

COMPARING PLACE ATTACHMENT AND
VISITORS' ENVIRONMENTAL ETHIC: A STUDY OF
LAKE MCMURTRY VISITORS

By

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COMPARING PLACE ATTACHMENT AND
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Abstract: The purpose of this study was to understand the relationship between visitors' place attachment at a nearby lake (Lake McMurtry) and their environmental ethic. This study utilized two scales, the Place Attachment scale (Williams & Vaske, 2003) and the New Ecological Paradigm scale (Dunlap, 2008) with both face-to-face and online surveys. A significant relationship was found between visitors' place attachment to Lake McMurtry and their environmental ethic ($r(279) = .156, p < 0.01$); however, the relationship between place identity and environmental ethic was found to be stronger ($r(279) = .347, p < 0.01$). A number of demographic variables were also collected and significant correlations were found with both place attachment and environmental ethic leading to conclusions that time associated with Lake McMurtry, the number of activities respondents participate in at Lake McMurtry, and respondents' levels of education all correlate with environmental ethic and place attachment. It was concluded that the visitors to Lake McMurtry could be identifying with a lake setting, since there are many in Oklahoma, but may not form strong attachments to Lake McMurtry specifically and utilize the lake and its resources because it is nearby.

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CHAPTER I

INTRODUCTION

“Wisdom sits in these places ... you must remember everything about them. You must remember what happened at them today and long ago” (Basso, 1996, p. 127). Places play a vital role in the human experience. If you think back on any memory in your life, the setting in the memory is what stands out. While a place is technically a location or setting that one can visit, view pictures of, or read about, places have intrinsic value also; they have meaning, traditions, and history for society and individuals (Halpenny, 2010). There are many theories and ideas in past and present research that are associated with places and the relationships people form with them. Sense of place (Relph, 1976), the third place theory (Oldenburg, 1991), and place attachment (Williams & Roggenbuck, 1989) are three examples of person-place theories that have driven past and current research to where it is today.

Edward Relph (1976) wanted to understand the complexity of place as it is experienced by real people. He posited that in order to fully understand place, you must understand how people experience that place, and only when you fully understand this, can you know the significance of the place.

Without a thorough understanding of place as it has human significance, one would find it difficult to describe why a particular place is special, and impossible to know how to repair existing places in need of mending. In short, before we can properly prescribe, we must first learn how to accurately describe (Seamon & Sowers, 2008).

Three qualities that Relph utilized to understand and describe place included meanings, activities, and physical settings. By understanding the relationship between these dimensions, place is defined and understood as both a geographical location and as having an emotional and cultural importance in society. With this understanding, a person can develop a strong “sense of place” by feeling a sense of belonging at the particular place.

Another theory that encompasses person-place attachments is the third place theory. This theory denotes that our first place is our home, our second place is our working environment, and our third place is a public setting or environment that we go to, to feel a sense of belonging, to have more creative interactions, and to develop relationships (Oldenburg & Brissett, 1982). Oldenburg (1991) described third places as being a personal experience, fulfilling an individual need, as important to defining ourselves as work or home, and something we need in order to function. As much as a third place begets the person – place attachment, some theorists consider the social relationships constructed at these places to be what people are attached to, not solely the place (Low & Altman, 1992). They state that the places are just where the relationships occur and that the attachment lies within the social relationships that a place signifies. Whichever the case, third places rest on the social aspect that public coffeehouses,

barbershops, green spaces, community centers, etc. provide to people in order to feel a sense of belonging and attachment (Oldenburg & Brissett, 1982).

Place attachment theory, in a sense, umbrellas all the above mentioned place concepts and develops a two-dimensional model that includes place identity and place dependence. Williams and Roggenbuck (1989), observed the degree to which people valued or identified with certain places and settings and that the attachment cannot only be explained by the environments functional properties but its emotional properties as well. Through these properties, place identity (emotional attachment) and place dependence (functional attachment), a person develops a relationship with a certain setting and from that, a person can better define who they are to themselves and to the world (Proshansky, Fabian, & Kaminof, 1983; Stokols & Shumaker, 1981).

With place attachment, some environmental behaviorists argued that the more attached a person is to a place, the more likely they were to display behavior that is “place-protective” (Schultz, 2000; Walker & Chapman, 2003). Other research shows that people will be willing to donate additional time and money to places in which they have both an emotional and functional attachment (Moore & Graefe, 1994). Managers of site specific places must recognize the attachment between users and their favorite places by understanding how certain environments become special places that the users want to actively help in maintaining (Moore & Scott, 2003). Society has begun to place an increased value on natural resources and the extent of this has not been thoroughly researched and therefore is not completely understood by most managing agencies (Bengston, 1994). With these increased values, it is important to fully understand the relationship between how people view the places they are attached to and their ethical

stance on environmental concerns. In order to continue to have natural spaces for people to enjoy, an understanding of visitors' environmental perspectives, as well as an understanding of person-place attachments, is important in the management and maintenance of places (Halpenny, 2010).

Rationale for the Study

Lake McMurtry is a small, family-friendly lake that is owned by the City of Stillwater. In October of 2011, plans were made for the Friends of Lake McMurtry Inc., a non-profit organization, to take over management of the lake by August 2012, in order for the lake to be better managed, better utilized, and ultimately to become self-sustaining (City of Stillwater, 2012). With this change in management came the need to have an understanding of the population that utilizes the lake – who they are, what they enjoy, what they want to see happen with the lake (trail and campsite maintenance, new RV sites, etc.), and what they do not want to see happen (privatization, rental homes being built, etc.). While an understanding of the concrete ideals of its visitors is important, an understanding of the importance of the place itself to its visitors should come first. Are people attached to Lake McMurtry and what does that mean when it comes to their participation in taking care of the lake?

With the growing awareness of sustainable initiatives in Stillwater, Oklahoma such as Stillwater's Recycling Program and becoming a bicycle friendly community, the Friends of Lake McMurtry can benefit from knowing where their visitors are when it comes to their level of place attachment and their environmental ethic. Understanding their users' environmental ethic can help management recognize their role in educating

the public by providing opportunities for their visitors while raising awareness for environmental concerns at the lake and beyond. In order to best manage community spaces like Lake McMurtry, the Friends of Lake McMurtry and the City of Stillwater need to know what this lake and its opportunities for recreation and open spaces mean to its visitors and community members.

Statement of Problem

Oklahoma is more like an eastern state than a Midwestern or western state in that 90.2% of its land is privately owned (Caneday, Jordan, Brown, San Diego, Smith, & Fink, 2007). Therefore, there is not a lot of public land available for recreation and open space. Since place attachment is understudied in the state of Oklahoma, and there is not a lot of public land available, there is not a complete understanding of how people value or are attached to public land. The City of Stillwater wants to continue to provide Lake McMurtry as public space, so therefore, it is important for the Friends of Lake McMurtry to understand who their visitors are, their attachment level to the lake and public land, and if that attachment is related to a particular environmental ethic. If through this study, the Friends of Lake McMurtry can understand if their visitors are attached to the lake and surrounding land, the Friends can better manage the land and know what to provide for their visitors in the future. The outcomes of this study may also be helpful in generalizing if Oklahomans have person-place attachments with public land and if those attachments have a relationship with their environmental ethic.

Limitations

The study was limited by the following:

- The study only included visitors who were 16 years of age and older.
- Visitors self-reported their answers on the survey; therefore there may be bias in their response. In addition, all respondents were voluntary and willing participants. This may represent some bias.
- Only visitors asked while at the park and those who find the survey online from the flyers at Lake McMurtry were part of the study. The study did not include non-users in the research.
- Data collection occurred from April 10 – May 15, 2014.

Assumptions

The following basic assumptions were accepted:

- The visitors who were surveyed answered questions honestly.
- Surveyors were well trained and approached visitors, asked questions, and provided information in a systematic manner.
- Anonymity was assured to all respondents.

Definition of Terms

The following terms are defined in their relation to the study:

Place:

- A spatial location that is assigned meanings and values by society and individuals (Halpenny, 2010).

Place Attachment:

- An emotional, cognitive, and functional bond with a place (Jorgensen & Stedman, 2001).
- The extent to which individuals value or identify with a particular environmental setting (Williams and Roggenbuck, 1989).

Place Identity:

- “Dimensions of self that define the individual’s personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences, feelings, values, goals, and behavioral tendencies and skills relevant to this environment” (Proshansky, 1978, p. 155).
- A symbolically important connection between an individual and the natural world; an emotional attachment (Clayton, 2003).

Place Dependence:

- The importance of a place in providing features and conditions that support specific goals or desired activities; a functional attachment (Stokols & Shumaker, 1981).

Environmental Ethic:

- Theory and practice about appropriate concern for, values in, and duties to the natural world (Baker & Richardson, 1999).
- Including the non-human world, (plants, animals, etc.) in ethics traditionally extended solely to humans (Singer, 1979).

New Ecological Paradigm Scale:

- Survey designed to measure the support of a “pro-ecological” worldview and understand where a population is in transitioning from the Dominant Social Paradigm to the New Ecological Paradigm (Anderson, 2012).

Hypothesis and Research Questions

1. Is there a relationship between visitors’ demographic variables and their levels of place attachment?

H_O: There is no relationship between demographic variables and levels of place attachment among visitors to Lake McMurtry.

H_A: There is a significant relationship between demographic variables and levels of place attachment among visitors to Lake McMurtry.

2. Is there a relationship between visitors’ demographic variables and their environmental ethic?

H_O: There is no relationship between demographic variables of visitors to Lake McMurtry and their environmental ethic.

H_A: There is a significant relationship between demographic variables of visitors to Lake McMurtry and their environmental ethic.

3. Is there a relationship between visitors’ levels of place attachment and their environmental ethic?

H_O: There is no relationship between visitors’ levels of place attachment and their environmental ethic.

H_A: There is a significant relationship between visitors’ levels of place attachment and their environmental ethic.

4. Is there a relationship between one of the sub-elements of place attachment, place dependence or place identity, and visitors' environmental ethic?

H_O: There is no relationship between place dependence and/or place identity with visitors' environmental ethic.

H_A: There is a significant relationship between place dependence and/or place identity with visitors' environmental ethic.

5. What are the demographic characteristics of respondents who have a Dominant Social Paradigm viewpoint in comparison with respondents who have a New Ecological Paradigm viewpoint?

Purpose and Significance of Study

The purpose of this study was to understand the relationship between place attachment and visitors' environmental ethic at a local natural area, Lake McMurry. As the City of Stillwater and the Friends of Lake McMurry try to work together in order to manage the lake in a responsible and user-friendly way, they must also include the views and opinions of their visitors. By understanding whether or not their visitors are attached to the lake, the two agencies will have insight as to how the visitors will accept or disagree with their managing activity. In many cases, people who are highly attached to a certain place can be the biggest supporters, offering time and resources, but they can also be the biggest critics to management and changes without their consent (Moore & Scott, 2003). By understanding whether or not Lake McMurry is part of its visitors' personal identity, a place for their favorite activity, or just another lake in Oklahoma, is an important step in learning how to best manage the lake and its amenities.

Chapter Summary

The introduction to this research study stated a number of person-place attachment theories that exist today and focused on how place attachment theory may have a relationship with visitors' environmental ethic. The problem and rationale for the study was discussed in that Lake McMurtry needs to understand if its visitors are attached to this lake and will therefore be able to better manage its amenities for public consumption. The purpose of this study is to understand the relationship between place attachment and visitors' environmental ethic at a local natural area, Lake McMurtry. Therefore, five research questions were proposed in order to fully understand whether or not the findings will be relevant to the purpose of the study.

This research study is divided into five chapters. The first chapter introduced the topic of discussion and the purpose of the research. Chapter two denotes the main topics of the study and highlight past and present research from relevant literature. Chapter three describes how the research took place and how the sample was chosen from the population. The results are stated in Chapter four and Chapter five includes a discussion of the results, answers to the research questions, and states recommendations and suggestions for future research.

CHAPTER II

Literature Review

Introduction

The purpose of this study was to examine the relationship between place attachment to a local family lake, Lake McMurtry, and the environmental ethic of the lake's visitors. The following chapter outlines what past research has shown when it comes to this relationship and breaks down each dimension of the study including place attachment, place dependence, place identity, and environmental ethic. The literature review also includes information about the New Environmental Paradigm and the research site Lake McMurtry.

Place Attachment

Place attachment is an emotional or affective bond between a person and a particular place (Giuliani & Feldman, 1993; Williams & Patterson, 1999). However, past and present research show that place attachment theory is multidimensional and cannot be explained through a simple definition. Even though it is relatively new when compared with other theories in social science, place attachment has found interest throughout many fields of study and is utilized in a wide variety of applications

(Altman & Low, 1992; Moore & Scott, 2003). Attachment to place has been theorized under many terms including: “place belonging” (Jones, Patterson, & Hammitt, 2000; Proshansky, Fabian, & Kaminof, 1983), “sense of place” (Relph, 1976), “topophilia” (Tuan, 1974), and “place attachment” (Williams & Roggenbuck, 1989). This variety allows researchers to develop an in-depth look into how people can be affectively, cognitively, and behaviorally attached to a certain setting or environment (Scannell & Gifford, 2010).

Place attachment occurs when a setting includes meanings and activities that enhance emotional and physical ties to a natural resource (Cuba & Hummon, 1993). In some cases, proximity to a natural setting, such as a local lake, allow for repeat visitation and therefore can create an emotional attachment to the resource (Vaske & Kobrin, 2001). Williams, Patterson, Roggenbuck, and Watson, (1992) discovered from a study of visitors in a wilderness setting that local resources are not just there to be turned into recreational opportunities, but held more importance as places with generational histories, places people cared about, and places that gave visitors a sense of belonging and meaning to their lives. People become attached to places, not only because of the resources they provide, but also because places provide settings where people can feel at home and where they can be known for their achievements and who they are (Moore & Scott, 2003). Other aspects that are correlated with place attachment include a person’s proximity to the place and how often they participate in and utilize the resource (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams et al., 1992). Jacob and Schreyer (1980) noticed that some people experience their surroundings in a “focused” way by being involved with the details of a setting while others are “unfocused” in that they

utilize a general setting without noticing or needing the details. For example, “an avid fly fisherman may know and identify with every pool in a favorite trout stream while a dedicated kayaker may feel the same level of attachment, but to the river as a whole” (Moore & Scott, 2003, p. 883). Place attachment is holistic in that it involves all aspects of both the place and the person including the physical environment, human activity, social context, and the mindset of the individual (Greider & Garkovich, 1994; Relph, 1976; Tuan, 1977; Williams & Stewart, 1998).

With the vast amount of research on place attachment, studies have found that there are two sub-dimensions of place attachment: place dependence and place identity (Lockocz, Ryan, & Sadler, 2011; Moore & Graefe, 1994; Williams et al., 1992). These sub-dimensions incorporate both aspects of a person’s attachment to a particular setting – the emotional bond and the functional bond (Halpenny, 2010; Vaske & Korbin, 2001). Moore and Graefe (1994) describe the sub-dimensions with the example of a hiker and a specific trail, such as the Appalachian Trail. While one hiker may be attached to the trail because it provides challenges and opportunities to improve skills (place dependence) – another hiker may feel attached to the trail because it brings forth memories from when they hiked with family members when they were young (place identity). These topics are discussed in more depth in the following sections.

Place Dependence

Place dependence is the functional attachment in place attachment, in that it establishes the importance of place in providing the necessary resources for certain activities to occur (Stokols & Shumaker, 1981; Vaske & Kobrin, 2001; Williams &

Roggenbuck, 1989). People typically assess certain environments in regards to their functionality and identify places with what activities can be done there (Halpenny, 2010). With place dependence, the attachment is with the physical characteristics of the setting and the amenities it offers. This attachment can increase when the place is close enough in proximity to allow for frequent visitation (Vaske & Kobrin, 2001). For example, a river not known for its trout or salmon fishing may be located near an avid fisher's home, and therefore becomes a resource that allows improvement of casting skills. This attachment is not based on an emotional or psychological attachment, but one that allows the fisherman to practice his trade and gain new skills, a functional attachment. Place dependence represents the ongoing relationship between a person and a particular place, most notably involving local natural resource areas (Vaske & Kobrin, 2001).

Place dependence is also based on the quality of the place in comparison to other places that meet the needs of the person. There are two aspects that a person or group will consider when choosing where to partake in a certain activity – the quality of the place and the quality of other places in which they can perform their specific activity (White, Virden, & van Riper, 2008). The place that offers the best or a unique quality for that person will, in most cases, be the place to which they form an attachment. Another factor that can predict place dependence is the level of involvement in a certain activity. Bricker and Kerstetter (2000), studied individual white water rafters and found that rafters with higher levels of activity commitment expressed greater levels of attachment to the river than did rafters reporting lower levels of activity commitment. How often a person participates in a certain activity can be a factor in how attached they become to the place that provides the amenities for the activity. In some cases, place dependence can turn into

place identity when a person continuously visits a single place (Moore & Graefe, 1994). Place dependence focuses on the functional aspects of place attachment and describes how activities and amenities can help goal achievement and therefore form the bond between person and place (Kyle, Graefe, & Manning, 2005).

Place Identity

If place dependence is the functional attachment, place identity is the emotional attachment in which people have an affective investment with a certain setting or place that comes from within and allows them to feel comfortable and at home (Rowles, 1983; Williams & Patterson, 1999). Seamon (1979) describes place identity as being involved in a setting in which a person can be ones' self and "really be me." Proshansky (1978) theorized that individual's found their own identity through place by "understanding their beliefs, feelings, values, goals, and behavioral tendencies relevant to the specific environment" (p.155). The emotional aspect of place identity reveals that places can have symbolic meanings that allow a person to feel like they belong, which can therefore enhance a person's life (Relph, 1976; Vaske & Kobrin, 2001; Williams & Patterson, 1999).

Certain settings give people the opportunity to not only express their identity but also to establish it for them (Korpela, 1995; Kyle, Graefe, & Manning, 2005). While places can be used to define a person (outdoorsy, shop-a-holic, etc.), people can use places to help define "self" (I am a hiker, I am a fisherman, I am a golfer). There is no aspect of social-identity that does not include place relatedness (Hauge, 2007). Place identity contributes to a person's self-identity by helping them better understand and

define who they are and who they want to be (Ittelson, 1976; Kyle, Graefe, & Manning, 2005; Vaske & Kobrin, 2001).

Not only has place identity been theorized to increase the feelings of belonging to one's community (Relph, 1976; Tuan, 1980; Vaske & Kobrin, 2001), in some cases people can become attached to places they have never visited (Tuan, 1974). Places can hold significance to a person on an emotional level because of their cultural heritage or even because of its geological aspects. Many Native Americans have high levels of place attachment to their homelands, where their tribes came from originally, without ever having been there. Their attachment comes in the form of an emotional bond to their cultural heritage through place identity (Semken, 2005). Place identity encompasses an attachment to a place through emotional and symbolic meanings because of what the setting symbolizes or stands for in that particular person's life (Williams & Roggenbuck, 1989).

Environmental Ethic and the New Ecological Paradigm

Aldo Leopold stated in *A Sand County Almanac* that an environmental ethic is, "an ethic dealing with man's relation to land and to the animals and plants which grow upon it" (1949). In simple words, that is what an environmental ethic is; however, in today's developing world there is a large amount of diverse information and widespread theories when it comes to understanding environmental ethic. Many times, these theories are broken into two points of view such as dominant versus stewardship theory (Sylvan, 1973), ecocentric versus anthropocentric theory (Kortenkamp & Moore, 2001; Thompson & Barton, 1994; Stokols, 1990), and the Dominant Social Paradigm (DSP) versus the

New Ecological Paradigm (NEPD) (Dunlap, 2008). With each of the above theories, there are people who agree that nature is to be used as we, humans, see fit and there are people who agree that nature is to be taken care of and preserved not only for future generations but for the inherent value of nature itself. Sylvan (1973) states that in the dominant point of view, nature is under the control of man and it is only here for our use and enjoyment. This point of view determines that a person can still be considered ethical even when they destroy the very land they live on because it is under their domain to destroy, if they see fit. On the other hand, people who view nature through the stewardship point of view want to see nature utilized in a responsible manner and to continuously take care of our natural surroundings. Even with the more environmentally friendly undertones of the stewardship point of view, Sylvan relates that both points of view do not entirely encompass what environmental ethic means.

Thompson and Barton (1994) discussed two values or motives for understanding peoples' environmental ethic – ecocentric and anthropocentric. Individuals in both of these categories have positive actions and behaviors toward nature; these categories simply help explain the reasoning behind the pro-environmental viewpoints. Ecocentric individuals value nature for its own sake and want to protect it for its intrinsic value. They see nature as a part of a grander scheme and believe everything is united under a spiritual connection. Anthropocentric individuals want to protect the environment because of its value in sustaining and enhancing the lives of humans. For example, an anthropocentric person will fight for less pollution in big cities because pollution can lead to health issues and thus lower their quality of life, while an ecocentric person may fight

for the same cause because they are connected to the air, sky, and atmosphere in some way (Kortenkamp & Moore, 2001).

Rooted in the environmental movement of the 60's and 70's and inspired by Rachel Carson's *Silent Spring*, social psychologists hypothesized that the prevailing worldview of the population was changing to reflect greater environmental concern. These psychologists went on to develop valid and reliable measures of environmental world views to better understand the direction of these changes from the DSP of the past to the NEPD of the present and future (Anderson, 2012). The DSP includes three basic principles: 1) faith that advances in technology will overcome any harm done to the environment, 2) economic growth will overcome any amount of social unrest, and 3) all societal problems can be solved through legislation and government officials are in place to protect society (Polonsky & Kilbourne, 2005). Items endorsed by the DSP include statements such as, "Humans have the right to modify the natural environment to suit their needs," and, "The Earth has plenty of natural resources if we just learn how to develop them" (Dunlap, Van Liere, Mertig, & Jones, 2000).

Much like the differences between the dominant viewpoint and stewardship discussed earlier, the DSP and the NEPD hold two different positions on how the environment should be taken care of. The NEPD has two principles that it is based on: 1) policies and regulations must limit growth and resource depletion in order to reverse the impact we have already made on the environment and 2) the understanding that any human – nature interaction impairs the environment (LaLonde & Jackson, 2002). Statements such as, "Plants and animals have as much right as humans to exist," and, "When humans interfere with nature it often produces disastrous consequences,"

represent items endorsed by the NEPD (Dunlap et al., 2000). Within this environmental viewpoint, nature is not ours to do with what we want but supposed to be left alone and protected.

Environmental ethic is a complicated issue and the theories, research, and definitions include a wide variety of information. For the purposes of this study, the revised New Ecological Paradigm scale will be utilized as the basis for theory and instrumentation.

Environmental Ethic and Place Attachment Theory

It has been well studied and researched that people who have high levels of attachment to a certain place will be more willing to participate in protecting that resource because they develop a “field of care” through repeat visitation (Relph, 1976; Schultz, 2000; Tuan, 1977; Walker & Chapman, 2003). If the place of attachment has consequences in other parts of a person’s life, such as a lake in a watershed where their water comes from, the person may have a more environmentally ethical approach when interacting with that resource (Hines, Hungerford, & Tomera, 1987; Relph, 1876; Tuan 1974; Vaske & Kobrin, 2001). In some cases, people who do have a high level of attachment to a local resource could be counted on for partnerships to help support the places they are attached to, either financially or environmentally. A study completed by Walker and Ryan (2008), found that people who had high levels of attachment to rural landscapes were more willing to participate in environmental programs and projects to help protect the landscapes. However, in some cases, the people who have the highest

levels of attachment may become antagonistic if they are not asked or considered when it comes to changes or developments at the attached place (Moore & Scott, 2003).

In comparing place dependence and place identity when it comes to a person's environmental ethic, Kyle, Graefe, Manning, and Bacon's (2004) study of hikers on the Appalachian Trail showed that as the hiker's place identity increased their "perceptions of negative environmental conditions became more pronounced" (Halpenny, 2010, p. 210). Bricker and Kerstetter (2000) found that people who have high levels of place dependency lean towards development and maintenance of natural spaces while people who want to preserve resources and keep areas primitive show higher levels of place identity. For example, a person who is only using an area for a certain activity will want that area maintained well enough to continue that activity; however, a person who has an emotional connection to an area will not want that area to be developed but instead preserved for future visits and memories.

Lake McMurtry

Lake McMurtry is a family-oriented lake and park around twenty miles from the towns of Stillwater and Perry, Oklahoma. It is owned by the City of Stillwater and operated by the Friends of Lake McMurtry, Inc. The lake itself is approximately 1,155 surface acres and the surrounding park covers an additional 2,306 acres of land (City of Stillwater, 2013). Lake McMurtry serves as a flood control reservoir, water supply, and a public recreation area and was developed by the Natural Resource Conservation Service in the 1970's (Lake McMurtry, 2013). Some of the land surrounding the lake has been leased for agricultural uses including hay and grazing leases. There are also companies

who own the mineral rights around Lake McMurry and therefore there is oil production and hydraulic fracturing in certain areas.

The park is split into East and West sections on either side of the lake and once you are in the park, there is no connecting road or bridge to get to the other side (See Figure 1). Both sides of the park have a ranger's station connected to a small gift and bait shop. There are 18 RV campsites that offer electric and water hook-ups and 25 primitive tent campsites (Lake McMurry, 2013). Along with camping, Lake McMurry offers fishing, boating, over 27 miles of hiking and mountain bike trails, two 18-hole disc golf courses, two developed swim beaches, bird watching, and waterfowl hunting. Since it is located in a fairly remote area, it is known for being a place to find solitude, perform outdoor activities, and connect with nature.

CHAPTER III

Research Design and Methodology

As stated in previous chapters, there has been very little research based on Oklahomans and their person-place attachments. With the majority of Oklahoma land being private, it is difficult to study and understand how Oklahomans perceive public space and how they identify with it. In order for managers to fully understand what visitors and users want from these special places, they must understand what the places mean and include that in their decision making process. They also need to understand what the environmental views are of their visitors to know if they should begin programs for a greater understanding of environmental issues and activities to promote sustainable initiatives at these places. Therefore, the purpose of this study is to understand the relationship between place attachment to a local family-oriented lake, Lake McMurtry, and the environmental ethic of the lake's visitors.

Research Design

Before data collection began, approval was gained from the Oklahoma State University Institutional Review Board in order to conduct research. Once approval was gained, the research for this study began and was conducted at Lake McMurtry, located in Noble and Payne Counties, in Oklahoma. It was a quantitative study that included a

survey which was conducted both in person and online. In 2012, the United States Bureau of Census found that 74.8% of American households had Internet and 78.9% owned personal computers (USBC, 2014). Since the majority of Americans have access to the Internet, this study utilized aspects of social media and the Internet to help achieve a higher response rate within the sample population. Flyers, with both a URL and a QR code to the online survey, were placed at both ranger stations at Lake McMurtry and around the park (See Appendix B). A link to the online survey was also announced on the Friends of Lake McMurtry's Facebook account in order for their followers to get to the survey. The link led respondents to Qualtrics, an online survey host, which was utilized for both hosting the survey and for survey collection. The researcher also gathered in-person surveys from visitors in all areas of the lake and from visitors who were using different amenities including hikers, bikers, RV campers, tent campers, swimmers, fishermen, etc. The research took place between April 10th and May 15th of 2014 and included both weekday and weekend visitors.

Once the data collection was complete, data from the Qualtrics online survey and the in-person surveys were entered into IBM SPSS 21.0 in order to run statistical analyses. The plan for missing data was dependent upon where data were missing. If a respondent failed to answer all of the items on either the Place Attachment scale or the NEP scale, the entire survey was void. However, if a respondent answered all of the items on the scales but failed to answer one or more of the demographic questions, that survey was still utilized. On a survey that was missing demographic data, the data from the Place Attachment and NEP scales were used when answering the research questions regarding only those variables and were not included when answering questions regarding

demographics. IBM SPSS 21.0 filtered the data in this manner so there was no human error when it came to missing data on the surveys.

Participants

Population. The population for this study included visitors to Lake McMurry. While the exact numbers of visitors per year to Lake McMurry is not known, the researcher acquired the following sales for July through December of 2013. There were 1,732 day passes sold, 144 annual passes sold, 985 days of RV camping, and 419 days of tent camping. With these numbers, the researcher estimated that there are, on average, 6,500 people per year who visit Lake McMurry.

Sample. The researcher conducted a voluntary census to acquire a sample from the population because the survey was conducted both online and in-person. This did not allow for random sampling or convenience sampling. The researcher approached every individual to participate in the study. If there was a group of people, the researcher approached the group and asked each person from the group to fill out the survey. If a person refused to answer the survey, the researcher approached the next individual or group and continued in the same fashion. In order to account for non-response bias, the researcher recorded observational data of the individuals who were approached but did not fill out a survey. This data included approximate age, sex, activity they were participating in, and the time of day they were approached. Only those visitors who were eighteen years of age or older were asked to participate.

In order to know how many surveys needed to be completed and since the population size is an estimate, Dattalo's (2008) formula for calculating sample size from a larger population ($N > 1000$) will be utilized. The formula is as follows:

$$n = [Z^2(p)(1-p)]/c^2$$

where:

n = sample size

Z = confidence level (for a 95% confidence level $Z = 1.96$)

p = standard deviation ($p = 0.5$)

c = margin of error (in this case: $\pm 5\%$) ($c = 0.05$)

With a confidence level of 95% and a margin of error of $\pm 5\%$, there must be 384 surveys completed to have a representative sample.

Instrument

Demographics. The survey instrument included questions regarding the visitors' age, gender, ethnicity, race, education level, and income. These questions helped define the people or groups of people who visit Lake McMurtry, which will not only aid the study, but also in the management of the lake. The demographic questions also included the distance the person traveled to Lake McMurtry, how long they have been coming to Lake McMurtry, and what "type" of visitor they are (day visitor, RV camper, or tent camper).

Place Attachment Scale. The questions regarding place attachment were designed to better understand if Lake McMurtry is a place that its visitors are attached to or if it is just another place that has no particular meaning or use to them. The questions

were drawn from Williams and Vaske's (2003) Place Attachment survey and were answered using a five point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) (See Appendix C). This specific survey has been used extensively in place attachment research and has been tested for its reliability and validity.

When considering the reliability of the survey questions, Williams and Vaske (2003) found the overall survey to have a Cronbach's alpha of .83, which is considered to be in the "good" range of reliability. Also, when divided into two dimensions (place identity and place dependence) they found alphas of 0.92 and 0.87 respectively, with six items from each dimension being used, the number of items being used in this study's survey. Also, when determining generalizability, Williams and Vaske (2003) found that the overall variance for place attachment as one dimension was 22.6%, whereas the variances for place identity and place dependence were 6.3% and 3.6% respectively. This shows that scores can be generalized within dimensions but not between dimensions, meaning scores in place identity cannot be generalized with scores in place dependence.

In order to test for convergent validity, Williams and Vaske (2003) used three variables: a) the number of prior visits to the four locations under study, b) perceived familiarity, and c) whether the location was a special place. They found that for place identity, all of the F -ratios tested were significant ($F \geq 5.67$, $P \leq 0.006$) across all of the variables, while all but three were found to be significant with place dependence. Even though the average scores at each location were higher for place identity than for place dependence, the results of the ANOVAs provide evidence for validity with place identity and place dependence through the place attachment scale.

While there may be additional dimensions of place attachment, such as place affect, place identity and place dependence will be the only dimensions tested in this research. They have both been tested for reliability and validity while other dimensions have not been established well enough in past research to add any additional insight to this study.

New Ecological Paradigm Scale. The NEP scale is a revised edition of the New Environmental Paradigm, a scale developed to understand the transition of a populations' environmental ethic from the DSP to the NEPD. The scale has questions from both paradigms and depending on how the visitors respond, it will explain where they are when it comes to their environmental ethic. The fifteen questions (eight NEPD and seven DSP) are answered on a five point Likert scale (Strongly agree, agree, neutral, disagree, strongly disagree).

There have been many critics to the New Environmental Paradigm scale and the revised NEP scale when it comes to its dimensionality and validity (Anderson, 2012; Bostrom, Barke, Turaga, & O'Connor, 2006). Many tests and studies have been completed to understand if the scale is one-dimensional, as planned for this study, or multidimensional. Studies have found one to four dimensions within the NEP across multiple nations, in both developed and developing countries (Dunlap & Van Liere, 1978; Gooch, 1995; Geller & Lasley, 1985; Furman, 1998). Originally, the study was found to be one-dimensional and obtained a Cronbach's alpha of 0.81, however when used in developing or transitional countries, the reliability is much lower and widespread depending on the country (Bostrom et al., 2006). Even though it has not been found to be statistically reliable in developing countries, this study will take place in a developed

country where the revised NEP has been found to be one-dimensional across numerous populations. When researching the usefulness of the NEP scale, LaLonde & Jackson (2002) found that the scale does show that a transition is occurring in Western civilization between the DSP and the NEPD throughout many populations, stating that the environmental worldviews of industrialized countries have changed in the past two decades.

In determining the validity of the revised NEP, much of the criticism comes from studies attempting to link results from the NEP to environmentally friendly behaviors (Anderson, 2012). These researchers suggest that the scale does not measure an accurate environmental worldview when the link between the variables is weak. However, the scale is only supposed to show where a population is, in transitioning to the NEPD, and does not predict what respondents will do behaviorally once their environmental ethic has been established (Bostrom et al., 2006). The validity of the revised NEP has been recognized throughout many studies and in many forms including known-group validity (Dunlap & Van Liere, 1978; Edgell & Nowell, 1989; Widegren, 1998), predictive validity (Ebreo, Hershey, & Vining, 1999; Schultz & Zelezny, 1998; Tarrant & Cordell, 1997), and criterion validity (Zeller & Carmines, 1980). With the scale being established as both reliable and valid, this study will utilize the fifteen item revised NEP scale for data collection at Lake McMurtry.

Statistical Analysis

The researcher entered all collected data into IBM SPSS 21.0 in order to aid in the analysis. To first establish the internal consistency of the scales, Cronbach's alpha was used on the Place Attachment and NEP scales. Next, a descriptive analysis was

completed in order to see general patterns in data for both scales. In order to understand the relationship between visitor’s demographics, place attachment, and visitors’ environmental ethic, inferential statistics were completed. Data were coded depending on whether it was nominal or ordinal. Nominal data were coded beginning with a 1 and increasing by 1 for each answer to an item (Example: Male = 1, Female = 2). On the place attachment scale, coding ranged from 16 (no place attachment) to 56 (high place attachment) depending on how the respondent answered. Question number twelve was reverse coded. On the NEP scale, coding ranged from 15 (DSP) to 75 (NEPD) with every even question being reverse coded. Respondents who received a score below a 45 were more in favor of a DSP viewpoint while those who scored above a 45 were more in favor of a NEPD viewpoint (Rideout, Hushen, McGinty, Perkins, & Tate, 2005). A study conducted in New Zealand (Thomson, 2013) characterized respondents into the categories seen in Table 3-1. These same categories will help in characterizing Lake McMurtry visitors.

Table 3-1: Environmental ethic scale scores by category

	Score	Percentage
Pro-Ecological	68 - 75	88 - 100%
Mid-Ecological	47 - 65	53 - 83%
Anti-Ecological	< 45	< 50%

Data were analyzed using the Spearman’s rho correlation coefficient. The Spearman’s rho coefficient avoids assumptions that the variables must be linear in their relationship, normally distributed, and homoscedastic (Aron, Aron, & Coups, 2010). Since the data collected were ordinal in some instances and categorical in others, the Spearman’s rho coefficient was utilized because it is nonparametric and can be used

when one or both variables is measured on an ordinal scale (Aron, Aron, & Coups, 2010). The researcher also assumed that the variables had a monotonic relationship in order to use the Spearman's rho coefficient. In performing the correlations, when considering place attachment, all items on the scale were summed to create one score. However, when correlating place identity or place dependence with visitors' environmental ethic, only the items within each dimension were summed to create two separate scores – one for place identity and one for place dependence.

In order to address the last research question, responses on the NEP scale were separated in quartiles. The highest scoring quartile included those respondents who scored high on the NEPD while the lowest scoring quartile included those respondents who scored high on the DSP. Descriptive statistics were then reviewed for the respondents in each of the two groups.

Chapter Summary

This research study was conducted at Lake McMurtry and the sample population was visitors to the lake between April 10th and May 15th, 2014. A survey that was made up of three sections – demographics, Place Attachment Scale, and the NEP Scale, was completed by respondents either in person or online. The researcher analyzed the data by utilizing IBM SPSS 21.0 and an assortment of statistical methods. Once data were collected and analyzed, the results were presented in Chapter four which is followed by a discussion of the results in Chapter five.

CHAPTER IV

Results

The results of this study are presented in this chapter beginning with the changes to the research protocol that occurred during data collection, which will be followed by descriptive and frequency statistics describing general demographics of the respondents. Once there is a foundation and understanding of the sample population, the internal consistency of the scales and the results of the Spearman rho correlations between place attachment, place identity, place dependence, and environmental ethic will be presented in order to address the research questions and hypotheses.

This study aimed to understand if there was a relationship between the place attachment of visitors to Lake McMurtry and their environmental ethic. A place attachment scale (Williams and Vaske, 2003), which had six items identifying place identity and six items identifying place dependence, was used to determine if visitors to Lake McMurtry were attached to the area. Another scale, the NEP (Dunlap, 2008), was utilized to determine visitors' environmental ethic. Both instruments were designed on a five point Likert-scale with five being strongly agree and one being strongly disagree. General demographics were also acquired from each respondent and will be reported in this chapter.

Method Modifications

Certain changes were made before and during data collection in order to collect as many surveys as possible to represent the population of visitors at Lake McMurry. Instead of only Lake McMurry Friends posting a link to the Qualtrics survey on their Facebook page, other civic and nonprofit organizations who are affiliated with Lake McMurry were approached. Stillwater Red Dirt Pedalers Bicycle Club, Stillwater Summit Co., and the Oklahoma WONDERtorium were all asked to post a link to the Qualtrics survey on their Facebook pages, with the caption: “An OSU student has asked us to help with her research project to better understand Lake McMurry visitors. Please take a few minutes and complete the survey below if you have visited Lake McMurry.” This extra exposure aided in increasing the number of people who could take the survey during the time data collection occurred.

An additional change from the original methods was an extension of data collection time from April 30th to May 15th. This was due to the Institutional Review Board taking longer than expected in approving this study. The extension allowed for continued data collection to make up for the missing week and a half at the beginning of April.

Data Collection

Data were collected from April 10th through May 15th of 2014 at Lake McMurry utilizing both face-to-face survey collection and an online survey hosted on Qualtrics. Data collection occurred both during the week and on the weekends. There were two special events at Lake McMurry when data collection was occurring; the Tulsa Area

Trail and Ultra Runners (TATUR) annual Lake McMurtry race and MudU. These events brought a large number of people to Lake McMurtry that may not have otherwise been a part of the study.

Population and Sample Size

In determining the sample size needed for this particular study, Dattalo (2008) specifies the following formula for populations where $N > 1,000$.

$$n = [Z^2(p)(1-p)]/c^2$$

where:

n = sample size

Z = confidence level (for a 95% confidence level $Z = 1.96$)

p = standard deviation ($p = 0.5$)

c = margin of error (in this case: $\pm 5\%$) ($c = 0.05$)

With a confidence level of 95% and a margin of error of 5%, there must be 384 surveys completed to have a representative sample. The researcher aimed for a 95% confidence level and a 5% confidence interval; but was only able to acquire 281 surveys during the data collection period. Using the same formula, with a confidence level of 90% ($Z = 1.645$) and a margin of error of $\pm 5\%$, 270 surveys are needed for a representative sample. Therefore, with 281 respondents, the researcher is 90% certain, with a $\pm 5\%$ margin of error, that the sample accurately represents the total population.

A total of 281 Lake McMurtry visitors completed either online or face-to-face surveys. The response rate differed from 56% for the face-to-face surveys and 68% for online surveys. Attempted surveys account for those cases in which a visitor was

approached to fill out a survey or when a person viewed the online survey. Rejected surveys account for events in which a visitor did not agree to fill out a survey or when a person viewed the online survey but did not answer any questions. During TATUR’s annual race at Lake McMurtry, many people declined filling out the survey because they were too exhausted after running the race. Other reasons, on non-event days, for declining to fill out the survey were they had somewhere to be, did not have the time, or did not want to be interrupted during their activity.

Table 4-1: Response Ratios

Type	Attempted Surveys	Rejected Surveys	Completed Surveys	Response Rate
Face-to-Face Survey	335	103	232	0.69
Qualtrics Survey	72	23	49	0.68
Totals	407	126	281	0.69

Descriptive and Frequency Statistics

A descriptive analysis was completed in order to understand the sample population and the respondent’s level of involvement with Lake McMurtry. The type of visitor responding to the survey was fairly congruent with the numbers Friends of Lake McMurtry acquired from visitors between July and December of 2013. Their numbers show the largest group of visitors being day visitors while tent campers were the smallest group of visitors. This study found that during April 10th – May 15th, the majority of visitors to the lake were day visitors at nearly 80%, and tent campers made up the smallest population at 9.6%. The large number of day visitors could have been due to the

two special events that occurred during data collection; however, this is simply speculation.

Table 4-2: Type of user

Type of User	Percent	N
Tent Camper	9.6	27
RV Camper	10.7	30
Day Visitor	79.7	224

There were 276 visitors who reported the distance they traveled from their homes to Lake McMurry. This question on the survey was open ended and the data collected was compiled into categories to get a better visual of how far people were traveling to get to Lake McMurry. The average distance to get from home to Lake McMurry was 17.08 miles. Since there were outliers who traveled much farther distances than the average, additional representations, such as mode and median, were utilized. The mode was 10 miles and the median was 11.5 miles. These statistics show a more accurate portrayal of how far respondents traveled from home to Lake McMurry. It was found that 48% of respondents traveled between 1 to 10 miles to get to Lake McMurry. This is understandable seeing as how the lake is situated 9.4 miles from the town center of Stillwater, Oklahoma. Another town near Lake McMurry, Perry, Oklahoma, is nearly 21 miles away, which could explain that the second largest category of respondents, at 31% traveled 11 – 20 miles from their home.

Table 4-3: Miles respondents traveled from home to Lake McMurtry

Mileage	Percent	N
1 - 10 Miles	47.7	134
11 - 20 Miles	31	87
21 - 30 Miles	7.5	21
31 - 40 Miles	1.8	5
41 - 50 Miles	2.8	8
> 51 Miles	7.5	21

In order to understand if Lake McMurtry had any repeat visitors, a question regarding the length of time a visitor has been coming to Lake McMurtry was asked. Of the 281 respondents, 52% have been associated with Lake McMurtry two years or less and 56% have been associated with the lake between three and twenty five years. Since Lake McMurtry changed management two years ago and the Friends of Lake McMurtry have been working to get more people out to the lake, these numbers are understandable. One category did not elicit any response, that of being associated with the lake for more than 50 years. This is understandable since the lake was impounded in the 1970's and therefore has only been around for about 45 years.

Table 4-4: Length of time respondents have been associated with Lake McMurtry

Time Associated	Percent	N
Less than 1 Year	26	73
1-2 Years	26.3	74
3-5 Years	23.1	65
6-10 Years	11.4	32
11-25 Years	12.5	35
26-50 Years	0.7	2
> 50 Years	0	0

The visitors who took the survey were asked which activities they participate in while at Lake McMurtry. There were eight options including swimming, fishing, mountain biking, hiking, disc golf, boating, bird watching, and other. The respondents were able to choose as many activities as were applicable. There were 160 respondents, out of the 281 who were surveyed, who chose hiking as an activity they participated in while at the lake. Swimming was the second most popular activity at Lake McMurtry with 117, followed by fishing with 107 responses. Mountain biking, disc golf, and boating (which included kayaking and canoeing) had similar numbers at 89, 85, and 86 responses respectively. Some respondents chose ‘other’ and wrote in activities such as camping, trail running, photography, and walking.

In order to get a better understanding between activity involvement and place attachment, data were put into categories based on how many activities each respondent chose. The highest percentage of activities per respondent was 35.6% at two activities.

The majority of respondents (83.6%) participate in three or less activities at Lake McMurtry. Only 7.1% of respondents participate in more than five activities.

Figure 4-1: Respondent activities

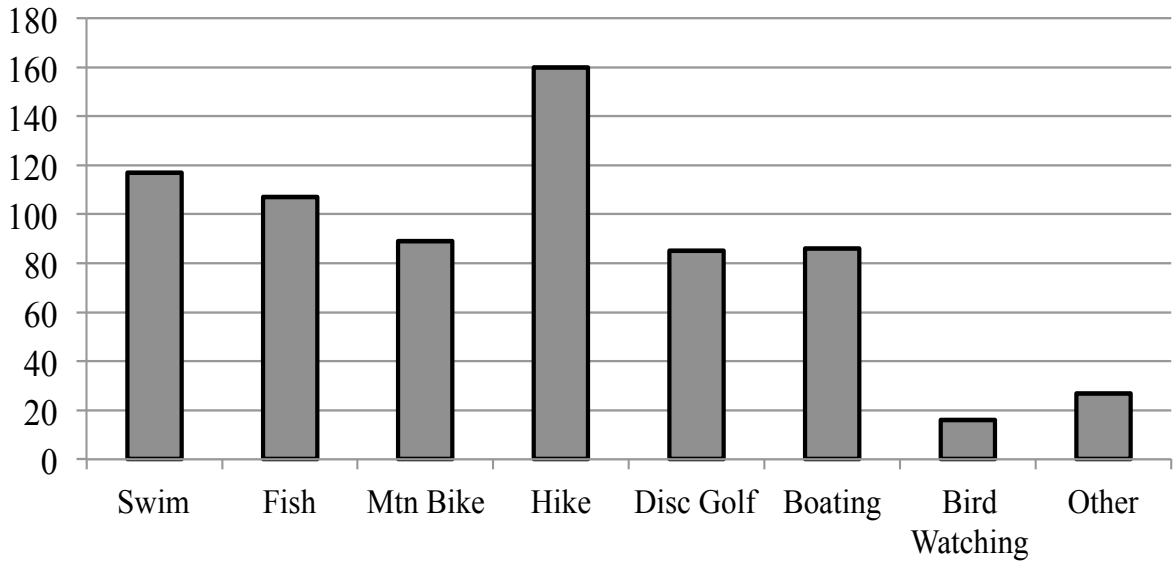


Table 4-5: Number of activities per respondent

Number of Activities	Percent	N
1	26.3	74
2	35.6	100
3	21.7	61
4	9.3	26
5	3.2	9
6	2.1	6
7	1.8	5

Respondents were asked to indicate their yearly income by selecting one of six categories. Out of the 277 respondents for this question, 64.8% selected an income ranging from \$25,000 - \$74,999 while only 6.1% selected a yearly income over

\$100,000. Since Lake McMurry is located near Oklahoma State University, these percentages are understandable considering the number of college students in the area. Also, according to the U.S. Census (2010) the median income per household in Stillwater was \$32,567, which is represented by this data.

Table 4-6: Respondents' yearly incomes

Yearly Income	Percent	N
Less than \$25,000	16	45
\$25,000 - \$49,999	33.5	94
\$50,000 - \$74,999	31.3	88
\$75,000 - \$99,999	11.7	33
\$100,000 - \$124,999	4.3	12
\$125,000 or More	1.8	5

Respondents were asked a question regarding their education levels and were given six categories to choose from ranging between less than high school and having a doctoral degree. The majority of respondents, 46.3%, selected Bachelor's degree as their highest level of education. Being that Lake McMurry is near a college town, this is understandable. It was thought, by the researcher, that a larger amount of respondents would select doctoral degree knowing how many professors live in and around the Stillwater area. However, only 4.3% of the 279 respondents selected having a Ph.D. This could mean that professors at Oklahoma State University are choosing to spend their time at a different location and may not have a strong association with Lake McMurry.

Table 4-7: Respondents' education levels

Education Level	Percent	N
Less Than High School	0	0
High School or Equivalent	21	59
Associate's Degree	16.4	46
Bachelor's Degree	46.3	130
Master's Degree	11.4	32
Doctoral Degree	4.3	12

Of the 281 respondents, nearly 60% identified as male while 40% identified as female. According to the U.S. Census (2010), the Oklahoma population is 50.5% female and 49.5% male. The difference at Lake McMurry could be a number of things, but most likely it has to do with the activities offered and how many of them are male dominated sports. Disc golf, mountain biking, and fishing are all sports that are mainly male oriented and all offered at Lake McMurry.

Table 4-8: Gender of respondents

Gender	Percent	N
Male	59.1	166
Female	40.9	115

The respondents were asked to select their age category and while the age category 35 – 44 was best represented at Lake McMurry at 28.5%, the first three categories are almost equally distributed. This indicates that nearly 78% of respondents are between the ages of 18 – 44. It could be possible that because of the MudU event and the amount of young families present, the 25 – 44 age categories have the majority of

respondents. Visitors who are 65 years of age or older are underrepresented (0.7%) in the data considering the percentage of persons 65 years of age or older make up 10.8% of the population in Payne County (U.S. Census, 2010). This could possibly mean that they may choose other locations or activities besides Lake McMurry or they may not be able to perform many of the activities offered at Lake McMurry.

Table 4-9: Respondents' age in years

Age	Percent	N
18 - 24	23.8	67
25 - 34	25.3	71
35 - 44	28.5	80
45 - 54	13.5	38
55 - 64	8.2	23
> 65	0.7	2

Table 4-10: Respondents' cultural origins

Cultural Origin	Percent	N
No, I am not of Hispanic, Latino, or Spanish origin	99.3	272
Yes I am of Hispanic, Latino, or Spanish origin	0.73	2

Out of the 274 respondents who answered the question regarding cultural origin, 99.3% are not of Hispanic, Latino, or Spanish origin. Also, 281 respondents answered a question regarding their race and it was found that the majority (96.1%) answered white. While Oklahoma and Stillwater have mainly white populations, the numbers found in this study are higher than the average for Payne County at 81.8% (U.S. Census, 2010). This could be because white, middle class families have been found to be the largest

population of outdoor recreation users (Godbey, 2009). Even so, Lake McMurry visitors are not congruent with Oklahoma’s demographics in regards to race and cultural origin.

Table 4-11: Respondents’ race

Race	Percent	N
White American	96.1	270
African American	0.7	2
Asian American	0.7	2
Native American	1.1	3
Native Hawaiian	0.0	0
Other Pacific Islander	0.0	0
Two or More Races	1.4	4

Cronbach’s Alpha

In order to understand the internal consistency of the scales, Cronbach’s Alpha was conducted on both the place attachment scale and the New Ecological Paradigm (NEP) scale. Based on the 281 respondents, it was found that the place attachment scale’s Cronbach’s Alpha was 0.754. According to Kline (2000), a Cronbach’s Alpha between $0.7 \leq \alpha < 0.9$ describes a good internal consistency. Therefore, the place attachment scale’s internal consistency for this study was good. The sub-dimensions of place attachment, place identity and place dependence, received Cronbach’s Alpha of 0.761 and 0.627 respectively. While the place identity sub-dimension had a good internal consistency, the place dependence’s consistency was merely acceptable.

The NEP scale’s Cronbach’s Alpha was 0.728 which is considered a good internal consistency. When looking at internal consistencies of the sub-dimensions of the NEP,

the DSP and the NEPD, the internal consistencies are considered poor at 0.574 and 0.579, respectively.

Place Attachment Scale

The place attachment scale contained twelve items – six of which reflected the sub-dimension place identity and six of which reflected the sub-dimension place dependence. The questions were based on a 5-point Likert scale in which respondents could answer ‘strongly agree’, ‘agree’, ‘neither agree nor disagree’, ‘disagree’, and ‘strongly disagree’. The last question on the scale was formed in the opposite manner of the other eleven questions and therefore was reverse coded.

Table 4-12: Place identity statements

Place Identity Statements
1. I feel like Lake McMurry is apart of me
2. Lake McMurry is very special to me
3. I identify strongly with Lake McMurry
4. I am very attached to Lake McMurry
5. Visiting Lake McMurry says a lot about who I am
6. Lake McMurry means a lot to me

The frequencies for each answer were calculated for the six place identity statements (See Appendix D). While ‘neither agree nor disagree’ was the answer most chosen for four out of the six items, (#1: 40.9%, #3: 38.8%, #4: 36.7%, and #5: 37.0%), ‘agree’ was chosen the most on questions two (40.2%) and six (35.9%). In all items except for number five, the choice ‘agree’ had a higher percentage than both ‘disagree’ and ‘strongly disagree’ combined. On each question for place identity, ‘strongly agree’ and ‘agree’ combined had a much higher percentage (36.3, 49.1, 36.0, 46.3, 33.8, and

49.4) than the combined percentages of ‘disagree’ or ‘strongly disagree’ (22.8, 14.6, 25.3, 17.0, 29.2, and 15.6).

Table 4-13: Place dependence statements

Place Dependence Statements
7. Lake McMurtry is the best place for what I like to do
8. No other place can compare to Lake McMurtry
9. I get more satisfaction out of visiting Lake McMurtry than any other place
10. Doing what I do at Lake McMurtry is more important to me than doing it in any other place
11. I wouldn't substitute any other area for doing the types of things I do at Lake McMurtry
12. The things I do at Lake McMurtry, I would enjoy doing just as much at a similar site

The frequencies for each answer were calculated for the six place dependence statements (See Appendix E). Again, the last question on the scale (#12) was formed in the opposite manner of the other eleven questions and therefore was reverse coded.

‘Neither agree nor disagree’ had the highest percentage for each of the six items, (37.7, 46.3, 45.9, 42.0, 44.8, and 36.3). Items eight, nine, and eleven had a higher percentage of ‘disagree’ chosen (24.6, 23.8, and 22.8) than agree (19.9, 19.2, and 21.4). On all items except for numbers seven (36.0%) and twelve (44.5%), the choices ‘strongly agree’ and ‘agree’ combined had lower percentages than ‘strongly disagree’ and ‘disagree’ combined. Item 12 had a higher percentage of ‘strongly agree’ and ‘agree’ due to the nature of how the question was written.

The means for each item on the place attachment scale were determined by taking each individual respondent's answers and summing them, then dividing that number by 281. If a respondent answered ‘strongly agree’ it was scored a five, ‘agree’ was scored a four, ‘neither agree nor disagree’ was scored a three, and so on. While computing means using Likert data is somewhat debatable, the numbers can help draw a picture that

indicates how the respondents feel toward Lake McMurry. The means on the place attachment scale ranged between 2.65 and 3.46. Although the means show that all items could be rounded to a three, indicating that the respondents most often neither agreed nor disagreed with the place attachment statements; the items pertaining to place identity (m=3.28) have a slightly higher average score than the items that pertain to place dependence (m=2.91). The average item score for all 281 respondents was 3.10.

Table 4-14: Average scores per place attachment item

Place Attachment Items*, **	Mean	Standard Deviation
Item 1 – LM is apart of me	3.19	0.965
Item 2 – LM is very special to me	3.41	0.902
Item 3 – I identify strongly with LM	3.15	0.978
Item 4 – I am very attached to LM	3.39	0.972
Item 5 – Visiting LM says a lot about who I am	3.07	1.043
Item 6 – LM means a lot to me	3.46	0.944
Item 7 – LM is the best place for what I like to do	3.11	1.036
Item 8 – No other place compares to LM	2.93	0.901
Item 9 – More satisfaction out of visiting LM	2.93	0.933
Item 10 – Doing activities at LM more imp than elsewhere	2.97	0.972
Item 11 – No substitutions for LM	2.89	0.935
Item 12 – I would enjoy other place as much as LM	2.65	0.922

*N=281 for all 12 statements, **Item 12 was previously reverse coded

New Ecological Paradigm Scale

The NEP scale contained fifteen items – eight of which reflected the ethical viewpoint of the NEPD and seven of which reflected the ethical viewpoints of the DSP. The questions were based on a 5-point Likert scale in which respondents could answer ‘strongly agree’, ‘agree’, ‘neither agree nor disagree’, ‘disagree’, and ‘strongly disagree’.

Each of the seven DSP items was reverse coded.

Table 4-15: New Ecological Paradigm (NEPD) statements

New Ecological Paradigm Statements
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
7. Plants and animals have as much right as humans to exist
9. Despite our special abilities, humans are still subject to the laws of nature
11. The Earth is like a spaceship with very limited room and resources
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

The frequencies for each answer were calculated for the eight NEPD statements (See Appendix F). If a respondent answered a NEPD item with ‘strongly agree’ or ‘agree,’ they are leaning more toward the NEPD environmental ethic, which shows a pro-ecological viewpoint. While ‘neither agree nor disagree’ was the answer most chosen for seven out of the eight items, ‘agree’ was chosen the most on question nine with 39.5%. On all of the NEPD items, the choice ‘agree’ had a higher percentage than both ‘disagree’ and ‘strongly disagree’ combined. On each NEPD item, ‘strongly agree’ and ‘agree’ combined had a much higher percentage (45.2, 34.5, 43.4, 50.6, 54.4, 38.4, 38.1, and 34.5) than the combined percentages of ‘disagree’ or ‘strongly disagree’ (18.1, 19.9, 15.6, 13.5, 14.6, 18.5, 16.4, and 20.3).

Table 4-16: Dominant Social Paradigm (DSP) statements

Dominant Social Paradigm Statements
2. Humans have the right to modify the natural environment to suit their needs
4. Human ingenuity will insure that we do not make the earth unlivable
6. The Earth has plenty of natural resources if we just learn how to develop them
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations
10. The so-called “ecological crisis” facing human kind has been greatly exaggerated
12. Humans were meant to rule over the rest of nature
14. Humans will eventually learn enough about how nature works to be able to control it

The frequencies for each answer were calculated for the seven DSP statements (See Appendix G). Each of the DSP items was reverse coded during data entry to allow for statistical analysis. If a respondent answered with either ‘strongly agree’ or ‘agree,’ they are leaning more toward the DSP anti-ecological viewpoint. ‘Neither agree nor disagree’ had the highest percentage for each of the seven items, (44.1, 46.3, 42.0, 51.6, 36.7, 40.6, and 41.6). Items two, four, and six had higher percentages of ‘disagree’ (26.3, 23.5, 31.0) while items eight, ten, twelve, and fourteen had higher percentages of ‘agree’ (22.4, 24.2, 28.1, and 28.5). By combining ‘strongly agree’ and ‘agree’ and ‘strongly disagree’ and ‘disagree’ the percentages remain constant in that items 2, 4, and 6, are higher for disagreement while 8, 10, 12, and 14 are higher for agreement.

The means for each item on the NEP scale were determined by taking each individual respondent’s answers and summing them, then dividing that number by 281. If a respondent answered ‘strongly agree’ it was scored a five, ‘agree’ was scored a four, ‘neither agree nor disagree’ was scored a three, and so on. While computing means using Likert data is somewhat ambiguous, the numbers can help draw a picture that indicates where respondents are on an ethical spectrum. The means on the NEP scale ranged

between 2.92 and 3.56. The means show that all but two items could be rounded to a three, indicating that the respondents most often neither agreed nor disagreed with the NEP statements. Items 7 and 9 have means that could be rounded to a four; therefore showing agreement with the NEPD. The items pertaining to the NEPD (m=3.40) have a slightly higher average score than the items that pertain to the DSP (m=3.09). The average overall NEP score for all 281 respondents was 3.23, which equals a mean score of 48.5. In Chapter three it was stated that any score above a 45 would show favor toward a NEPD viewpoint and based on the categories from Thomson’s (2013) study in New Zealand, the respondents had a mid-ecological environmental viewpoint.

Table 4-17: Average scores per NEP item

New Ecological Paradigm*, **	Mean	Standard Deviation
Item 1 – Number of people earth can support	3.37	0.959
Item 2 – Modify environment	2.97	0.898
Item 3 – Human interference with nature	3.23	0.932
Item 4 – Human ingenuity	3.02	0.928
Item 5 – Humans abusing the environment	3.38	0.914
Item 6 – Develop natural resources	2.92	0.912
Item 7 – Plants and animals right to exist	3.56	1.023
Item 8 – Balance of nature	3.19	0.847
Item 9 – Humans subject to laws of nature	3.53	0.956
Item 10 – Exaggerated “ecological crisis”	3.08	1.049
Item 11 – Earth has limited room and resources	3.29	0.934
Item 12 – Humans rule over nature	3.22	0.987
Item 13 – Delicate balance of nature	3.30	0.900
Item 14 – Humans control nature	3.28	0.950
Item 15 – Major ecological catastrophe	3.17	0.875

*N=281 for all 15 statements **Items 2, 4, 6, 8, 10, 12, and 14 were previously reverse coded

Research Questions

The purpose of this study was to understand the relationship between place attachment and visitors' environmental ethic at a local natural area, Lake McMurry. In order to acquire this understanding, five research questions have been established. The following information will aim to answer each research question through statistical analyses.

Research Question 1: Is there a relationship between visitors' demographic variables and their levels of place attachment? In order to answer this question, a number of Spearman rho correlations were performed between the variable 'place attachment' and the respondent's demographic variables. The following hypothesis was tested:

H₀: There is no relationship between demographic variables and levels of place attachment among visitors to Lake McMurry.

H_A: There is a significant relationship between demographic variables and levels of place attachment among visitors to Lake McMurry.

After correlating 'place attachment' with every demographic variable ('age', 'gender', 'income', 'level of education', 'cultural origin', 'race', 'time associated with Lake McMurry', 'number of activities', 'miles traveled from home', and 'type of user'), there were two significant correlations – the 'time associated with Lake McMurry' ($r(279) = .176, p < 0.01$) and the 'number of activities' ($r(279) = .147, p < 0.05$). The sub-dimensions of 'place identity' and 'place dependence' were analyzed with the variables that were found to be significant with 'place attachment'. The two variables 'place identity' and the 'time associated with Lake McMurry,' were moderately correlated

($r(279) = .237, p < 0.01$). The two variables, ‘place identity’ and the ‘number of activities,’ were also moderately correlated ($r(279) = .205, p < 0.01$). However, ‘place dependence’ did not have a significant correlation with either ‘time associated with Lake McMurtry’ nor with the ‘number of activities’. Since there were four significant correlations among these variables, the researcher rejects the null hypothesis.

Table 4-18: Research question 1 - Spearman rho correlation results

	Place Attachment	Place Identity	Place Dependence
Time Associated with Lake	0.176**	0.238**	0.050
Number of Activities	0.147*	0.205**	0.014

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Research Question 2: Is there a relationship between visitors’ demographic variables and their environmental ethic? In order to answer this question, a number of Spearman rho correlations were performed between the variable ‘environmental ethic’ and the respondent’s demographic variables. The following hypothesis was tested:

H₀: There is no relationship between demographic variables of visitors to Lake McMurtry and their environmental ethic.

H_A: There is a significant relationship between demographic variables of visitors to Lake McMurtry and their environmental ethic.

After correlating ‘environmental ethic’ with every demographic variable (‘age’, ‘gender’, ‘income’, ‘level of education’, ‘cultural origin’, ‘race’, ‘time associated with Lake McMurtry’, ‘number of activities’, ‘miles traveled from home’, and ‘type of user’), there were three significant correlations – the ‘time associated with Lake McMurtry ($r(279) =$

.238, $p < 0.01$), the ‘number of activities’ ($r(279) = .136, p < 0.05$), and ‘level of education’ ($r(277) = .216, p < 0.01$). The ethical viewpoints, ‘DSP’ and ‘NEPD’, were analyzed with the variables that were found to be significant with ‘environmental ethic’. Both the ‘DSP’ variable ($r(277) = .167, p < 0.01$) and the ‘NEPD’ variable ($r(277) = .282, p < 0.01$) were moderately correlated with ‘time associated with Lake McMurtry’. Also, they both correlated with ‘level of education’. The ‘NEPD’ variable had somewhat of a correlation with ‘number of activities’ ($r(277) = .166, p < 0.01$), while the ‘DSP’ variable did not. Since there were eight significant correlations among these variables, the researcher rejects the null hypothesis.

Table 4-19: Research question 2 - Spearman rho correlation results

	NEP	NEPD	DSP
Time Associated with Lake	0.238**	0.282**	0.167**
Number of Activities	0.136*	0.166**	0.077
Level of Education	0.216**	0.236**	0.151*

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Research Question 3: Is there a relationship between visitors’ levels of place attachment and their environmental ethic? In order to answer this question, a Spearman rho correlation was performed between the variable ‘place attachment’ and the variable ‘environmental ethic’. The following hypothesis was tested:

H_0 : There is no relationship between visitors’ levels of place attachment and their environmental ethic.

H_A : There is a significant relationship between visitors’ levels of place attachment and their environmental ethic.

After correlating ‘place attachment’ and ‘environmental ethic’, there was found to be a significant correlation ($r(279) = .156, p < 0.01$). The variables ‘DSP’ and ‘NEPD’ were also correlated with ‘place attachment’ and significance was found at the 0.05 level. Since there were three significant correlations among these variables, the researcher rejects the null hypothesis.

Table 4-20: Research question 3 – Spearman rho correlation results

	NEP	NEPD	DSP
Place Attachment	0.156**	0.151*	0.131*

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Research Question 4: Is there a relationship between one of the sub-elements of place attachment, place dependence or place identity, and visitors’ environmental ethic? In order to answer this question, a number of Spearman rho correlations were performed between the variables ‘environmental ethic’, ‘place identity’, and ‘place dependence.’

The following hypothesis was tested:

H_0 : There is no relationship between place dependence and/or place identity with visitors’ environmental ethic.

H_A : There is a significant relationship between place dependence and/or place identity with visitors’ environmental ethic.

After correlating ‘environmental ethic’ with ‘place identity’ and ‘place dependence’, there was one significant correlation. ‘Environmental ethic’ and ‘place identity’ had a moderate correlation ($r(279) = .347, p < 0.01$) while there was not a correlation between ‘environmental ethic’ and ‘place dependence’. Since there was a moderately strong

correlation between ‘environmental ethic’ and ‘place identity’, the researcher rejects the null hypothesis.

Table 4-21: Research question 4 – Spearman rho correlation results

	Place Identity	Place Dependence
New Ecological Paradigm	0.347**	-0.104

**Correlation is significant at the 0.01 level (2-tailed)

Research Question 5: What are the demographic characteristics of respondents who have a DSP viewpoint in comparison with respondents who have a NEPD viewpoint? In order to categorize the respondents into ‘DSP’ and ‘NEPD’ viewpoints, the raw scores were divided into quartiles. The top quartile included raw scores ranging from 51 to 70, from a mid-ecological to pro-ecological viewpoint, and the bottom quartile included raw scores ranging from 34 to 44, which are all considered anti-ecological. There were seventy respondents in each of the quartiles.

By analyzing the descriptive statistics of the two quartiles, there were found to be some comparable differences (See Appendix H). The majority of the respondents in the ‘DSP’ quartile were found to be male (63%) while the ‘NEPD’ quartile was almost split between the two genders but had two more females (51%) than males (49%). When looking at the age of the respondents in the ‘DSP’ quartile, only 20% were 45 years of age or older while in the ‘NEPD’ quartile, 36% of the respondents were 45 years of age or older. The yearly income for the ‘NEPD’ quartile was similar to the ‘DSP’ quartile; however, 20% of the ‘NEPD’ respondents reported earning \$75,000 or more per year while only 8% of the ‘DSP’ respondents earned the same amount. When it came to the

respondent's level of education, those who earned either a master's degree or their doctorate made up only 10% of the 'DSP' quartile but 25% of the 'NEPD' quartile.

When looking at the information that pertains to the respondent's relationships with Lake McMurry, there continue to be comparable differences between the 'DSP' and 'NEPD' quartiles. The majority of respondents in the 'DSP' quartile have only been associated with Lake McMurry for five or less years (85%). The respondents in the 'NEPD' quartile are spread across all categories of associated time, however 32% reported having been associated with the lake between eleven and fifty years. In the 'DSP' quartile, 91% of respondents reported participating in 3 or fewer activities at Lake McMurry and only 2% participated in 5 or more activities. The 'NEPD' quartile contained 68% of respondents participating in 3 or fewer activities while 12% reported participating in 5 or more. Across all individual activities, the respondents in the 'NEPD' quartile reported a higher participation rate. Hiking was the most popular activity for both quartiles followed by swimming and mountain biking for the 'NEPD' quartile and disc golf for the 'DSP' quartile.

Chapter Summary

In this chapter, all of the data gathered from visitors at Lake McMurry were reported. The analyzed data were presented using both descriptive and inferential statistics including Spearman's rho correlation coefficient. Spearman's rho was used in order to understand if there was a relationship between two variables while the descriptive statistics gave a breadth of information about the respondents to the survey. The research questions from Chapter one were also answered.

CHAPTER V

Discussion

Summary of Study

The purpose of this study was to understand the relationship between place attachment and visitors' environmental ethic at a local natural area, Lake McMurtry. With the abundance of privately owned land in Oklahoma, there is a need to understand how Oklahomans interact with public open space and if they can form an attachment to that space. Along with place attachment, this study aimed to understand the environmental ethic of the visitors to Lake McMurtry. In 2012, management of Lake McMurtry switched from the City of Stillwater to a non-profit group, the Friends of Lake McMurtry. Since the Friends of Lake McMurtry has taken over management of the lake, there is a need to understand who visits the lake, if those people have formed attachments to the lake, and what direction the Friends of Lake McMurtry needs to go in order to educate their visitors on environmental issues.

Data were collected using two different scales, Williams and Vaske's Place Attachment scale (2003) and Dunlap's New Ecological Paradigm scale (2008). Data were collected both in person and online between April 10th and May 15th, 2014. A total of 335 Lake McMurtry visitors were approached to take face-to-face surveys and 232 visitors completed the survey. There were 72 people who clicked the link to reach the online survey and 49 who completed the online survey. Both descriptive and inferential

statistics were used, including Spearman's rho correlation coefficient, to analyze the data. The proposed research questions were answered and further findings will be discussed in this chapter.

Demographic Summary

In order to understand the visitors to Lake McMurry, the respondents were asked a selection of demographic questions. It was found that the respondents were primarily lower to middle class, predominately white, and between the ages of 18 and 44. The wording of the question, "Please select your income over the past 12 months," could have contributed to the levels of income for this study being different than the average yearly household income for Payne County. If the question had been worded differently, specifying either a *household* income or an *individual's* income, the responses may have varied from what was observed in this study. The majority of respondents was male and selected "Bachelor's degree" for their level of education. Again, the wording of the question, "Please select your highest level of education," may have been too ambiguous. Since Lake McMurry is located near a college, the students who are still earning their Bachelor's degree could have answered either 'High School or Equivalent' or 'Bachelor's Degree' because the question was not specific enough. If the question had asked what level of education had been *completed*, the responses may have been different than what was observed in this study and more significant conclusions could have been drawn.

Additional questions were asked of the respondents in order to gain a better understanding of the visitor's relationship with Lake McMurry. The respondents were mainly day visitors who traveled ten miles or less from their home to get to Lake

McMurtry. Since the center of Stillwater, Oklahoma is 9.4 miles from Lake McMurtry, this could be where the majority of its visitors are coming from. Perry, Oklahoma, which is 24 miles away, could be the next area the visitors are coming from seeing that the second most specified mileage was '10 – 20 miles.' The majority of respondents to this study have only been associated with the lake two years or less. Since Lake McMurtry has been around for forty-five years, this is surprising. However, the Friends of Lake McMurtry, since taking over management two years ago, has been increasing the number of events and programs, which may account for the high number of respondents only being associated with the lake for two or less years. While there are many activities to participate in at Lake McMurtry, hiking the trails and swimming were the top two activities and the majority of respondents participated in two or less activities.

Place Attachment Summary

The place attachment scale, which was designed by Williams and Vaske (2003), included items for both sub-dimensions place identity and place dependence. Both dimensions are used together to understand if a person is attached to a certain place and whether that attachment stems from an emotional bond or a functional bond. In this study, on the place attachment scale as a whole, respondents replied most often to 'neither agree nor disagree.' This can occur when a sample population does not feel passionate about a certain topic and therefore does not want to form an opinion; it is most commonly referred to as 'central tendency bias' (Davies, 2007). However, the average raw score was a 37.8, which shows that the respondents did have somewhat of an attachment, since it was not below a score of 36, the determining score between attached and not attached. This low level of attachment could be because the respondents have

attachments to lake settings in general, so they have some form of attachment to Lake McMurry because it is a lake setting but they also could have attachments with other lakes in Oklahoma and elsewhere. Oklahoma does have a large number of manmade lakes so Oklahomans may be comfortable in a lake setting and Lake McMurry is just one of many similar environments.

Low and Altman (1992) stated that “a person’s feelings and emotions toward environments and settings can vary in several ways – in scale or size and scope...” (p.5). When looking at place identity, the respondents did have positive emotions toward Lake McMurry and replied more positively than negatively on all of the items. Items two, ‘Lake McMurry is very special to me,’ and six, ‘Lake McMurry means a lot to me,’ received the highest percentages of ‘strongly agree’ and ‘agree’ out of the six place identity statements. This shows that the respondents may have had an emotional bond with Lake McMurry and consider it a place that has significance to them. Or the respondents could be identifying with a lake setting, and Lake McMurry is another lake setting in Oklahoma in which respondent’s feelings vary in size and scope compared with other lakes.

Place dependence had more respondents disagreeing with the statements rather than agreeing. Item twelve, ‘The things I do at Lake McMurry, I would enjoy doing just as much at a similar site’ was agreed with more than disagreed, representing how the respondents did not feel that Lake McMurry was the only place to participate in their chosen activities. Stokols and Shumaker (1981) stated that a person’s place dependence is based on the quality of the activities and amenities at a certain place in comparison to the quality of the activities and amenities at a comparable place. The respondents at Lake

McMurtry may utilize the lake's activities and amenities because they are conveniently located; however, if there were other options in the area, they may wish to use a place that has a higher quality of activities and amenities.

With the data gathered in this study about visitor's place attachment, The Friends of Lake McMurtry now have a foundation in knowing that their visitors are not specifically attached to Lake McMurtry as their preferred place. While the new management is trying to get the Stillwater and Perry communities more involved with Lake McMurtry, it seems they need to better understand what their visitors want from the lake and recreation area. This brings forth additional questions that they will have to answer as to how do people become attached to certain natural areas and are their specific steps that can be taken to help visitors become attached?

Environmental Ethic Summary

The NEP scale, designed and revised by Dunlap (2008), contained viewpoints from both the DSP and the NEPD. These viewpoints describe whether a respondent has a pro-ecological stance (NEPD) or an anti-ecological stance (DSP). In this study, respondents answered most often 'neither agree nor disagree' to the majority of the items on the scale. Again, similar to the place attachment scale, this could be because of central tendency bias, indicating the respondents were not necessarily passionate enough about the topic to form an opinion. Item number seven, "plants and animals have as much right as humans to exist," was one of the most agreed with statements, which was also found in a similar study conducted in a park setting about Oklahomans' environmental ethic (Bradley, 2008). It can be speculated that because Oklahoma has a large population of farmers and ranchers, who depend on plants and animals for their own survival, they may

agree with this statement. When comparing the ‘DSP’ and the ‘NEPD’, respondents leaned more toward a mid-ecological point of view than an anti-ecological point of view. While this was unexpected, since it has been found that individuals who live in rural settings are not typically concerned with environmental issues (Tremblay & Dunlap, 1977), the fact that Oklahoma State University brings a wide variety of individuals to the area could be a reason why the ‘NEPD’ was endorsed at a slightly higher level than the ‘DSP.’

Findings

Research Question 1: The first research question investigated if there were any correlations between respondent’s place attachment to Lake McMurry and ten demographic variables. It was found that two of the variables, ‘time associated with Lake McMurry’ and the ‘number of activities’ both significantly correlated with the ‘place attachment’ variable. These two demographic variables also significantly correlated with ‘place identity.’ There have been many studies that describe situations in which a person forms an attachment with a place the longer they are associated with that place (Halpenny, 2010; Kyle, Bricker, Graefe, & Wickham, 2004; Moore & Graefe, 2004). It is interesting though, that in this study there is a significant correlation between ‘time associated with Lake McMurry’ and ‘place attachment’ since the majority of respondents have only been associated with the lake for two or less years. This could mean that the respondents who have been associated with Lake McMurry for a longer period of time have a stronger place identity and place attachment to the lake and that is where the relationship is the strongest. Or it could mean that, through the newer events and programs that the Friends of Lake McMurry are putting on, people who are first

coming to Lake McMurtry are beginning to form attachments to the place where those events were held, not necessarily Lake McMurtry itself.

It was also found that the ‘number of activities’ significantly correlated with ‘place identity.’ As a visitor participates in more activities at a certain place, it has been found that they can form an emotional bond with the place itself, or even a certain aspect of that place (Bricker & Kerstetter, 2000). Also, it has been found that people who participate in more specialized activities have a higher degree of setting attachments than those who participate in less specialized activities (Mowen, Graefe, & Virden, 1997). Those respondents who participate in numerous activities at the lake, such as mountain biking and disc golf, may not only be dedicated to the activities themselves but also desire a specific trail or disc golf course in which to practice their skills. Whereas, someone who just comes to the lake to swim or go for a day hike, may not care which lake they are at or trail they are on. It could also be said that as a visitor develops a ‘sense of self’ in a certain setting, they may want to be there more and participate in additional activities to see if they can go deeper into how that place helps define them. Further study of specific activities within Lake McMurtry could help identify which user groups are more attached to which specific trails or activities in order for management to better accommodate them.

Research Question 2: The second research question was similar in nature to the first, in that it investigated if there were any relationships between respondent’s demographic variables and their environmental ethic. Three demographic variables were found to significantly correlate with respondent’s environmental ethic: ‘time associated with the lake,’ ‘number of activities,’ and ‘level of education.’ All of these variables also

significantly correlated with the 'NEPD' variable. Only two of the variables, 'time associated with the lake' and 'level of education' significantly correlated with the 'DSP' variable.

There have been many studies that discuss the relationship between a person repeatedly visiting a certain place and therefore developing a "field of care" for that place by displaying environmentally friendly behaviors (Relph, 1976; Schultz, 2000; Tuan, 1977; Walker & Chapman, 2003). The longer a person spends time in a natural setting, the more chances they have of seeing how nature works and noticing when human interaction with nature has a negative effect. This can change a person's perception or ethic when it comes to their views on environmental issues. There has been a relationship established between length of time associated with a natural area and environmentally friendly behavior (Lawrence, 2012); however, the majority of the respondents in this study have only been associated with Lake McMurtry for two or less years. It does make sense though that as a person has been associated with Lake McMurtry for a longer period of time, they will have formed an attachment and have an understanding of how their interactions with nature can impact it for the better or worse; therefore, affecting their environmental ethic.

There were significant correlations between 'NEP' and 'NEPD' with the 'amount of activities' respondents participated in at Lake McMurtry. There have been a number of studies that have also found a correlation between environmental attitudes and outdoor activities (Geisler, Martinson, & Wilkening, 1977; Theodori, Luloff, & Willits, 1998). When people spend more time involved in outdoor activities, they tend to display more environmentally friendly behaviors (Gosling & Williams, 2010). Whether it is hiking,

camping, fishing, etc. people want an unobstructed experience (no litter, erosion, tree damage, etc.) when participating in outdoor activities and the more activities a person participates in, the more chances they will see some time of obstruction that affects their experience (Flood & McAvoy, 2000). Even though the majority of respondents participated in two or less activities at Lake McMurry, it has been shown in numerous studies that people who participate in any amount of outdoor activities may be counted on to display pro-ecological behaviors. Some studies have shown that people who participate in less consumptive activities (hiking, bird watching, and swimming) displayed a higher environmental concern than those who participated in more consumptive activities (hiking and fishing) (Bjerke, Thrane, & Kleiven, 2006).

The correlations between 'level of education' and 'NEP,' 'NEPD,' and 'DSP' seem contradictory. It seems unlikely that the respondents' 'level of education' could be significantly correlated with both the 'NEPD' and 'DSP' variables. Outside of the issue of central tendency bias, it may be speculated that this could mean that there are two groups of respondents represented in the data. The 'level of education' of the respondents is divided between 36% having an associate's degree or less and 46% having their bachelor's degree. Howell and Laska (1992) have found that education levels are important in determining a person's environmental attitudes. Therefore, there may be two groups, one with a higher level of education and one with a lower level of education, that correlate with the corresponding environmental viewpoints. Further statistical analysis is needed to determine this speculation.

The relationship between 'NEP' and 'level of education' makes sense from a statistical point of view. As respondents' environmental ethic moves toward a pro-

ecological viewpoint, their level of education may also increase. This parallels other studies that demonstrate that an understanding of environmental concerns (education) is an indicator of environmental viewpoints (Lyons & Breakwell, 1994). However, this could be dependent upon a respondent's particular field of study. In many cases, engineers and those who have studied in agriculture may see nature as something that man can overcome and it is here for our own uses. If the survey had an additional question concerning either field of study or occupation, this may have helped in furthering the analysis. The correlation between 'NEP' and 'level of education' can be understood also because of the fact that Lake McMurry is near Oklahoma State University and therefore has an above average amount of educated individuals.

Research Question 3: The third research question assessed if there was a relationship between visitors' levels of place attachment and their environmental ethic. It was found that there was a significant relationship between place attachment and the environmental ethic of Lake McMurry visitors. Place attachment was also found to be significantly correlated with 'NEPD' and 'DSP' at the 0.05 level. While past studies show that a high level of place attachment can increase an individual's willingness to protect that place (Schultz, 2000; Walker & Chapman, 2003), in this study, the levels of place attachment were not that high and there were correlations between opposing ethical viewpoints. One situation that could describe this occurrence is if there were two groups of people at Lake McMurry, one that is more environmentally sensitive and one that is more extractive in use. People, who are more extractive or consumptive in nature, those who hunt, fish, ride all-terrain vehicles, and snow mobiles, tend to have an environmental ethic that coincides with the 'DSP' viewpoint. They can be attached to a place that

provides the space for an activity they enjoy, but are not of the ethical viewpoint that the natural area needs to be protected or conserved; they want to use it for their activity (Bjerke, 2006). On the other hand, someone who enjoys hiking, bird watching, swimming, etc. can become attached to a place but also want to see place protected and conserved for future generations. There could be two differing groups at Lake McMurtry and that is why 'place attachment' correlated positively with both 'NEPD' and 'DSP' variables.

Research Question 4: The fourth research question investigated if there was a relationship between visitors' environmental ethic and either place identity and/or place dependence. Place identity had a positive significant correlation with visitors' environmental ethic that was higher than the correlation between place attachment and environmental ethic. Place dependence had a negative correlation with visitors' environmental ethic and it was not found to be significant. The fact that place identity correlated with environmental ethic but place dependence did not could help explain the weak correlation between place attachment and environmental ethic.

Kyle, Graefe, Manning, and Bacon's (2004) study of hikers on the Appalachian Trail showed that as the hiker's place identity increased their "perceptions of negative environmental conditions became more pronounced" (Halpenny, 2010, p. 210). This helps confirm what was found in this study in that those with higher levels of place identity may have a deeper awareness of what goes on around them in nature. Also, it has been found that people who show higher levels of place dependence desire maintenance and development of natural areas and may not care as much about the environmental impacts (Bricker & Kerstetter, 2000). This is also confirmed by this study in that the

relationship between environmental ethic and place dependence, even though not significant, was a negative relationship.

However, this could also mean that those individuals with higher environmental ethics are dependent on other places rather than Lake McMurtry for their activities, even though they may identify with the lake because it is local and convenient. This speculation coincides with the information that answered previous research questions, in that the respondents identified with Lake McMurtry because it is a lake setting but not specifically because they have a strong place attachment with Lake McMurtry.

Research Question 5: The last research question aimed to understand what the demographic characteristics of respondents who have a DSP viewpoint are in comparison with respondents who have a NEPD viewpoint. The NEPD respondents in the top quartile were highly educated and had higher yearly incomes than the DSP respondents. They also participated in more activities and have been associated with Lake McMurtry for a longer period of time. The findings are congruent with many past research studies in that those who have an environmental ethic that aligns with the NEPD viewpoint are typically well educated and spend more time in nature.

Some researchers have found a relationship between gender and environmental attitudes in that females have higher environmental attitudes than males (Lou & Deng, 2008). This is congruent with this study's findings because the NEPD group had a more equal balance between males and females when compared to the DSP, which had 26% more males than females.

Other research has found relationships between age and environmental attitudes; however, it shows that younger people have higher environmental attitudes when

compared with older people (Zinn & Graefe, 2007) and that was not found in this study. The respondents in the DSP group had 46% who were between the ages of 18 and 34 and only 20% who were between 45 and 64. The respondents in the NEPD group were split between younger ages (50%) and older ages (36%). While the NEPD group has a sizeable portion of younger adults, it also has a large number of older adults, which would not be congruent with previous studies. This could be because these respondents have been coming to Lake McMurtry for quite some time and therefore have developed a higher environmental ethic.

Past research, as stated before, has found a relationship between levels of education and environmental attitudes (Taskin, 2009). The more education a person has, the higher their environmental attitudes tend to be. However, once again, this could be dependent upon their field of study. Within these two quartiles, this study is consistent with past findings. While the respondents in the lowest quartile only had 10% who had earned their Master's degree or their Doctorate degree, 36% of the respondents in the highest quartile had earned one of those degrees.

It is also worthy to note that out of the 49 completed online surveys, 27 of the respondents in the NEPD quartile filled out the survey online. Only two of the DEP respondents, in the lowest quartile, were taken online. Since many of the online survey takers 'follow' the Friends of Lake McMurtry Facebook page, they more than likely have spent a lot of time at the lake and have personal interest in its protection and conservation. Therefore, it is understandable that those who have intrinsic motivation to take an online survey for Lake McMurtry would have an elevated level of environmental ethics.

Though the respondents at Lake McMurtry may lean toward a pro-ecological viewpoint, many studies have shown that even with an increased understanding of environmental issues, people still fail to change their behaviors in order to decrease their influence on the environment (Bamberg & Moser, 2007; Dunlap & Scarce, 1991; Howell & Laska, 1992). The Friends of Lake McMurtry need to work together with other non-profit organizations in the area to get visitors involved with the happenings at the lake and determine what programs they can put in place to help increase visitors passion for the lake and environmental concerns. Perhaps if they had a specific area or place in which to be passionate about, their attitude and behaviors would change.

Recommendations for Future Research

If this research study was to be conducted again, there are a number of things that could be changed to enhance the study. Had the study been conducted either for a longer time period or across different seasons throughout the year, the number of respondents may have increased. Additionally, different user groups and activities may have been reported depending on the time of year. As mentioned earlier, some of the questions on the survey were too ambiguous and needed to be more specific to truly understand the sample population. Specifying whether the yearly income was for a household or individual would have given respondents a better idea of how to answer that item on the survey. Also, had the question regarding education been more specific in asking what level of education the respondent had completed or what their area of study was, answers may have been different than what was observed. If the respondent's zip codes had been collected, lake management would have a more specific idea of where their visitors were coming from instead of only knowing the mileage from their home to the lake. Knowing

the general area where their visitors live could help with marketing and in determining the scope of their programs and activities they offer to the public.

Another factor that could play a significant role in future research would be to incorporate respondents who are not visitors to Lake McMurry. Having an understanding of why Lake McMurry's presence in Stillwater and the surrounding areas is not very widespread could help management better market the lake. Knowing who visits the lake could be just as important as why people do not come to Lake McMurry.

In regards to the scales on the survey, the revised NEP scale has both its followers and its critics. Many critics state it has outlived its usefulness and relevance (LaLonde & Jackson, 2002), but it is still one of the most used instruments in understanding a population's ecological standpoints (Kopnina, 2012). Some critics think it is too focused on the carrying capacity of the Earth and the future of the environment and does not address any positive actions or opinions (LaLonde & Jackson, 2002). If done again, a different scale that incorporated questions regarding a person's actions may be more beneficial to a management group instead of simply respondent's ethical viewpoints. While it is important to know where a population is on an environmental spectrum, information regarding actions they take to support that viewpoint could be more advantageous.

Conclusions

Lake McMurry is a family-oriented lake that has a devoted number of visitors who enjoy the activities and amenities that are offered there. The respondents to this study, surprisingly, did not have high attachment levels to the lake. This could be because

of an under representative sample group or those that are truly devoted to the lake are few and far between. Knowing that Oklahoma has only a small amount of public natural areas, one of the purposes of this study was to better understand if Oklahomans could be attached to public space. Garnering information from this study, Oklahomans do not form strong bonds with public natural areas. However, this study's sample size was very small compared to the population of Oklahomans that reside in this state. With the numerous amounts of manmade lakes in Oklahoma, it is understandable that respondents had a higher place identity attachment with Lake McMurtry than place dependence. They may have identified with a lake setting, just like Lake McMurtry, but identify with a lake setting as a whole instead of individual lakes.

This study has also established that while understanding the environmental ethic of visitors is important, grasping what they do with that ethic in their behaviors and attitudes is also important. Research needs to be conducted on visitors' environmental behaviors, but before that can occur, an instrument that has the ability to calculate and allow researchers to fully understand respondent's attitudes, actions, and behaviors toward the environment needs to be developed.

The researcher hopes that this study can provide insight for the Friends of Lake McMurtry into who their visitors are and how they can best form relationships with those visitors. The future of Lake McMurtry is dependent upon gaining and sustaining passionate people who want to see the lake, trails, camping sites, etc. continue to be available for years to come. In order for this to happen, management and visitors must work together to make Lake McMurtry an important place in Oklahoma.

REFERENCES

- Altman, I., & Low, S. (Eds.). (1992). Place Attachment. *Human Behavior and Environment, 12*, 1-12.
- Anderson, M. (2012). New Ecological Paradigm (NEP) scale. *The Berkshire Encyclopedia of Sustainability: Measurements, Indicators, and Research Methods for Sustainability*, 260-262.
- Aron, A., Aron, E., & Coups, E. (2010). *Statistics for the behavioral and social sciences: A brief course*. New York, NY: Pearson Publishing.
- Baker, E., & Richardson, M. (1999). Ethics and the environment. *Ethics Applied, 2*, 407-437.
- Bamberg, S., & Moser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psychosocial determinants of proenvironmental behavior. *Environmental Psychology, 27*, 14-25.
- Basso, K. (1996). *Wisdom sits in places*. Albuquerque, NM: University of New Mexico Press.
- Bengston, D. (1994). Changing forest values and ecosystem management. *Society and Natural Resources, 7*, 515-533.
- Bjerke, T., Thrane, C., Kleiven, J. (2006). Outdoor recreation interests and environmental attitudes in Norway. *Journal of Managing Leisure, 11*, 116-128.

- Bostrom, A., Barke, R., Turaga, R., & O'Connor, R. (2006). Environmental concerns and the New Environmental Paradigm in Bulgaria. *The Journal of Environmental Education*, 37(3), 25-40.
- Bricker, K., & Kerstetter, D. (2000). Level of specialization and place attachment: An exploratory study of whitewater recreationists. *Leisure Sciences*, 22(4), 233-257.
- Caneday, L., Jordan, D., Brown, P., San Diego, T., Smith, K., & Fink, K. (2007). A second century of outdoor recreation in Oklahoma: 2007 statewide comprehensive outdoor recreation plan. Working Paper, Oklahoma Tourism and Recreation Department.
- Carson, R. (1962). *Silent spring*. Cambridge, Mass: Houghton Mifflin.
- City of Stillwater. (2012, June 4). *Consider operations agreement with the Friends of Lake McMurtry, Inc.*
- City of Stillwater. (2013). *Lake McMurtry*. Retrieved from http://stillwater.org/government/city_facilities/lake_mcmurtry.php.
- Clayton, S. (2003). Environmental identity: A conceptual and an operational definition. In S. Clayton, & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (p. 45-65). Cambridge, MA: The MIT Press.
- Cuba, L., & Hummon, D. (1993). A place to call home: Identification with dwelling, community and region. *Sociological Quarterly*, 34(1), 111-131.
- Dattalo, P. (2008). *Determining sample size: Balancing power, precision, and practicality*. New York: Oxford University Press.
- Davies, M. (2007). *Doing a successful research project: Using qualitative or quantitative methods*. New York, NY: Palgrave Macmillan.

- Dunlap, R. (2008). The New Environmental Paradigm Scale: From marginality to worldwide use. *The Journal of Environmental Education, 40*(1), 3-18.
- Dunlap, R., & Scarce, R. (1991). The polls – poll trends: Environment problems and protection. *Public Opinion, 55*, 651-672.
- Dunlap, R., & Van Liere, K. (1978). The New Environmental Paradigm: A proposed measuring instrument and preliminary results. *The Journal of Environmental Education, 9*, 10-19.
- Dunlap, R., Van Liere, K., Mertig, A., & Jones, R.E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues, 56*(3), 425-442.
- Ebreo, A., Hershey, J., & Vining, J. (1999). Reducing solid waste. Linking recycling to environmentally responsible consumerism. *Environment and Behavior, 31*, 107-135.
- Edgell, M., & Nowell, D. (1989). The New Environmental Paradigm scale: Wildlife and environmental beliefs in British Columbia. *Society and Natural Resources, 2*, 285-296.
- Furman, A. (1998). A note on environmental concern in a developing country results from an Istanbul survey. *Environment and Behavior, 30*, 520-534.
- Geisler, C., Martinson, O., & Wilkening, E. (1977). Outdoor recreation and environmental concern: A restudy. *Rural Sociology, 42*, 241-249.
- Geller, J., & Lasley, P. (1985). The New Environmental Paradigm scale: A reexamination. *The Journal of Environmental Education, 17*(1), 9-12.
- Giuliani, M., & Feldman, R. (1993). Place attachment in a developmental and cultural context. *Journal of Environmental Psychology, 13*, 267-274.
- Godbey, G. (2009). Outdoor recreation, health, and wellness: Understanding and enhancing the relationship. (Working Paper No. 09-21) Retrieved from Resources for the Future

website:

<http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=20803>.

Gooch, G. (1995). Environmental beliefs and attitudes in Sweden and the Baltic states.

Environment and Behavior, 27, 513-539.

Gosling, E., & Williams, K. (2010). Connectedness to nature, place attachment, and conservation behavior: Testing connectedness theory among farmers. *Journal of Environmental Psychology*, 30, 298-304.

Greider, T., & Garkovich, L. (1994). Landscapes: The social construction of nature and the environment. *Rural Sociology*, 59, 1-24.

Halpenny, E. (2010). Pro-environmental behaviours and park visitors: The effect of place attachment. *Journal of Environmental Psychology*, 30, 409-421.

Hauge, A. (2007). Identity and place: A critical comparison of three identity theories.

Architectural Science Review, 43(3), 1-15.

Hines, J., Hungerford, H. & Tomera, A. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *Journal of Environmental Education*, 18, 1-8.

Howell, S., & Laska, S. (1992). The changing face of the environmental coalition: A research note. *Environment and Behavior*, 24(1), 134-144.

Ittelson, W. (1976). Environmental perception and urban experience. *Environmental and Behavior*, 10(2), 193-213.

Jacob, G., & Schreyer, R. (1980). Conflict in outdoor recreation: A theoretical perspective.

Journal of Leisure Research, 12, 368-380.

- Jones, C., Patterson, M., & Hammitt, W. (2000). Evaluating the construct validity of sense of belonging as a measure of landscape perception. *Journal of Leisure Research, 32*, 383-395.
- Jorgensen, B., & Stedman, R. (2002). Sense of place as an attitude Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology, 21*(3), 233-248.
- Kilbourne, W., & Beckmann, S. (1998). Review and critical assessment of research on marketing and the environment. *Journal of Marketing Management, 14*(6), 513-532.
- Kopnina, H. (2012). 'People are not plants, but both need to grow': Qualitative analysis of the New Ecological Paradigm scale for children. *Environmentalist, 32*(4), 394-404.
- Korpela, K. (1995). *Place identity as a product of environmental self-regulation*. In Groat, L. (Ed.). *Readings in environmental psychology: Giving places meanings* (115-130). San Diego: Academic Press.
- Kortenkamp, K., & Moore, C. (2001). Ecocentrism and anthropocentrism: Moral reasoning about ecological commons dilemmas. *Journal of Environmental Psychology, 21*(3), 261-272.
- Kyle, G., Bricker, K., Graefe, A., & Wickham, T. (2004). An examination of recreationists' relationships with activities and settings. *Leisure Sciences, 26*, 123-142.
- Kyle, G., Graefe, A., & Manning, R. (2005). Testing the dimensionality of place attachment in recreational settings. *Environment and Behavior, 37*(2), 153-177.
- Kyle, G., Graefe, A., Manning, R., & Bacon, J. (2004). Effects of place attachment on users' perceptions of social and environmental conditions in a natural setting. *Journal of Environmental Psychology, 24*, 213-225.

- Lake McMurry. (2013). *Visit Lake McMurry*. Retrieved from <http://lakemcmurtry.com/index.php>.
- LaLonde, R., & Jackson, E. (2002). The New Environmental Paradigm scale: Has it outlived its usefulness? *The Journal of Environmental Education*, 33(4), 28.
- Lawrence, E. (2012). Visitation to natural areas on campus and its relation to place identity and environmentally responsible behaviors. *The Journal of Environmental Education*, 43(2), 93-106.
- Leopold, A. (1949). *A Sand County almanac: With essays on conservation from Round River*. New York: Oxford University Press.
- Lockocz, E., Ryan, R., & Sadler, A. (2011). Motivations for land protection and stewardship: Exploring place attachment and rural landscape character in Massachusetts. *Landscape and Urban Planning*, 99(2), 65-76.
- Lou, Y., & Deng, J. (2008). The new environmental paradigm and nature-based tourism motivation. *Travel Research*, 46, 392-402.
- Low, S., & Altman, I. (1992). *Place attachment: A conceptual inquiry*. In I. Altman, & S. Low (Eds.), *Place attachment* (1-12). New York: Plenum Press.
- Lyons, E., & Breakwell, G. (1994). Factors predicting environmental concern and indifference in 13 to 16-year-olds. *Environment and Behavior*, 26(2), 223-238.
- Milbrath, L., (1989). *Envisioning a sustainable society: Learning our way out*. New York, NY: SUNY Press.
- Moore, R., & Graefe, A. (1994). Attachments to recreation settings: The case of rail-trail users. *Leisure Science: An Interdisciplinary Journal*, 16(1), 17-31.

- Moore, R., & Scott, D. (2003). Place attachment and context: Comparing a park and trail within. *Forest Science, 49*(6), 877-884.
- Mowen, A., Graefe, A., & Virden, R. (1997). A typology of place attachment and activity involvement. In H.G. Vogelsong (ed.), *Proceedings of the 1997 Northeastern Recreation Research Symposium* (pp 89-92).
- Mowen, A., Graefe, A., & Williams, D., (1998). An assessment of activity and trail type as indicators of trail user diversity. *Journal of Park and Recreation Administration, 16*(1), 80-96.
- Oldenburg, R. (1991). *The great good place*. New York, NY: Marlow & Company.
- Oldenburg, R., & Brissett, D. (1982). The third place. *Qualitative Sociology, 5*(4), 265-284.
- Polonsky, M., & Kilbourne, W. (2005). Environmental attitudes and their relation to the dominant social paradigm among university students in New Zealand and Australia. *Australasian Marketing Journal, 13*(2), 37-48.
- Proshansky, H. (1978). The city and self-identity. *Environmental Behavior, 10*(2), 147-169.
- Proshansky, H., Fabian, A., & Kaminof, R. (1983). Place identity: Physical world and socialization of the self. *Environmental Psychology, 3*, 57-83.
- Regan, T. (1981). The nature and possibility of an environmental ethic. *Environmental Ethics, 3*(1), 19-34. doi: 10.5840/enviroethics19813131.
- Relph, E. (1976). *Place and placelessness*. London, England: Pion Limited.
- Rideout, B., Hushen, K., McGinty, D., Perkins, S., & Tate, J. (2005). Endorsement of the New Ecological Paradigm in systematic and e-mail samples of collect students. *Journal of Environmental Education, 36*(2), 15-23.

- Rowles, G. (1983). Place and personal identity in old age: Observations from Appalachia. *Journal of Environmental Psychology*, 3(4), 299-313.
- Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, 30, 1-10.
doi:10.1016/j.jenvp.2009.09.006.
- Schultz, P. (2000). Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues*, 56(3), 391-406.
- Schultz, P., & Zelezny, L. (1998). Values and pro-environmental behavior: A five-country survey. *Journal of Cross-Cultural Psychology*, 29, 540-558.
- Seamon, D. (1979). *A geography of the lifeworld: Movement, rest, and encounter*. New York: St. Martin's Press.
- Seamon, D., & Sowers, J. (2008). *Place and placelessness*. In P. Hubbard, R. Kitchen, & G. Vallentine. (Eds.). *Key texts in human geography* (43-51). London: Sage.
- Semken, S. (2005). Place-based introductory geoscience teaching for American Indian and Alaska native undergraduates. *Journal of Geoscience Education*, 53(2), 149-157.
- Singer, P. (1979). *Practical ethics*. Cambridge, NY: Cambridge University Press.
- Stokols, D. (1990). Instrumental and spiritual views of people-environment relations. *American Psychologist*, 45, 641-646.
- Stokols, D., & Shumaker, S. (1981). *People in places: A transactional view of settings*. In Harvey, J.H. (Eds.), *Cognition, social behavior, and the environment* (441-448). Hillsdale, NJ: L. Erlbaum.
- Sylvan, R. (1973). Is there a need for a new, an environmental, ethic? *Proceedings of the XV World Congress of Philosophy*, 1, 205-210.

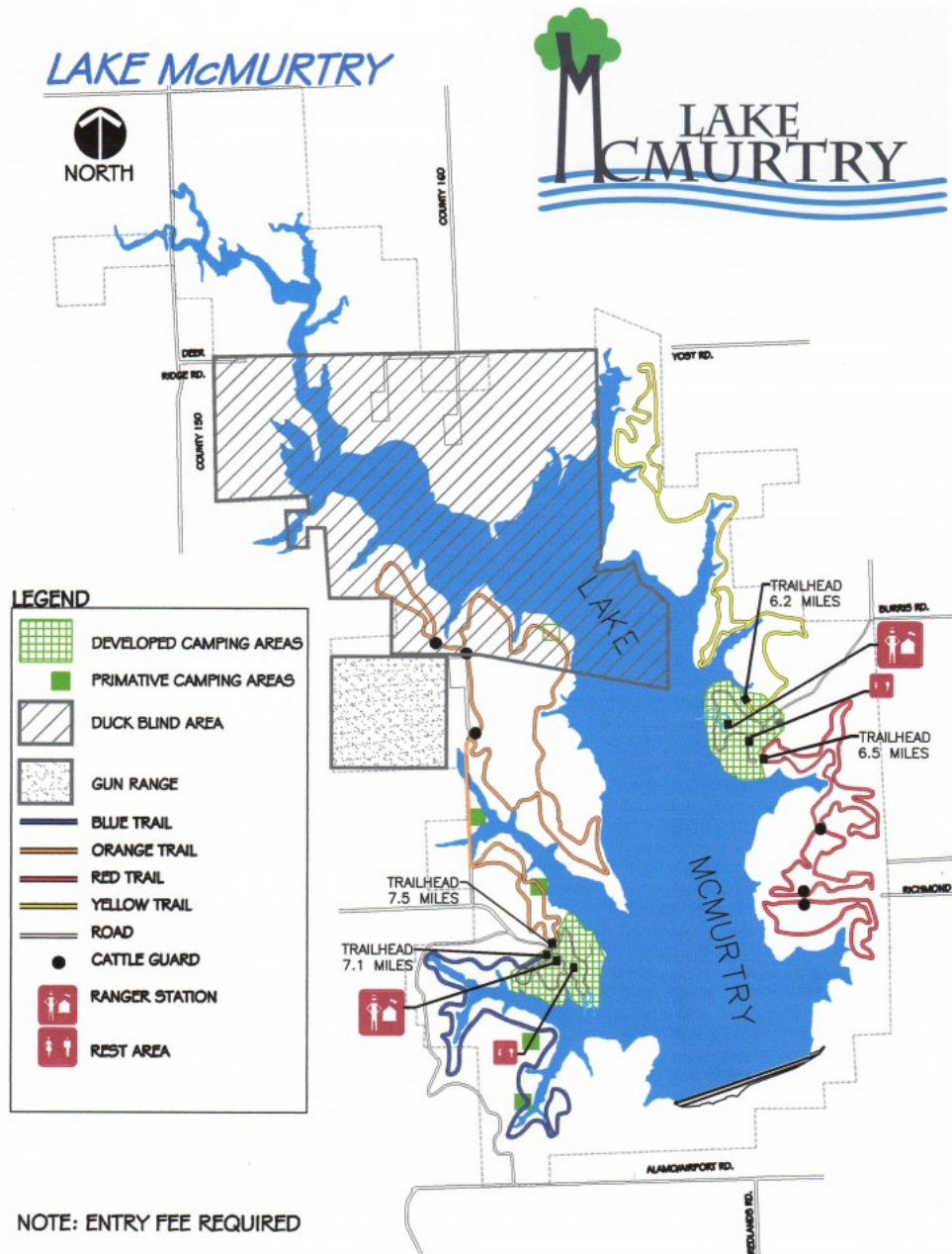
- Tarrant, M., & Cordell, H. (1997). The effect of respondent characteristics on general environmental attitude-behavior correspondence. *Environment and Behavior, 29*, 618-637.
- Tasking, O. (2009). The environmental attitudes of Turkish senior high school students in the context of postmaterialism and the new environmental paradigm. *International Journal of Science Education, 31*, 481-501.
- Theodori, G., Luloff, A., Willits, F. (1998). The association of outdoor recreation and environmental concern: Reexamining the Dunlap-Heffernan thesis. *Rural Sociology, 63*, 94-108.
- Thompson, S., & Barton, M. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology, 14*, 149-157.
- Tremblay, K., & Dunlap, R. (September, 1977). *Rural-Urban Residence and Concern with Environmental Quality: A Replication and Extension*. Paper presented at the annual meeting of the Rural Sociological Society, Madison, WI.
- Tuan, Y. (1974). *Topophilia: A study of environmental perception, attitudes, and values*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- United States Census Bureau. (2014). *Computer & Internet trends in America*. Retrieved March 1, 2014. From https://www.census.gov/hhes/computer/files/2012/Computer_Use_Infographic_FINAL.pdf.
- Vaske, J., & Kobrin, K. (2001). Place attachment and environmentally responsible behavior. *The Journal of Environmental Education, 32*(4), 16-21.

- Walker, G., & Chapman, R. (2003). Thinking like a park: The effects of sense of place, perspective-taking, and empathy on pro-environment intentions. *Journal of Park and Recreation Administration, 21*(4), 71-86.
- Walker, A., & Ryan, R. (2008). Place attachment and landscape preservation in rural New England: A Maine case study. *Landscape and Urban Planning, 86*(2), 141-152.
- White, D., Virden, R., & van Riper, C. (2008). Effects of place identity, place dependence, and experience – use history on perceptions of recreation impacts in a natural setting. *Environmental Management, 42*, 647-657.
- Widegren, O. (1998). The New Environmental Paradigm and personal norms. *Environment and Behavior, 30*, 75-100.
- Williams, D. & Patterson, M. (1999). Environmental psychology: mapping landscape meanings for ecosystem management. In H. Cordell, & J. Bergstrom (Eds.), *Integrating social sciences and ecosystem management: Human dimensions in assessment, policy, and management* (141-160). Champaign, IL: Sagamore Press.
- Williams, D., & Roggenbuck, J. (1989). *Measuring place attachment: Some preliminary results*. In L.H. McAvoy, & D. Howard (Eds.), *Abstracts of the 1989 Leisure Research Symposium* (32). Arlington, VA: National Recreation and Park Association.
- Williams, D., & Patterson, M., Roggenbuck, J., & Watson, A. (1992). Beyond the commodity metaphor: Examining emotional and symbolic attachment to place. *Leisure Sciences, 14*, 29-46.
- Williams, D., & Stewart, S. (1998). Sense of place: An elusive concept that is finding a home in ecosystem management. *Journal of Forestry, 96*(5), 18-23.

- Williams, D., & Vaske, J. (2003). The measurement of place attachment: Validity and generalizability of a psychometric approach. *Forest Science*, *49*, 830-840.
- Zeller, R., & Carmines, E. (1980). *Measurement in the social sciences*. New York: Cambridge University Press.
- Zinn, H., & Graefe, A. (2007). Emerging adults and the future of wild nature. *International Journal of Wilderness*, *13*, 16-23.

APPENDICES

Appendix A: Map of Lake McMurry



Appendix B: Survey Flyer



WHAT CAN YOU DO IN 15 MINUTES?

- Have a Cup of Coffee
- Check Your Email
- Take a survey!

I am a Master's student at Oklahoma State University and I am conducting research on the relationship between visitors' place attachment to Lake McMurry and their environmental ethic.

I invite you to use the URL or QR code below and fill out the survey, your response will be completely anonymous, and it should take less than 15 minutes!

URL Short
link

Thank you!



Appendix C: Research Instrument for Lake Murtry



Comparing Place Attachment and Visitors Environmental Ethic: A Study of Lake Murtry Visitors

Hello, my name is Jessica Kincannon and I am conducting a research study to better understand the relationship between place attachment and Lake Murtry visitors' environmental ethic.

This survey will take less than 15 minutes of your time and you are kindly requested to fill out all sections of the survey. There are no known risks associated with this project that are greater than those you encounter in a daily life. Your responses to the survey will be anonymous. Any results will discuss group findings and will not include information that will identify you.

Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

Contacts: You may contact the researchers at the following address and phone number, should you desire to discuss your participation in the study and/or request further information about the results of the study: Jessica Kincannon, 180 Colvin Recreation Center, Oklahoma State University, Stillwater, OK 74078, 580-467-2285. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

If you choose to participate: Please, continue on to the next page if you choose to participate. By turning the page, you are indicating that you freely and voluntarily agree to participate in this study and you also acknowledge that you are at least 16 years of age.

Comparing Place Attachment and Visitors Environmental Ethic:

A Study of Lake McMurtry Visitors

Internal Use Only: Time of Survey:	Date:
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1. Below you will read several statements regarding your experiences at Lake McMurtry. Please read each statement carefully. For each statement, please indicate the extent to which you agree or disagree.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I feel like Lake McMurtry is apart of me	5	4	3	2	1
Lake McMurtry is very special to me	5	4	3	2	1
I identify strongly with Lake McMurtry	5	4	3	2	1
I am very attached to Lake McMurtry	5	4	3	2	1
Visiting Lake McMurtry says a lot about who I am	5	4	3	2	1
Lake McMurtry means a lot to me	5	4	3	2	1
Lake McMurtry is the best place for what I like to do	5	4	3	2	1
No other place can compare to Lake McMurtry	5	4	3	2	1
I get more satisfaction out of visiting Lake McMurtry than any other place	5	4	3	2	1
Doing what I do at Lake McMurtry is more important to me than doing it in any other place	5	4	3	2	1
I wouldn't substitute any other area for doing the types of things I do at Lake McMurtry	5	4	3	2	1
The things I do at Lake McMurtry, I would enjoy doing just as much at a similar site	5	4	3	2	1

Please continue on the next page.

2. Below you will read several statements regarding your thoughts or philosophy related to the environment. Please read each statement carefully. For each statement, please indicate the extent to which you agree or disagree.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
We are approaching the limit of the number of people the earth can support	5	4	3	2	1
Humans have the right to modify the natural environment to suit their needs	5	4	3	2	1
When humans interfere with nature it often produces disastrous consequences	5	4	3	2	1
Human ingenuity will insure that we do not make the earth unlivable	5	4	3	2	1
Humans are severely abusing the environment	5	4	3	2	1
The Earth has plenty of natural resources if we just learn how to develop them	5	4	3	2	1
Plants and animals have as much right as humans to exist	5	4	3	2	1
The balance of nature is strong enough to cope with the impacts of modern industrial nations	5	4	3	2	1
Despite our special abilities, humans are still subject to the laws of nature	5	4	3	2	1
The so-called "ecological crisis" facing human kind has been greatly exaggerated	5	4	3	2	1
The Earth is like a spaceship with very limited room and resources	5	4	3	2	1
Humans were meant to rule over the rest of nature	5	4	3	2	1
The balance of nature is very delicate and easily upset	5	4	3	2	1
Humans will eventually learn enough about how nature works to be able to control it	5	4	3	2	1
If things continue on their present course, we will soon experience a major ecological catastrophe	5	4	3	2	1

Please continue on the next page.

3. Below you will read several questions regarding general demographic items. Please know that no questions may identify you as a respondent and these questions are used for general research purposes. Please read each statement carefully. For each statement, please circle the most appropriate answer.

A. Please circle the age group that you belong to:

18 – 24 25 – 34 35 – 44 45 – 54 55 – 64 65+

B. Please circle the gender that most represents you:

Male Female

C. Are you of Hispanic, Latino, or Spanish origin (circle only one)?

No, I am not of Hispanic, Latino, or Spanish origin

Yes, I am of Hispanic, Latino, or Spanish origin

D. Please select your race (circle all that apply):

White American African American Asian American
Native American Native Hawaiian Other Pacific Islander
Two or More Races Some Other Race:

E. Please select your income over the past 12 months:

Less than \$25,000 \$25,000 - \$49,999 \$50,000 - \$74,999
\$75,000 - \$99,999 \$100,000 - \$124,999 \$125,000 or more

F. Please select your highest level of education:

Less than High School High School or Equivalent Associate's Degree
Bachelor's Degree Master's Degree Doctorate
Other: _____

Please continue on the next page.

4. Below you will read several questions regarding your experiences at Lake McMurtry. Please know that no questions may identify you as a respondent and these questions are used for general research purposes. Please read each statement carefully. For each statement, please check the most appropriate answer.

A. How long has it been since you first used Lake McMurtry for recreation and leisure?

- | | | |
|------------------|---------------|---------------|
| Less than 1 year | 1 – 2 years | 3 – 5 years |
| 6 – 10 years | 11 – 25 years | 26 – 50 years |
| 51 or more years | | |

B. How many miles do you travel from your home to Lake McMurtry?

C. Please select the group that best defines you for this visit to Lake McMurtry:

- | | | |
|-------------|-----------|-------------|
| Tent Camper | RV Camper | Day Visitor |
|-------------|-----------|-------------|

D. Which activities do you participate in when you visit Lake McMurtry? (Please circle all that apply).

- | | | |
|---------------|--------------|---------------------------|
| Swimming | Fishing | Mountain Biking |
| Hiking | Disc Golf | Boating/Kayaking/Canoeing |
| Bird Watching | Other: _____ | |

Thank you for participating in this survey of Lake McMurtry visitors. We hope that the results of this study will allow us to gain more insight into who visits Lake McMurtry, how visitors relate to the lake, and how management can best serve its visitors.

Appendix D: Place Identity items – Frequency Distributions (N = 281; number of responses below percentages)

Item	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
1	8.9% 25	27.4% 77	40.9% 115	19.2% 54	3.6% 10
2	8.9% 25	40.2% 113	36.3% 102	12.1% 34	2.5% 7
3	8.2% 23	27.8% 78	38.8% 109	21.4% 60	3.9% 11
4	12.5% 35	33.8% 95	36.7% 103	14.2% 40	2.8% 8
5	8.9% 25	24.9% 70	37.0% 104	22.8% 64	6.4% 18
6	13.5% 38	35.9% 101	34.9% 98	14.2% 40	1.4% 4

Appendix E: Place Dependence items – Frequency Distributions (N = 281; number of responses below percentages)

Item	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
7	8.2% 23	27.8% 78	37.7% 106	19.2% 54	7.1% 20
8	3.9% 11	19.9% 56	46.3% 130	24.6% 69	5.3% 15
9	5.0% 14	19.2% 54	45.9% 129	23.8% 67	6.0% 17
10	5.0% 14	23.5% 66	42.0% 118	22.4% 63	7.1% 20
11	3.2% 9	21.4% 60	44.8% 126	22.8% 64	7.8% 22
12	10.3% 29	34.2% 96	36.3% 102	18.5% 52	0.7% 2

Appendix F: New Ecological Paradigm items – Frequency Distributions (N = 281; number of responses below percentages)

Item	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
1	11.7% 33	33.5% 94	36.7% 103	16.0% 45	2.1% 6
3	10.3% 29	24.2% 68	45.6% 128	17.8% 50	2.1% 6
5	11.4% 32	32.0% 90	40.9% 115	14.2% 40	1.4% 4
7	21.4% 60	29.2% 82	35.9% 101	11.0% 31	2.5% 7
9	14.9% 42	39.5% 111	31.0% 87	12.8% 36	1.8% 5
11	11.0% 31	27.4% 77	43.1% 121	16.7% 47	1.8% 5
13	10.0% 28	28.1% 79	45.6% 128	14.6% 41	1.8% 5
15	5.7% 16	28.8% 81	45.2% 127	17.8% 50	2.5% 7

Appendix G: Dominant Social Paradigm items – Frequency Distributions (N = 281; number of responses below percentages)

Item	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
2	4.6%	21.4%	44.1%	26.3%	3.6%
	13	60	124	74	10
4	6.8%	19.6%	46.3%	23.5%	3.9%
	19	55	130	66	11
6	5.3%	18.5%	42.0%	31.0%	3.2%
	15	52	118	87	9
8	7.8%	22.4%	51.6%	17.1%	1.1%
	22	63	145	48	3
10	9.6%	24.2%	36.7%	23.5%	6.0%
	27	68	103	66	17
12	10.0%	28.1%	40.6%	17.1%	4.3%
	28	79	114	48	12
14	10.7%	28.5%	41.6%	16.7%	2.5%
	30	80	117	47	7

Appendix H: ‘DSP’ and ‘NEPD’ comparison tables

	DSP		NEPD	
	N	Percent	N	Percent
Gender				
Male	44	63%	34	49%
Female	26	37%	36	51%

	DSP		NEPD	
	N	Percent	N	Percent
Age				
18-24	16	23%	17	24%
25-34	16	23%	18	26%
35-44	24	34%	10	14%
45-54	10	14%	17	24%
55-64	4	6%	6	9%
> 65	0	0%	2	3%

	DSP		NEPD	
	N	Percent	N	Percent
Yearly Income				
Less than \$25,000	9	13%	11	16%
\$25,000 - \$49,999	32	46%	28	40%
\$50,000 - \$74,999	21	30%	17	24%
\$75,000 - \$99,999	5	7%	9	13%
\$100,000 - \$124,999	2	3%	3	4%
\$125,000 or More	1	1%	2	3%

‘NEPD’ and ‘DSP’ comparison tables continued

Education Level	DSP		NEPD	
	N	Percent	N	Percent
Less than High School	0	0%	0	0%
High School or Equivalent	18	26%	14	20%
Associate's Degree	15	21%	5	7%
Bachelor's Degree	30	43%	26	37%
Master's Degree	5	7%	17	24%
Doctorate Degree	2	3%	8	12%

Time Associated	DSP		NEPD	
	N	Percent	N	Percent
Less than 1 Year	17	24%	17	24%
1-2 Years	30	43%	11	16%
3-5 Years	13	18%	10	14%
6-10 Years	6	9%	10	14%
11-25 Years	4	6%	20	29%
26-50 Years	0	0%	2	3%
>50 Years	0	0%	0	0%

Number of Activities	DSP		NEPD	
	N	Percent	N	Percent
1	24	34%	15	21%
2	25	37%	16	23%
3	14	20%	17	24%
4	5	7%	13	19%
5	0	0%	5	7%
6	1	1%	3	4%
7	1	1%	1	1%

‘NEPD’ and ‘DSP’ comparison tables continued

Activities	DSP	NEPD
Swimming	22	34
Fishing	22	27
Mountain Biking	12	34
Hiking	38	42
Disc Golf	24	27
Boating	14	25
Bird Watching	3	4

Appendix I: IRB Approval letter

Oklahoma State University Institutional Review Board

Date: Thursday, April 10, 2014
IRB Application No ED1459
Proposal Title: Comparing Place Attachment and Visitors' Environmental Ethic: A Study of Lake McMurry Visitors
Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 4/9/2017

Principal Investigator(s):

Jessica Kincannon 180 Colvin Center Stillwater, OK 74078	Lowell Caneday 180 Colvin Center Stillwater, OK 74075
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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.

- 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. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2. Submit a request for continuation if the study extends beyond the approval period. 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 the 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 Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,


Shelia Kennison, Chair
Institutional Review Board

VITA

Jessica Kincannon

Candidate for the Degree of

Master of Science

Thesis: COMPARING PLACE ATTACHMENT AND VISITORS'
ENVIRONMENTAL ETHIC: A STUDY OF LAKE MCMURTRY VISITORS

Major Field: Leisure Studies

Biographical:

Education:

Completed the requirements for the Master of Science in Leisure Studies at Oklahoma State University, Stillwater, Oklahoma in July 2014.

Completed the requirements for the Bachelor of Science in Zoology at Oklahoma State University, Stillwater, Oklahoma in December 2006.