (e.g., proenvironmental values and behaviors). Though Milfont (2009) found that social desirability (in the form of *impression management*) did not affect self-reported values or self-reported behaviors, the author also noted that when this study occurred in 2009, only six studies existed

examining SDR and environmental issues so SDR and environmental issues is still unclear.

Much of SDR research examined two components: *impression management* and *self-deceptive positivity*. Milfont's (2009) study only examined one component, *impression management*, which dealt with overt behaviors and lying. Again, even though Milfont found little association regarding SDR and environmental values and behaviors very little research existed within the environmental psychology field. The researcher hypothesized that the questions would not be embarrassing for a respondent, however based on verbal conversations, perhaps the presence of the researcher created an embarrassing situation for the participant. Such that, a respondent self-reported one attitude on the NEP Scale (i.e., neutral attitude), verbalized another (i.e., an environmental ethic), and acted upon a third (i.e., littered, motorboated).

A third possibility concerning place attachment and environmental values concerned the context and activities presently available within Lake Murray State Park. For instance, state park visitors likely had different motivations and relationships with nature than a wilderness user, for example, due to how each person valued the area (Hendee, 1968; Williams & Watson, 2007). For instance, Hendee found that wilderness-purists (p. 29) preferred anti-artifactualism (as he termed it) meaning these users valued undisturbed nature and were not interested in car camping, motorboating, gravel roads, plumbing, and lodges. At Lake Murray State Park, the draw for many of the visitors who participated in this study was to motorboat and car camp in their RVs (recreational vehicle), which represented an urban-oriented attitude (from Hendee, p. 33; Jensen & Guthrie, 2006). Rather wilderness-purists, according to Hendee, were more likely

interested in sleeping outdoors, hiking, climbing, and backpacking. As such, a state park user might have different values than a wilderness user or a collegiate sample who favorably viewed the environment from the artificiality of their classroom (Thapa, 1999).

It might be that a state park user, who values the lake for motorboating, did not consider the impact of artificial structures, litter, and minimal impacts. Even though past research was contradictory, perhaps Dunlap and Heffernan's (1975) initial hypothesis that outdoor users' values, attitudes, and behaviors would be affected by their outdoor-use intentions and activity preferences was not without merit. Though this hypothesis found weak and contradictory support, perhaps with newer and updated measurement scales, this hypothesis should be revisited. Perhaps, because Lake Murray State Park attracted users who preferred high impact activities as well as artificial structures, visitors exhibited lower environmental values than expected.

The fourth question that this study examined was how were sociodemographic indicators related to the environmental values found within this sample. Overall, R-squared statistics for the various regression equations indicated that none of these models explained the dependent variables adequately (i.e., *Eco-Concern, Anti-Anthropocentrism, Place Identity,* or *Place Dependence*). In examining how the demographic indicators as well as the place attachment subcomponents related to *Eco-Concern*, four variables were found to load onto the equation. As previously reported (refer to Chapter IV), females seem to have a higher proenvironmental values in general (Caro, Pelkey, & Grigione, 1994; Hirsh, 2010; Luo & Deng, 2008; Merchant, 2007) and this was represented within the current study. Individuals categorized as women had increased *Eco-Concern*. Though *Liberals* did not load onto the equation, *Conservative* individuals were more strongly and

negatively related to *Eco-Concern*. This represented the typical Republican (Conservative) – Democrat (Liberal) dichotomy currently seen in politics as it related to environmental issues. This is unsurprising in the current political atmosphere as it seems Conservatives perceive environmental stability while Liberals believe the environment is rapidly degrading.

Though higher income individuals negatively loaded into the *Eco-Concern* regression equation, it should not be forgotten that many of the park visitors were from Oklahoma or Texas and typically made comments against the current political party in power. Remember too that previous research indicated that income did not significantly affect environmental attitudes or behaviors (Dunlap & Mertig, 1995; Hirsh, 2010; Kennedy, Beckley, McFarlane, & Nadeau, 2009; refer to Chapter IV) even though conventional belief was that more affluent individuals likely held eco-centric beliefs.

Finally, *Place Dependence* was positively, though weakly, related to *Eco-Concern*. This differed from previous literature in that persons with higher place identity were more likely to be ecologically concerned. Perhaps visitors wanted to keep their campgrounds and lake pristine for continued recreational use. Many visitors noted that Lake Murray was prettier and cleaner than other lakes in Oklahoma or Texas. It makes sense that visitors would want to protect their outdoor recreational interests for future participation and satisfaction.

Again, income was negatively associated with *Anti-Anthropocentric* values, which may be unsurprising due to the political affiliations of the state. Older adults, though, were positively associated with *Anti-Anthropocentric* values. Conversely, though, as noted in the research literature, young adults were not associated with either value

system. Again, from observation, many of the older visitors preferred lower impact recreational activities at Lake Murray State Park (though their behaviors were also environmentally degrading). Camping and sitting by the lakeside seemed more of interest to older individuals while younger individuals preferred motorboating at the lake. Again, Aminrad, Zakari, and Hadi (2011) hypothesized that general life experience and learning may have contributed to more eco-concerns with older populations. Older individuals had more life experiences and more time to learn from literature, media, and personal experiences.

Sociodemographic indicators were also examined in how these affected *Place Identity* and *Place Dependence*. *Origin* and *Income* were negatively represented within the regression equation. Those who identified themselves as *Yes, Other…* did not identify with Lake Murray State Park for their recreational needs. Perhaps these individuals did not identify with the park based on the large discrepancy between Hispanic, Mexican, Spanish, and Latino visitors versus Caucasian visitors. Minorities were grossly underrepresented in this study not because these individuals went unapproached, but due to who was visiting the park. The majority of visitors were Caucasian, non-Hispanic in origin. Therefore, perhaps minority visitors felt like outsiders when comparing themselves to other park visitors.

Again, without identifying and interviewing visitors who were categorized as *Less than $25,000*, one can only speculate. Lower income visitors, though, also did not identify with Lake Murray. Perhaps, lower income individuals were younger, as about 70% of the visitors were older than 35 years of age, and had not experienced outdoor areas adequately to be concerned or develop a special place. Of the 25 people who

indicated they earned less than $25,000 dollars, 10 were between 18 and 24 years of age while 8 were between 25 and 34 years of age. Clearly, for this sample the younger participants were lower income earners. Perhaps as well, lower income individuals felt like outsiders because they did not have the equipment displayed by others, such as the RV, motor boat, or DIRECTV. Likely, their social and recreational experiences were less pleasing because of the differences in equipment, type of use, and the displays of wealth.

In examining *Place Dependence*, six demographic variables were included in the regression equation. The six variables include *Special Event* (Yes), *Yes, Other Hispanic, Latino, or Spanish origin*, *Less than $25,000*, *High School Equivalent*, *$75,000 to 99,999*, and *More than $125,000*. Individuals who were *Yes, Other*… in origin were less dependent on Lake Murray State Park for their recreational needs. Perhaps other parks better suited their outdoor recreational needs. Lake Murray seemed to focus on motorized camping and boating. Perhaps these individuals preferred other outdoor sites or did not prefer these types of activities for their outdoor recreation and easily substituted camping or swimming elsewhere.

Individuals who were attending the state park for a *Special Event* also appeared not to be dependent upon the state park for their recreational needs. Conceivably, these visitors traveled during the holiday seasons and did not always return to Lake Murray. In conversation with individuals, many of the special events were birthday or anniversary-related and therefore, not dependent on Lake Murray for their celebration with friends and family.

Again, those with higher incomes were less dependent upon Lake Murray as a place. Perhaps this group preferred to travel to different parks and areas to satisfy their

outdoor recreational needs. Again, though, perhaps these groups consisted of first time visitors as well. As for groups with *Less than $25,000*, possibly this group contained first-time users or that the type of outdoor recreational activities they preferred did not depend on a lake atmosphere, such as motor boating.

Implications for Research and Theory

There are a number of modifications or adaptations that should be implemented regarding future research in this field. These were noted below as well as examining limitations found within the study.

Sample Size

Future research examining environmental concern, place, and/or demographic indicators should have a larger sample size than 155 – 170 participants. This recommendation also applies to replicating the current research project. As noted in Chapter III, for the purposes of analyzing the data, a minimum of 150 individuals were to be included in the analysis. Though this goal was achieved, doubling the sample size (n = 300) would parallel recommendations by Thompson (2004). Thompson's recommendation was that researchers should have 20 individuals per item. Perhaps having more participants might create a clearer underlying structure for the NEP Scale that more represents visitor attitudes (Ray, 2007).

In regard to sample size for fitting a regression model, Field (2009, p. 222) recommended $50 + 8k$, where k is the number of predictors; therefore, if each demographic indicator was considered (9) as well as the place attachment subcomponents (2), then the minimal sample size was 50 + (8 x 11) = 138. For testing individual predictors, Field recommended $104 + k$ (i.e., 104 + 11 = 115). Because this study

examined both the fit and variable predication capabilities, an appropriate sample size would have been 253 (i.e., 138 + 115 = 253) (Field).

To increase sample size, future researchers may need more surveyors approaching potential participants, utilize park staff as surveyors, and/or study more than one park. Utilizing more than one park might answer research questions pertaining to differences between types of users (e.g., state park versus national park; state park versus wilderness users; regional park locations) concerning their place attachment, sociodemographics, and environmental values. As Hendee (1968) noted, wilderness-purists seemed to prefer more natural activities than urban-oriented users, which could affect levels of *place dependence*, *identity*, and *environmental concern*.

Ethnicity

As well as increasing the sample size, future research should better involve diverse populations; specifically, in *race* (n = 165) and *origin* (n = 170). It is probable that group differences exist among different races and origins regarding environmental values and attachment to specific places (Johnson, Bowker & Cordell, 2004). Unfortunately, Lake Murray State Park primarily attracted *white* (n = 147; 86.5%) or *white-mixed* (n = 150; 90.9%). As well as a higher *Caucasian* profile, almost 92% (n = 156) of the surveyed population did not have any Hispanic, Latino, or Spanish origins. This deficiency could be remedied by including a Spanish-language version of all the measurement instruments and Participation Information Sheet. Hispanic and Latino populations are a growing segment of the population who will have a voice and participate in environmental and resource issues (Lopez, Torres, Boyd, Silvy, & Lopez, 2007). However, Hispanic and Latino populations are relatively small percentages of the

Oklahoma population and are infrequent visitors to Oklahoma state parks at the present time. In the future, it is important to include the voices of diverse populations who use and manage resources.

Place Attachment

Another adaptation for future research may include utilizing a different version of the Place Attachment Scale. Though researchers still use *place identity* and *place dependence* as subcomponents of the Place Attachment Scale (Brown & Raymond, 2007; Williams & Vaske, 2003), recently, scholars have examined an expanded view of place attachment. For example, Kyle, Graefe, and Manning (2005) examined the dimensions of place attachment in surveying Appalachian Trail users. Specifically, in this study, the authors added a *social bonding* dimension to *identity* and *dependence* believing that social relationships that occur in specific settings likely increased place attachment for a specific place. *Social bonding* questions, for example, included "I have a lot of fond memories about X" or "I will (or do) bring my children to this place" (p. 159). Employing structural equation modeling, Kyle, Graefe, and Manning (2005) modeled a first order, three-factor solution (i.e., *identity*, *dependence*, and *social bonding*).

Though social bonding was included as a place attachment subcomponent, Halpenny (2010) conceptualized place attachment as *dependence*, *identity*, and *affect*. Similarly to this current study, *dependence* was defined by functional attachment to place as defined by Stokols and Shumaker (1981). Likewise, *identity* was defined as a "psychological investment with a setting that has developed over time" (Halpenny, 2010, p. 2). This simplified definition also was extracted from Proshansky's (1978) identity research already discussed in Chapter II. Unlike previous conceptualizations of place

attachment, Halpenny included *place affect* as a subcomponent that examined "the emotions and feelings of an individual towards a particular place" (p. 2). These items were conceptualized as "I feel strong, positive feelings for X," "X is my favorite place to be," and "I feel relaxed when I am at X." Even though the internal reliabilities of the three subscales were greater than .75, factor analysis led the author to conclude a two-factor solution. Despite the two-factor solution, multiple *affect* items loaded onto both factors and led the author to believe that even though *affect* did not emerge as its own factor, revising the format and content of the *affect* questions could improve the distinction of the subcomponents.

Similarly, Scannell and Gifford (2010) created a PPP framework of place attachment. The framework consists of Person-Place-Process. This model defined *who* (Person) was attached, *how* the attachment manifested through emotion, thought, and/or behavior (Process), and *where* (Place; including its characteristics). The authors used previous studies to build their model as they saw that there appeared to be more dimensions than *dependence* and *identity* alone. At the time of publication, though, it appeared that no formal study utilized the PPP framework yet.

As a theoretical framework, though, understanding place attachment as *identity* and *dependence* may be outdated as researchers have begun to examine other dimensions related to attachment to place.

New Ecological Paradigm

Cordano, Welcomer, and Scherer (2003), in examining the predictive validity of the New Ecological Paradigm Scale, found that the scale did not significantly predict proenvironmental behaviors. Further, the researchers wrote that scholars should not

presume that the original or revised scale was better than other environmental concern scales; specifically, those written by the authors of the NEP Scale (the authors of the NEP have written many environmental measurement scales). In using the NEP, a researcher should be certain that the scale was appropriate and which version was best because these authors found that the original version of the NEP may be superior to the revised NEP.

Though the current study did not examine the predictive ability of the New Ecological Paradigm Scale, the dimensionality issues with the scale found by other researchers may be telling in why place attachment failed to significantly explain proenvironmental values in the current study. As already stated above, having more participants might create a better structure regarding the emerging components. Initially, it appeared that five components emerged from the PCA, but due to small loadings (Factors 4 and 5 only had one item per factor) a three-component solution was examined. This led to low communalities and multiple high-cross-loadings. As these items were removed, a clearer two-component structure emerged. Even so, the amount of data manipulation might be minimized in future studies by having more individuals within the sample.

Based on findings of two-dimensions rather than one-dimension, the psychometric properties NEP Scale should be reexamined. In utilizing a confirmatory factor analysis to examine the underlying dimensionality of the NEP Scale, the hypothesized unidimensional structure was not found. Therefore, another study examining the underlying structure should occur. The study should examine the construct validity as well to “enhance our understanding about what types of interpretations we

may validly make and what types of actions we may validly undertake based on test scores (Hoyt, Warbasse, Chu, 2006, p. 778).

A second study should examine the dimensionality, social desirability, as well as convergent and divergent validity of the scale. A follow-up study can utilize a confirmatory factor analysis to determine if the two-dimension structure found within this study replicates (refer to Chapter IV). Because of the low communality scores and cross-loadings within the two-dimensional structure, the structural analysis of the NEP Scale should be revisited (Simmons, Worrell, & Berry, 2008).

A multiphasic study examining the validity of the NEP Scale should first examine the dimensionality. Once the dimensions are outlined, convergent and divergent validity analyses should be conducted. A convergent validity analysis examines each dimension (if there are multiple) against a measurement scale that purportedly measures a similar construct (Hoyt, Warbasse, Chu, 2006). For example, to determine the measurement validity of the *Eco-Concern* component, an examination of a similar scale should occur to determine the relative strength in measuring similar constructs. Similarly, in looking at divergent validity, one would expect that the *Eco-Concern* component would be negatively correlated with a scale measuring anthropocentric values.

In examining convergent and divergent validity, researchers can better hypothesize the theoretical constructs being measured. Researchers can also begin to understand the item representativeness for the theoretical construct. Hoyt, Warbasse, Chu (2006) noted that if a set of items measuring a construct has low convergent validity (and a higher correlation was predicted), the set of items likely under-represents (i.e., not fully measuring) the theoretical construct. The authors specifically wrote that in examining

subscale scores, which this researcher proposes, underrepresentation will likely be a problem. Because of this, the authors recommend examining divergent validity, specifically, for each component as well.

Finally, in studies utilizing self-report instruments, researchers should be aware that respondents may bias their answers based on the perceived social desirability of a particular response. Socially desirable answers are a concern regarding the validity of the measurement scale. In conducting a second study utilizing the NEP Scale, a second instrument, such as the Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960), should be utilized. Lower scores on the MCSDS indicate a lack of interest in responding to items in a socially desirable manner, which would strengthen the construct validity of responses for the NEP Scale.

Finally, a study reexamining the NEP Scale should examine the cultural generalizability, though this examination should be theoretically-based (Hoyt, Warbasse, Chu, 2006; Lee & Park, 2011). When examining cultural generalizability, researchers are testing a theoretical construct across various cultural groups (Lee & Park, 2011). Hoyt, Warbasse, Chu wrote that if a construct should be (and is found to be) valid across cultures, as the values measured by the NEP Scale may be, then results are more valid and generalizable.

Religiosity

One omission from the original research study examining place attachment and environmental values was that of religious practices. During the survey process, many participants commented on scale items and how these items related to their religious views and practices. One repeated idea was that humans were hierarchically above plants

and animals and therefore had the right to use them as he or she saw fit. This sentiment aligned with some scholarly views that Christian practices preach mastery and exploitation over nature (Biel & Nilsson, 2005; Hand & Van Liere, 1984; Shaiko, 1987; White, 1967). Biel and Nilsson noted, though, that contradictory research existed regarding how Christian beliefs aligned with environmental values. It also depended on strength of belief and denomination (Biel & Nilsson).

Lopez, Torres, Boyd, Silvy, and Lopez (2007) surveyed Texas Latino and Hispanic college students regarding their environmental concerns (NEP Scale). Within this research study, the authors examined religious preference (e.g., Catholic, non-Christian, etc.) and church attendance (e.g., < 1 time/year, 1 – 2 times/year, etc.) as demographic variables. Though religious preference did not significantly affect environmental values as measured by the NEP, church attendance did have an effect, albeit weak. Therefore, it would seem that in future research studies examining environmental values, researchers should include measure of religious affiliation and/or attendance rates. Researchers should also be mindful of the region in which surveying occurs as religiosity in some areas is stronger than others.

Children and Education

As noted in Chapter II, if providing outdoor experiences for children helped users develop environmental concern then outdoor-experienced adults may have higher proenvironmental values and stewardship practices (Measham, 2006; Ryan, 2005). Connecting children to the outdoors provided children human-nature experiences, which urged non-domination through exploitation or mastery over nature **(**Blizard & Schuster, Jr., 2004; Hacking, Barratt, & William, 2007; Louv, 2005; Thomas & Thompson, 2004).

In creating this relationship for children, the adult-versions of these children may hold proenvironmental values (Chawla & Flanders Cushing, 2007; Hacking, Barratt, & William, 2007; Tanner, 1980). Again, adults "must be exposed to natural areas as children if they [were] to care for them as adults" (Pergams & Zaradic, 2008, p. 2295). Understanding how outdoor recreation and use might affect environmental values in children has become more important in developing future environmental stewards and policy (Teisl & O'Brien, 2003; Wells & Lekies, 2006).

Though exposing children to outdoor experiences is clearly important, potentially as important for developing proenvironmental behaviors and values is education. Research indicated that environmental literature can change individuals' values and behaviors (Gardner & Stern, 1996; Johnson, Bowker & Cordell, 2004; Mobley, Vagias, & DeWard, 2010; Monroe, 2003). Mobley, Vagias, and DeWard recently examined United States residents' familiarity (i.e., "I have never heard of this book" to "Yes, I have read this book and have recommended it to others") with environmentally-oriented books (e.g., *Walden, A Sand County Almanac,* and *Silent Spring*) and the effects of reading on environmentally-responsible behavior (ERB). The researchers found that when sociodemographic indicators were controlled, environmental literature was a strong and statistically significant predictor of environmentally-responsible behavior. According to the authors, persons who self-reported high levels of reading environmental literature reported higher levels of environmentally-responsible behavior.

Future studies regarding environmental concern or ERB should consider examining the effects of environmental literature on creating environmental values and behavior patterns.

Implications for Management, Policy, and Practice

Understanding place attachment and environmental values may help park managers target desired behaviors of visitors, create programs that fit these behaviors and values, and help manage natural and artificial resources (Presley, 2003). Managers can identify strongly attached (and/or individuals with proenvironmental values) as volunteers, donors, as well as users who should be involved in the management and planning of the park (Presley). Understanding the different levels of attachment may also help managers guide policy or understand public reactions.

For instance, Kyle, Absher, and Graefe (2003) found that persons that identified highly with place were more likely to support fee-based programs in a recreation-setting. A manager, who understood this relationship, may better be prepared to react to place dependent individuals who did not want to pay an entrance fee for using a rock face, for instance. Teisl and O'Brien (2003) found that participation in forest-based activities led to a higher likelihood of monetary donation to environmental groups or outdoor organizations. Teisl and O'Brien also found that individuals who participated in activities like hiking, nature photography, snowmobiling, and fishing were likely to want to participate in management plans of forested areas and activities, though some activities led to more interest than others.

As Teisl and O'Brien (2003) found in their research, persons involved in outdoor leisure pursuits were more likely environmentally concerned citizens than those who did not pursue outdoor recreational activities. Park managers should tap this audience in their own park areas to encourage a self-policing group of visitors who learned to take care of the parks they loved and utilized. To do this, managers would be expected to research and

increase elements that promoted attachment to place and educated visitors about becoming service-agents for their park.

Clearly, there are numerous benefits for managers who have place attached visitors. Lake Murray management should be aware that feelings of attachment were low toward the state park. The visitors often complained of high camp- and RV-site prices. Visitors did perceive how their money was being positively spent toward their recreational experiences at the park. These factors may have contributed to low place attachment as well as how many first-time visitors attracted to the park. Provided below are suggestions from recent literature about how Lake Murray state park management and staff might increase attachment to the state park.

The place attachment literature indicates that place is space endowed with meaning by recreationists (Low & Altman, 1992; Relph, 1976; Steele, 1981; Tuan, 1980). These meaningful human feelings are imprinted upon a place by the activities and direct interaction within the specific place (Brandenburg & Carroll, 1995; Kaltenborn & Bjerke, 2002a). One method of increasing place attachment relates to the proximity of visitors. Visitors living closer to a specific place, and more frequently visit it, show increased attachment levels (Budruk, Thomas, & Tyrrell, 2009; Williams & Vaske, 2003).

Unfortunately, Lake Murray visitors appear to travel from other states such as Texas, Kansas, and Arkansas as well as attracting Oklahoma residents. Perhaps advertising the state park to surrounding communities regarding potential recreational activities could increase interest in visiting the park. Creating local interest in the state park may promote nationwide interest through online forums (i.e., word-of-mouth) such

as social networking sites, blogs, and WebPages (Chen & Dwyer, 2010). Chen and Dwyer recommend utilizing local residents to become "goodwill ambassadors, advocating the destination to families and friends" (p. 3). To create ambassadors, Lake Murray State Park could host community events that draw community members and possibly increase attachment levels through fun, positive experiences within the park (Alexandris, Kouthouris, & Meligdis, 2006). For example, Lake Murray has (onsite) a model airplane runway. Management could actively host competitions and events related to this target group as well as provide special accommodations to participants.

A second suggestion for Lake Murray State Park management is to conduct a recreation-related needs assessment. Williams and Vaske (2003) reported that place dependency increases when an individual's recreational needs were satisfied. It may benefit Lake Murray staff to conduct an assessment determining the users' preferred activities at the state park. Then focus their efforts on creating, and increasing, a visitor's satisfying outcomes for that activity. Perhaps users enjoy motorized boating on the lake, but find it is overcrowded. Regulating boating passes may create a more enjoyable atmosphere by minimizing overcrowding.

Previous scholars have written that while direct experiences imprint value, place meaning can also be created through an individual's passive senses (e.g., sights, smells, touch) (Inglis, Deery, & Whitelaw, 2008; Tuan, 1975; Warzecha & Lime, 2001). In creating these emotional meanings for natural resources, place attachment increased (Cuba & Hummon, 1993). Alexandris, Kouthouris, & Meligdis (2006), in examining how skiers attached to a resort in Greece, found that the environmental conditions of the physical environment were significantly correlated to both dimensions of place

attachment. They examined the perceived cleanliness of rest- and toilet-areas, facility cleanliness, maintenance of equipment, and how modern was the equipment offered by the resort.

Therefore, a third suggestion for Lake Murray State Park management should focus on providing cleaner facilities such as the outhouses (i.e., not filled with trash) and campgrounds (i.e., trash like cigarettes and alcohol containers). The staff may also want to consider allocating user fees to update the RV-sites to allow sewage connections as only one campground allowed this type connection. Because of the scarcity of this type of site, it filled quickly according to park users. A needs assessment likely would prove fruitful at this stage as well to determine the majority of the *type* of user (i.e., lodge user, RV-user, tent-camper). By reallocating user fees and funding toward projects that maintain and/or restore popular areas or facilities, place attachment may be engendered.

A fourth suggestion that Lake Murray staff can consider in increasing place attachment is to provide better staff service. Alexandris, Kouthouris, & Meligdis (2006, p. 422) examined quality of service as well and found that "issues related to employees' hiring policies, employees' training in communication skills, foreign languages, courtesy and alertness, and employees' expertise are important." The authors believed that employees of the ski resort should act as part-time marketers and should focus on having positive, even if brief, experiences with the resort users (Alexandris, Kouthouris, & Meligdis; Zeithaml & Bitner, 2003).

This relates to employees at Lake Murray State Park. This includes the park rangers, camp-hosts, and other part-time and full-time staff. Rangers who rarely leave their vehicles cannot interact well or act as marketing agents. The staff should interact

with visitors, learn about their interests and motivations, and assist visitors with issues or complications that arise. The staff who daily work within the park boundaries are "front line employees, and as such they are in constant interaction with… visitors; they subsequently determine in a large degree the quality of the total visitors' experience" (p. 422). In providing a better experience, visitors are more likely to attach to place and more likely promote the park (Chen & Dwyer, 2010).

Fifth, and finally, promoting educational opportunities for visitors may increase their attachment to place (Alexandris, Kouthouris, & Meligdis, 2006). Providing interpretative services that detail the historical significance of Lake Murray (i.e., first Oklahoma state park) and how the building of Lake Murray connects with United States' history (i.e., Civilian Conservation Corp) are interesting facts about the park. In examining how historical significance relates to place attachment, Lewicka (2008) conducted a study that examined *urban-reminders* and its effects on place attachment for the cities of Lviv and Wroclaw. *Urban-reminders* are the physical aspects still present within a specific place that reminds users of the significance of place, such as a plaque, monument, structure, and architectural design, and others.

These urban reminders provide information for the visitors about the historical or cultural significance of a site. For example, at Lake Murray, the CCC structure found at Buzzard's Roost is a historical reminder about the roots and meaning of the park. Though Lewicka (2008) found a smaller than hypothesized correlation between *urban-reminders* and place attachment, the author hypothesized that "the more autonomous is the place in people's minds, the more attachment to it should depend on its physical features, including presence of historical ''urban reminders'' (p. 227). Essentially, urban-

reminders do not seem to affect place attachment levels in national parks or at overtly religious or culturally significant areas; rather, lesser known units benefit more from urban reminders. Promoting the uniqueness of Lake Murray State Park may attract visitors interested in learning about Oklahoma and its history.

Conclusion

In conclusion, it appeared that place attachment did not significantly affect environmental values for the Lake Murray State Park sample. Though these findings were disappointing, contradictory results seem not uncommon within the environmental value literature. In all likelihood, differences in studies may be explained by the different parks and the types of users attracted to these areas. Clearly, research regarding environmental psychology and methods for increasing environmentally-responsible behaviors has been on the rise. It was conceivable also that many factors help individuals formulate environmental values throughout their lifetime. Therefore, place attachment was likely one small facet to the overall value formation that each individual progressed through to adulthood.

These research questions, therefore, were worth reinvestigation with various adaptations to discover if the results were negatively affected by sample size, sample location, or the measurement scales. It was clear also that more research regarding the structure and validity of the NEP Scale needs to be accomplished. At this time, researchers have used the NEP Scale inconsistently in terms of what values it measured and creating a more consistent measure may do more for the environmental psychology literature-base regarding how to better increase awareness and behaviors. A subsequent study examining the dimensionality and construct validity of the scale should be

conducted. The place attachment scale as well underwent transformation as researchers believed that attachment to place encompassed more than dependence upon the resource and incorporating place into one's personal identity.

It may become necessary to move away from place attachment research as positively affecting environmental concern and behavior. Perhaps the above results were not misleading, but that place attachment produced contradictory results because of its small effect on the overall concept of increasing proenvironmental concern and behaviors. Perhaps research should shift to other areas of study such as environmental education, childhood outdoor usage, and inclusion in outdoor groups (e.g., Boy and Girl Scouts; Junior Rangers; Sierra Club). Or perhaps, a longitudinal methodology should be adapted examining children's place attachment and their changing environmental values to adulthood.

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APPENDICES

A – INSTITUTIONAL REVIEW BOARD APPROVAL

B – INSTITUTIONAL REVIEW BOARD MODIFICATION

C – OKLAHOMA TOURISM AND RECREATION DEPARTMENT REQUEST

D – OKLAHOMA TOURISM AND RECREATION DEPARTMENT APPROVAL

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H – DEMOGRAPHIC SURVEY

I – PLACE ATTACHMENT SCALE

J – NEW ECOLGOCIAL PARADIGM SCALE

K – CONFIRMATORY FACTOR ANALYSIS REGRESSION WEIGHTS

L – CONFIRMATORY FACTOR ANALYSIS

M – NEP SCALE COMPONENTS AND ITEMS

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

Oklahoma State University Institutional Review Board

Date:	Wednesday, June 30, 2010
IRB Application No	ED1090
Proposal Title:	The Effects of Place Attachment on Environmental Values in Oklahoma State Park Visitors
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 6/29/2011

Principal Investigator(s):

Kevin Fink
180 Colvin Center
Stillwater, OK 74078

Lowell Caneday
184 Colvin Center
Stillwater, OK 74075

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

X The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia M. Kennison

Shelia Kennison, Chair
Institutional Review Board

APPENDIX B

INSTITUTIONAL REVIEW BOARD MODIFICATION

Oklahoma State University Institutional Review Board

Date:	Friday, August 06, 2010	**Protocol Expires: 6/29/2011**
IRB Application No:	ED1090	
Proposal Title:	The Effects of Place Attachment on Environmental Values in Oklahoma State Park Visitors	
Reviewed and Processed as:	Exempt **Modification**	

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s):

Kevin Fink
180 Colvin Center
Stillwater, OK 74078

Lowell Caneday
184 Colvin Center
Stillwater, OK 74075

The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office MUST be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

The requested change to the sampling method is approved.

Signature :

Shelia Kennison, Chair, Institutional Review Board

Friday, August 06, 2010
Date

APPENDIX C

OKLAHOMA TOURISM AND RECREATION DEPARTMENT REQUEST

School of Applied Health and Educational Psychology

180 Colvin Center
Stillwater, Oklahoma 74078

TEL: (405) 744-9337
FAX: (405) 744-6507

Kris Marek, Division Director
Oklahoma Tourism and Recreation Department
120 N. Robinson, 6th Floor
Oklahoma City, OK 73102

Ms. Marek:

My name is Kevin Fink. I am a doctoral candidate at Oklahoma State University. During the past three years, I have worked for Drs. Lowell Caneday and Deb Jordan and OTRD inventorying and providing GPS data in the state parks. This summer the Oklahoma State team will conducting the GPS inventory at Lake Murray State Park – upon approval of the on-going contract. Whether that contract is ultimately approved or not for work at Lake Murray, I am requesting your permission to survey Lake Murray State Park visitors as a sample for my dissertation research.

I am examining how place attachment toward Lake Murray State Park affects proenvironmental attitudes. Essentially, is outdoor attachment (in the form of Lake Murray State Park visitors) a significant predictor of proenvironmental values? I would like to survey Lake Murray State Parks separately from the OTRD-OSU project, but because I will be familiar with the park, I would like to use the state park and its visitors in my dissertation study. I would like to conduct this survey of state park visitors from July 2010 to September 2010. Potential participants will be asked to fill out two brief questionnaires (Place Attachment Survey and the New Ecological Paradigm Survey) and one demographic survey. This study, including the research protocol and the protection for human subjects, will be approved through the OSU Institutional Review Board (IRB) and the information will be anonymous and confidential.

Therefore, I am requesting your approval to contact visitors to Lake Murray State Park on the state property.

Thank you,

Kevin Fink, M.S.
Oklahoma State Doctoral Candidate
180 Colvin
Stillwater, OK 74078
mountainfink@gmail.com
913.706.0891

Dr. Lowell Caneday
Oklahoma State University: Leisure Studies
184 Colvin
Stillwater, OK 74078
lowell.caneday@okstate.edu
405.744.5503

APPENDIX D

OKLAHOMA TOURISM AND RECREATION DEPARTMENT APPROVAL

OKLAHOMA TOURISM &
RECREATION DEPARTMENT

120 NORTH ROBINSON
SUITE 600
OKLAHOMA CITY, OK
73102

P.O. BOX 52002
OKLAHOMA CITY, OK
73152

405-230-8300

June 15, 2010

Kevin Fink, M.S.
Oklahoma State Doctoral Candidate
180 Colvin
Stillwater, OK 74078

RE: Research Request

Dear Mr. Fink:

I have received you request to administer surveys at Lake Murray State Park while conducting GPS inventory work at the park this summer. The study looks interesting and our agency would be interested in the results of such work.

Please make sure that your surveying is not unreasonable intrusive to guests at the park. I will provide a copy of this letter to the Park Manager, Carol Conrad so that she will be advised of your proposal. I know that Dr. Caneday provides coordination with property managers for the Resource Management Plan work that is performed, but I wanted to make sure you take the time to meet the property manager and relevant staff prior to initiating your project.

Best of luck on your dissertation research. We look forward to the results of this study and making progress on the RMP for Lake Murray State Park.

Sincerely,

Kris Marek, Director
Division of State Parks

C: Carol Conrad, Lake Murray State Park Manager
Bryce Todd, SE Regional Manager
Dr. Lowell Caneday

APPENDIX E

BUSINESS CARD

APPENDIX F

SCRIPT

Hi, my name is Kevin Fink and I am an Oklahoma State graduate student conducting a study exploring how your feelings of attachment to Lake Murray State Park may affect your environmental attitudes. Participation involves completing two brief questionnaires and a demographic survey. In all, your participation should take no more than 15 minutes. Should you choose to participate, your information will be anonymous and confidential.

PARTICIPATE:
Thank you for your participation.

DO NOT PARTICIPATE:
Thank you for your consideration.

APPENDIX G

PARTICIPANT INFORMATION SHEET

PARTICIPANT INFORMATION SHEET

Title: The Effects of Place Attachment on Environmental Values in Oklahoma State Park Visitors

Principal Investigator: Kevin Fink, M.S., Graduate Student, Oklahoma State University

Purpose: The purpose of this study is to examine the effect of place attachment in predicting proenvironmental values in outdoor users. Previous studies have examined the activities of outdoor users. Rather than reexamining outdoor activity type in predicting environmental values, this study examines the attachment visitors have for their outdoor places and attachment's effect on proenvironmental values.

Procedures: This study is designed to take approximately 15 minutes. You will be asked to complete three questionnaires. The first questionnaire asks for demographic information such as your age, gender, race/ethnicity, and education level. The second questionnaire, the Place Attachment Scale, asks about your feelings toward Lake Murray State Park. The third questionnaire, the New Ecological Paradigm Scale, asks about your environmental views.

Risks of Participation: There are no known risks associated with this study greater than those ordinarily encountered in daily life. If, however, you begin to experience discomfort or stress in this study, you may end your participation at any time.

Benefits: Researchers and society may benefit from your participation by better understanding how proenvironmental views are predicted in outdoor users through the psychological variable, place attachment.

Confidentiality: You will not be identified individually. Private information and individualized survey responses will be kept private. The aggregated data recorded as a result of this research will be used for the purposes of a doctoral dissertation, may be published in a scholarly journal, and/or used for presentation purposes. Otherwise, the data will be kept confidential and will not be released. Data will be securely stored at the OSU-Colvin Building, Room 117. The Oklahoma State University (OSU) Institutional Review Board (IRB) has the authority to inspect consent records and data files. This information will be saved as long as it is scientifically useful; typically, such information is kept for five years after publication of the results.

Participant Rights: Your participation in this research project is voluntary. You may withdraw at any time without penalty or problem. Returning your completed survey packet indicates your willingness to participate in this study.

Contacts: If you need to contact the researcher during or after the study is completed, please contact the principal investigator or the dissertation adviser by email.

Principal investigator:
Kevin Fink, M.S., Graduate Student
117 Colvin Center
Oklahoma State University
Stillwater, OK 74078
kevin.fink@okstate.edu

Dissertation adviser:
Dr. Lowell Caneday
184 Colvin Center
Oklahoma State University
Stillwater, OK 74078
lowell.caneday@okstate.edu

If you have questions about your rights as a research volunteer, you may contact the Oklahoma State University Institutional Review Board (IRB) Chair, Dr. Shelia Kennison, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

APPENDIX H

DEMOGRAPHICS SURVEY

Please indicate your age (in years) (*select one*):

___ 18 – 24 ___ 25 – 34 ___ 35 – 44 ___ 45 – 54 ___ 55 – 64

___ greater than 65

Gender (*select one*):

_____ Male _____ Female

Origins: Are you of Hispanic, Latino or Spanish origin (*select one*)?

___ No, not Hisp., Latino, or Span. origin.

___ Yes, Mexican, Mexican Am., Chicano

___ Yes, Puerto Rican

___ Yes, Cuban

___ Yes, other Hisp., Latino, or Span. origin

Race (*select all that apply*):

___ White

___ Black, African Am., or Negro

___ American Indian/Alaska Native

___ Asian Indian

___ Japanese

___ Native Hawaiian

___ Chinese

___ Korean

___ Guamanian or Choamorro

___ Filipino

___ Vietnamese

___ Samoan

___ Other Asian

___ Other Pacific Islander

Please Indicate Your State of Current Residence (*Defined as the STATE of your main home, where you are registered to vote, or hold a valid driver's license*):

_____

Highest Level of Education (*select one*):

_____ Less than High School

_____ High School Equivalent

_____ Associate's

_____ Bachelor's

_____ Master's

_____ Professional Degree

_____ Doctorate

Level of Your Income in the Past 12 months (*select one*):

_____ Less than $25,000

_____ $25,000 to $49,999

_____ $50,000 to $74,999

_____ $75,000 to $99,999

_____ $100,000 to $124,999

_____ More than $125,000

Political Affiliation (*select one*):

_____ Liberal

_____ Moderate-Liberal

_____ Moderate

_____ Moderate-Conservative

_____ Conservative

Type of Visitor (*select one*):

_____ Day Visitor

_____ Overnight Visitor

Did You Visit Lake Murray State Park specifically for a Special Event (holiday, festival)?

_____ Yes

_____ No

APPENDIX I

PLACE ATTACHMENT SCALE

Instructions: Please answer the questions below on a Likert scale of 1 (Strongly Disagree) to 5 (Strongly Agree).

	Strongly Disagree	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1. Lake Murray State Park means a lot to me.	1	2	3	4	5
2. I am very attached to Lake Murray State Park.	1	2	3	4	5
3. I identify strongly with Lake Murray State Park.	1	2	3	4	5
4. I have a special connection to Lake Murray State Park.	1	2	3	4	5
5. Visiting Lake Murray State Park says a lot about who I am.	1	2	3	4	5
6. I feel like Lake Murray State Park is a part of me.	1	2	3	4	5
7. Lake Murray State Park is the best place for what I like to do.	1	2	3	4	5
8. No other place can compare to Lake Murray State Park.	1	2	3	4	5
9. I get more satisfaction out of Lake Murray State Park than from visiting any other state park.	1	2	3	4	5
10. Doing what I do at Lake Murray State Park is more important to me than doing it in any other place.	1	2	3	4	5
11. I would not substitute any other place for the type of recreation I do at Lake Murray State Park.	1	2	3	4	5
12. The things I do at Lake Murray State Park, I would enjoy doing just as much at a similar site.	1	2	3	4	5

APPENDIX J

NEW ECOLOGICAL PARADIGM SCALE

Instructions: Please answer the questions below on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree).

	Strongly Disagree	**Mildly Disagree**	**Unsure**	**Mildly Agree**	**Strongly Agree**
1. We are approaching the limit of the number of people the earth can support.	1	2	3	4	5
2. Humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5
3. When humans interfere with nature it often produces disastrous consequences.	1	2	3	4	5
4. Human ingenuity will insure that we do NOT make the earth unlivable.	1	2	3	4	5
5. Humans are severely abusing the environment.	1	2	3	4	5
6. The earth has plenty of natural resources if we just learn how to develop them.	1	2	3	4	5
7. Plants and animals have as much right as humans to exist.	1	2	3	4	5
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	1	2	3	4	5
9. Despite our special abilities, humans are still subject to the laws of nature.	1	2	3	4	5
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	1	2	3	4	5
11. The earth is like a spaceship with very limited room and resources.	1	2	3	4	5
12. Humans were meant to rule over the rest of nature.	1	2	3	4	5
13. The balance of nature is very delicate and easily upset.	1	2	3	4	5
14. Humans will eventually learn enough about how nature works to be able to control it.	1	2	3	4	5
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	1	2	3	4	5

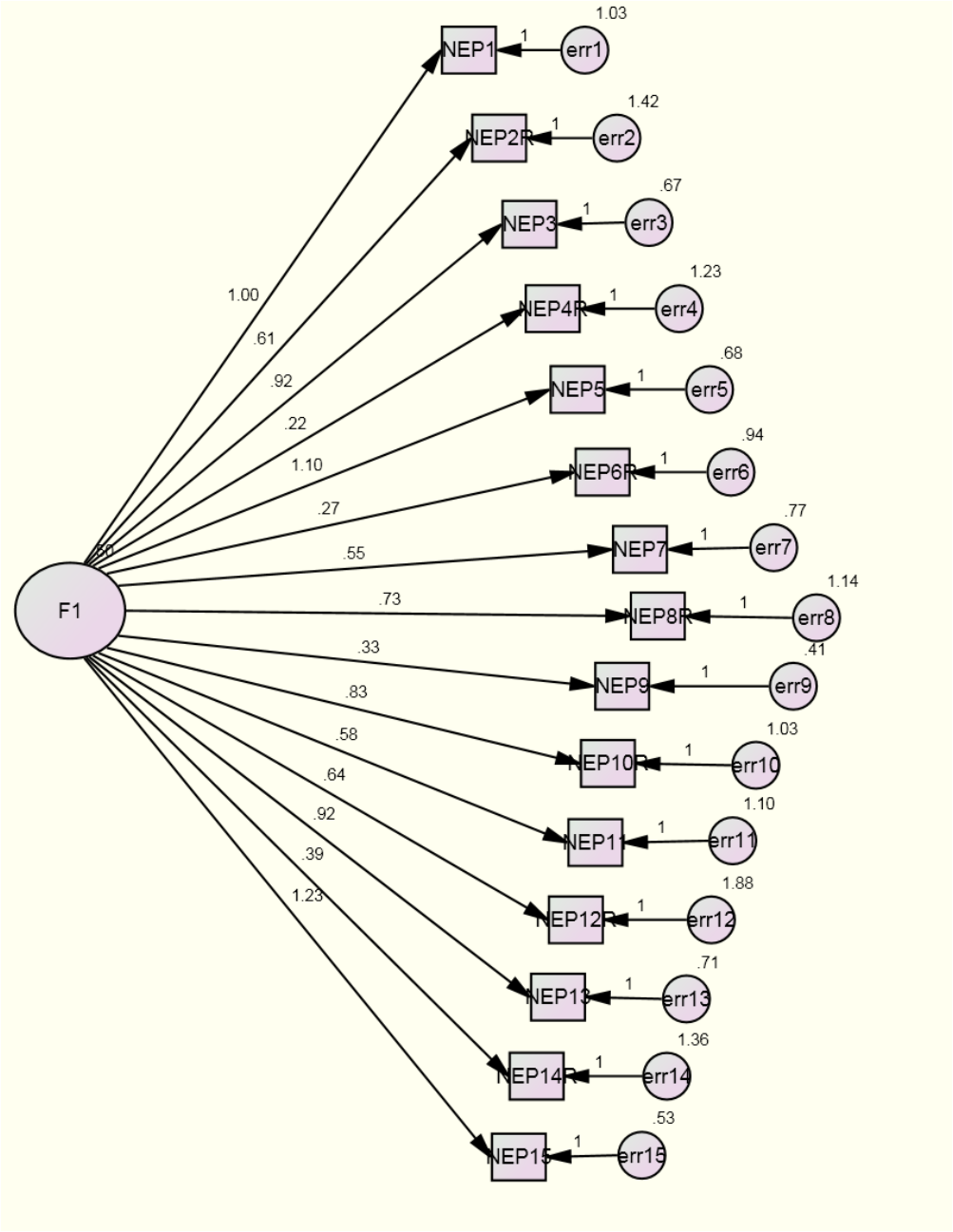
APPENDIX K

CONFIRMATORY FACTOR ANALYSIS REGRESSION WEIGHTS

	Estimate	S.E.	C.R.	P
NEP 1	1.000			***
NEP 2R	.607	.163	3.715	***
NEP 3	.915	.153	5.997	***
NEP 4R	.218	.137	1.594	.1111
NEP 5	1.102	.172	6.406	***
NEP 6R	.265	.122	2.176	.030
NEP 7	.546	.126	4.324	***
NEP 8R	.726	.158	4.589	***
NEP 9	.327	.088	3.717	***
NEP 10R	.834	.162	5.155	***
NEP 11	.581	.146	3.965	***
NEP 12R	.643	.185	3.478	***
NEP 13	.924	.155	5.955	***
NEP 14R	.386	.149	2.587	.010
NEP 15	1.235	.181	6.833	***

APPENDIX L

CONFIRMATORY FACTOR ANALSYSIS



APPENDIX M

NEP SCALE COMPONENTS AND ITEMS

Eco-Concern:

1. We are approaching the limit of the number of people the earth can support.

3. When humans interfere with nature it often produces disastrous consequences.

5. Humans are severely abusing the environment.

13. The balance of nature is very delicate and easily upset.

15. If things continue on their present course, we will soon experience a major ecological catastrophe.

Anti-Anthropocentrism:

4. Human ingenuity will insure that we do NOT make the earth unlivable.[a]

6. The earth has plenty of natural resources if we just learn how to develop them.[a]

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.[a]

[a] Indicates a reverse-scored item.

VITA

Kevin Jordan Fink

Candidate for the Degree of Doctor of Philosophy

Dissertation: THE EFFECTS OF PLACE ATTACHMENT ON ENVIRONMENTAL VALUES IN OKLAHOMA STATE PARK VISITORS

Major Field: Health Leisure, and Human Performance: Option in Leisure Studies

Biographical:

Personal Data: Born in Olathe, KS on May 13th, 1983, the son of Richard and Kathy Fink

Education: Graduated from Olathe East High School, Olathe, Kansas in May 2001; received a Bachelor of Art degree in Psychology and a Bachelor of Science degree in Justice Systems from Truman State University, Kirksville, Missouri in May 2005; received a Master of Science degree in Educational Psychology: Research, Evaluation, Measurement, & Statistics from Oklahoma State University, Stillwater, Oklahoma. Completed the requirements for the Doctor of Philosophy in Health, Leisure, and Human Performance: Option in Leisure Studies in May, 2011.

Experience: Ropes Course Facilitator, Stillwater, Oklahoma, 3 years; Ropes Course Facilitator, Edmond, Oklahoma, 6 months; Teaching Assistant, Oklahoma State University Leisure Studies Program, 3 years; Research Associate for Oklahoma State University, 1 year; Leisure Studies Program Coordinator, Oklahoma City Community College, 6 months; Leisure Studies Adjunct Faculty, Oklahoma City Community College, 6 months.

Professional Memberships: Boy Scouts of America, Rho Phi Lambda, Beta Theta Pi, National Parks and Recreation Association, Wilderness Education Association, Leave No Trace Society, International Society for the Scientific Study of Subjectivity, American Red Cross, Oklahoma Recreation and Park Society

Name: Kevin Jordan Fink Date of Degree: May, 2011

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: THE EFFECT OF PLACE ATTACHMENT ON ENVIRONMENTAL VALUES IN OKLAHOMA STATE PARK VISITORS

Pages in Study: 187 Candidate for the Degree of Doctor of Philosophy

Major Field: Health, Leisure, and Human Performance

Scope and Method of Study: The purpose of this study was to determine if place attachment for park users explained proenvironmental values. One-hundred seventy participants were surveyed on-site at Lake Murray State Park in Ardmore, Oklahoma. Environmental values of state park visitors were measured by the New Ecological Paradigm Scale. Place attachment was measured using the Place Attachment Scale. Analyses included a confirmatory factor analysis, which disconfirmed the unidimensional structure of the New Ecological Paradigm Scale, a principal components analysis of the same scale, and regression analyses examining how place attachment and sociodemographic indicators explained environmental values in visitors of Lake Murray State Park.

Findings and Conclusions: The findings indicated that park visitors were not strongly attached to Lake Murray State Park. The findings also suggested that place attachment was not a significant explanatory factor for environmental values in Lake Murray State Park visitors. A confirmatory factor analysis indicated that the New Ecological Paradigm scale was not unidimensional as hypothesized. Principal component analysis indicated a multidimensional structure as two environmental values emerged during the analysis. Further investigation should focus on the underlying component structure and construct validity of the New Ecological Paradigm Scale. The author made multiple recommendations regarding how park managers and staff might increase visitor attachment, which may positively affect repeat visitation as well as have other positive benefits.

ADVISER'S APPROVAL: Dr. Lowell Caneday