A CASE STUDY OF EMOTIONAL ENGAGEMENT IN A NATURAL AREA WITH COLLEGE SPORT AND RECREATION STUDENT PARTICIPANTS

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ABSTRACT

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Sport and recreation research is needed to provide effective ways to mitigate empathetic relationships with nature that engage ethnic populations in environmentally sustainable and emotionally rewarding recreation. Academic outreach and engagement through sport and recreation can model and promote healthy relationships to enhance the quality of life and quality of the environment, and thereby contribute to the sustainability of a Community, University, and Student body.

This research on the emotions of ethnic populations in outdoor recreation is an exploratory qualitative and quantitative study that draws upon an interdisciplinary approach to systemically understand the relationship between sport and the environment. The theoretical and experiential research question explores emotional engagement in the context of sport and recreation to affect empathetic relationships to nature. In order to generate a hypothesis, a case study was used to map an emotional geography of outdoor recreation within a protected natural area on a university campus. This emotion-based re-examination of the Dunlap – Heffernan Thesis (1975) drew from a representative sample of 10 college students who had participated in high school sports.

Athletic-students in the study had authentic experiences walking on a trail in the natural area Baker Woodlot, a place with minimal symbolic representations of modernization and industrialization. Work and school responsibilities, as well as a lack of knowledge of the Natural

Area were identified as barriers to previous involvement with Baker Woodlot. Past familiarity with nature was helpful for participants to mediate and construct their experiences during the study. Emotions “passiveness” and “relaxing” were the most significant indicators of change for experience and self subscales of Nature Relatedness. Perceptions of the Natural Area were described as both peaceful and in need of conservation. A discussion of the hypothesis, emotional engagement with peacefulness and curiosity in nature, can build capacity of sports and recreation to nurture empathy with nature, and is presented as the foundation for future research. Future studies of the emotional engagement with nature should have more students; and explore other natural areas to determine if all nature areas produce the same results.

DEDICATION

Grandparents
Kenneth and Jethrow
for planting seeds and knowing
the value of “a good outdoor life.”

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Background

The relationships of man to his physical world are a fundamental factor in human living, and an understanding and appreciation of the outdoors should be the heritage of every human being.

Julian W. Smith, 1968, p. 70

The dynamic relationship linking people and the natural world constitutes a pivotal interplay between individuals' and nature's affordances (Verbeek & de Wall, 2002). The emotional relationships people develop with outdoor and natural spaces illustrate how places can affect self-concept, invoke spiritual inspiration (Manzo, 2003), and arouse a person's motives to act in a way that protects and respects the integrity of nature (Schroeder, 2007a). Swan (1975) asserts "environmental quality starts from within" (p. 208). Nonetheless, as noted by Pyle (1978), an "extinction of experience" (p. 64), or a reduction in contact with the natural world, has been associated with growing apathy toward ecological issues (Hinds & Sparks, 2008). Significant declines in the quality and quantity of people's direct contact with their natural environments have been linked to various trends in modern society, including unsustainable consumption, urban sprawl, chemical contamination, and biodiversity loss (Kellert, 2002). Understanding emotional engagement through nature-based recreation may reveal a range of emotional connections occurring in the environment, for the environment, and about the environment that contribute to humanity's vibrant relationship with the planet.

It is essential for environmental educators to address and foster emotions (Iozzi, 1989; Iozzi, 1989). Culturally shared meanings conferred upon emotions in the context of the outdoors influence individual and community understanding regarding interrelationships with the

environment (Johnson, 1998). Research has shown emotions are a significant predictor of environmental attitudes (Pooley & O'Connor, 2000) and are a critical factor in people's interaction with the environment (Ullirich, 1983). For instance, the role of curiosity in discovery during nature-based activities (Verbeek & de Waal, 2002) forms a learning system in which "emotions constitute important environmental 'elements' both within the system (as its ambience) and beyond it, in the environment at large" (Bawden, 1997, p. 11). The relationship between emotion and environment offers research opportunities to observe the person-environment dynamics that entail an intimately personal investigation into relatively uncultivated realms (Russell & Snodgrass, 1987).

In order to grasp how people experience nature-based recreation, it is important to first understand how people emotionally engage with the environment (Schroeder, 1996). The spectrum of feelings experienced through nature-based recreation may range from "attraction to aversion, from awe to indifference, [and] from peacefulness to fear-driven anxiety" (Wilson, 1993, p. 31). Theorists have provided different disciplinary frames of reference to describe and investigate people's emotional concern for the environment. Wilson (1984) initially described biophilia, or the emotional attachment to nature, as an innate tendency to affiliate with natural things. Empirical and theoretical work on the mediating role of emotion in the construct of biophilia suggests that emotional systems of (1) attachment, (2) belonging, and (3) security intimately connect human and other primates' learning in nature (Bernhard, 1988; Verbeek & de Waal, 2002).

A core concept of place attachment is the profound affective bond developed from experiences with specific physical and aesthetic properties of the environment (Stedman, 2003). "Belonging" is commonly described by people during nature-based recreation as a "universal

connectedness" that is both pleasurable and enjoyable (Burns, 2005, p. 43). Finally, to understand "security," Pigram (1993) notes that experiences in natural environments tend to offset the pressures of an urban-industrial existence with direct visceral experiences and encounters such as visiting gardens, gardening, camping, and hiking in wilderness areas. Scholarship designed to explore human connections to nature through emotions may contribute to future generations' ability to cope with and adapt to the spectrum of sensations that only nature can offer: a genuine opportunity to "feel."

Over 75 years ago, Neumeyer and Neumeyer commented on the difference between feelings, or the subjective evaluations of experience that result from pleasurable or painful sensations, and the emotional attachments developed over the course of the individual's history with the environment (1936). Emotional attachments influence direct engagement with the natural environment, a personal sense of identity, and interrelationships that are facilitative of pro-environment related behaviors (Hinds & Sparks, 2008). These attachments develop from affective connections that occur within the natural environment and an individual's subjective experience (Hinds & Sparks, 2009). Emotional engagement with a "felt sense of place" is the "felt value" (Schroeder, 2008, p. 70): the immediate felt sense of value given to a place that has personal meaning (Schroeder, 2004; Schroeder, 2008). Such personal meaning is "full-bodied… with 'experiential validity and personal valence'" (Fear, Rosaen, Bawden, & Foster-Fishman, 2006, p. 46; Fear, 2010). Exploring the emotional rules (Hochschild, 1979) of engagement within human-environmental dynamics involved in nature-based recreation may foster a greater sensitivity toward and concern for restoring sustainable human-nature connections.

A lack of ethnic minority participation in outdoor recreation, and particularly exposure in wilderness settings, has persisted as an unresolved issue since the early 1970s. In "American

Eye: Red, White, and Black in the National Parks," Meeker (1973) reported that the emotional needs of ethnic minorities were not met through nature areas. In light of this claim, ethnic minority participation in nature and parks has become an important issue in the 21st Century, particularly as it relates to enjoyment and sustainability (Crandell, 1990). Outdoor recreation opportunities influence environmental ethos and can engage a culturally diverse public in pro-environmental behaviors (Larson & Hansen, 2005). Research has consistently shown that high levels of education are a socioeconomic predictor for environmental concern (Dunlap & Catton, 1979; Van Liere & Dunlap, 1980; Butttel, 1987; Taylor, 1989). Additionally, results from Taylor's (1992) study "Identity in Ethnic Leisure Pursuits" indicate that the "higher the educational attainment of the respondent, the greater the likelihood that the individual would use the parks" (p. 246).

Historically, the Federal government has outlined educational standards in national policies. An example of representative policy includes the Elementary and Secondary Education Act (Public Law 89-10, 1965). These policies were designed to legislate equitable allocation of the benefits of education. The 1983 report "A Nation at Risk," published by the National Commission on Excellence in Education, contributed to perceptions of an educational epidemic by asserting that American students were being poorly prepared to compete in a globally competitive job market. This instrumental report on the U.S. education system expressed concern that America was at risk of not maintaining a dominant standing in the areas of commerce, industry, science, and technology (Dotterweich, 2003). A 1998 study by Liebermann and Hoody presented scientific findings that have uniquely contested the aforementioned penchant towards an industrial and commercial pedagogy. Specifically, the authors found that student learning in an environment-based context is effective in spurring achievement in the

traditional academic subjects of science, math, English/language arts, and social studies (Liebermann & Hoody, 1998). More recently, Richard Louv's (2005; 2008) writings have provided a pivotal impetus for the introduction of the "No Child Left Inside Act," and the reintroduction of the "No Child Left Inside Act 2013." Furthermore, Louv's work has demonstrated the need for understanding natural resources, environmental scientific thinking, and participation in outdoor activities to play a more prominent role in educational policy and practices.

Participation in outdoor sports and recreation has a deep tradition in College and University life that dates back to the 19th century. For example, in 1852, James N. Elkins sponsored 41 rowing students from Harvard and Yale to race an aquatic course approximately one and a half miles long on the Winnipesaukee River of New Hampshire (Whiton, 1901). This nature–based interscholastic boat regatta had the distinction of being the first intercollegiate athletic competition (Lewis, 1970; Shulman & Bowen, 2001). More than half a century later, in 1928, the term "student athlete" was first used to denote an "athletic program" that ideally "involves every member of the student body in wholesome physical activity, and so finds in the teams which represent the institution in intercollegiate contests a natural outgrowth of its life" (Chase, 1928, p. 390). As of 2012, the National Collegiate Athletic Association (NCAA) estimates that there are nearly 3 million high school student athletes. Moreover, about 5.98 percent of the senior student athletes will matriculate into the NCAA (NCAA, 2012). Many high school student-athletes who disengage from sports before entering college continue their involvement through fan-based activities and recreational organizations, develop alternative hobbies, pursue deviant activities, or – if possible - cease to take part in leisure activities.

The unique relationships between leisure, recreation, and sports in higher education institutions can play a role in developing students and their relationship to the land. However, the modernization of sporting practices has cultivated a commercial industry that promotes economic and social capital (Stewart, 1987; Sperber, 1991). College sports have undergone an immense growth that has resulted in them being characterized as both the "Promised Land" (Lapchick, 1984) and "College Sport Inc." (Sperber, 1990). "Big-time" college sports, as described by Clotfelter (2011), have benefited from a structural-functional partiality toward "modernization" and "commercialization" at the expense of academic development (Purdy, Eitzen, & Hufnagel, 1982; Underwood, 1984; Adler & Adler, 1989; Serber, 1990; Washington & Karen, 2001; Beyer & Hannah, 2000; Branch, 2011; Lindo, Swenson, & Waddell, 2011).

With regard to the environment, sports systems affect natural resources through various channels. These include land deterioration resulting from densification and/or overuse; pollution from traffic congestion, waste disposal, and wastewater; restrictive and damaging acts on ecological life systems; and noise pollution levels that require special municipal permission (Cachay, 1973). The environmental impact from the lack of a pervasive "land ethic" (Leopold, 1949) in sports has partially contributed to biodiversity loss and climate change (Diegel, 1992; Sasidharan, 2000).

Sport and recreational settings demarcate emotional terrain that is experienced through aspects of play and spectatorship infused with meaning and expectations (Woodward 2009; Tagen 2004). Sports offer a complex system of intellectual and competitive activity based on "the application of physical exercises and aimed at the achievement of socially significant results" (Ponomarev, 1978, p. 18). In turn, these experiences facilitate environmental understanding. An environmental philosophy emerging from the sports industries calls attention

to the need to investigate the relationship between sports and the environment. Moreover, this philosophy underscores the importance of utilizing emotions involved with sports to cultivate sustainable practices to improve relations with the natural environment. The impact of modern sport systems on the environment should be aligned to resource-use patterns that enhance, if not at least complement, natural ecological services (Cachay, 1973). Leisure services through outdoor education and recreation have traditionally addressed the preservation and protection of the natural world and people's natural experiences (Henderson, 1990). These services have focused particularly on those experiences that accentuate the quality of life through the quality of the environment (Williams, 2006).

The International Olympic Committee's (IOC) documentation and dissemination of a sustainable sport policy has facilitated the globalization of "green sport" through commentary, theories, and practices designed to shape a growing field of environmental discourse. The IOC has institutionalized a sustainability philosophy and established environmental standards as a result of the loss of forest area and disruption to wildlife from the 1992 Olympics in Albertville, France (Girginov & Parry, 2005). The IOC's "green games" model of ecological stewardship through sports has become a cooperative global effort to facilitate economic and policy commitment to the protection of environmental resources (Cantelon & Letters, 2000). Elite international and national sports organizations have begun to promote opportunities to foster better relationships between sports and the environment. For example, the international football club Manchester United has implemented environmental measures to reduce lighting as well as improve the heating and air conditioning systems of their Old Trafford Stadium. Moreover, Manchester United has developed a communication policy to motivate fans to recycle and use public transportation when traveling to games. Another professional organization, the National

Hockey League, was the winner of the 2011 Sport for the Environment Award for their program NHL Green, as well as their commitment to support the World Wildlife Fund's Earth Hour (St. Louis Blues, 2012).

The Mathare Youth Sports Association (MYSA) in Nairobi, Kenya is an example of a grassroots community sport organization that has generated positive results from operating with a social and environmental agenda (Brady, 2005). The MYSA has developed and maintains one of the largest grassroots organizations in Kenya (Willis, 2000). The objective of the MYSA is to engage youth in sports and environmental issues for the purpose of improving living conditions within a local impoverished urban setting. In many respects, the MYSA has been a forerunner in establishing services that link youth development, sports, and environmental activism into community-based programming (Brady & Khan, 2002). By teaching abstract concepts and modeling condensed time-space relationships that simulate environmentally adaptable attitudes and behaviors (Swan, 1974), the MYSA has demonstrated how competition can facilitate ecological remediation of a "crisis [due to] maladapted behavior" (Maloney & Ward, 1973). Every weekend since 1988, MYSA teams have participated in social and environmental improvement activities such as planting trees, clearing garbage, opening sewage gutters to prevent the spread of disease, transporting medical supplies, and distributing public health pamphlets throughout Mathare (Lindoe, Boit, & Musomi, 2001). This environmental stewardship earns team points in the league standings and is required for participation in championship play (Willis, 2000).

Recently, students and high-profile universities have begun to develop sports, recreation, and playing services that include environmental practices and programming. Northwestern University's Leonard B. Thomas Sports Complex is a premier multi-purpose athletic facility

built for field hockey, women's lacrosse, and men's and women's soccer teams. The complex was designed to feature a scenic view of Lake Michigan. The *Ohio State* University *Zero Waste Stadium program* is presently diverting 90 percent of trash from the landfill by recycling and composting materials from the stadium. The program involves recording statistics on trash recycling ratios at home football games to track program performance (The Ohio State University, n.d.). PlayGreen 2012, sponsored by UC Berkeley's Recreational Sports Facility (RSF), provides a weeklong festival of activities structured to foster active and fit lifestyles without the immense consumption of natural resources (Fernandez, 2012). Michigan State University earned a fourth place finish in the Gorilla League of Recyclemania 2012, a national tournament that has schools recycle as much as possible in eight days (Recycle Mania Tournament, 2012). Other universities including Arizona State University, University of Connecticut, University of Minnesota, University Colorado at Boulder, Yale University, and Harvard University have entered into this emerging field of sport and the environment. These universities support the involvement of athletic students and student athletes in environmental discourse and practices.

Statement of Research Purpose

Education has no more serious responsibility than making adequate provision for enjoyment of recreative leisure; not only for the sake of immediate health, but still more if possible for the sake of its lasting effect upon habits of the mind (sic).

Dewey, 1916, p. 205

For the scholar-practitioner, engaged learning can be an expression of personal essence that enables thematic, coherent, and meaningful connections among seemingly diverse practices to foster well-being (Fear, Bawden, Rosaen, & Foster-Fishman, 2002). My proposed research emerges as a byproduct of personal and professional experiences in public schools with urban ethnic youth identified by the educational system as "at-risk" for obtaining the academic trophy: the high school and/or college diploma. Many of these students communicated the aspiration of being a collegiate and/or a professional athlete during confidential counseling discussions. My scholar-practitioner inquiry of emotional engagement arises from a need for more information regarding the emotional experiences of play, recreation, and leisure with nature (Dwyer, 1994). I am particularly interested in ethnic participants' experiences unbound from the complex structure of formal and informal rules in organized sports (Wiggens, 1994). My engaged scholarship (Barker, 2004) on the emotional bond between sport and the environment draws upon interdisciplinary research on human development to make new contributions to the natural and social sciences (Maguire, 2004).

Education of the student body (personal and collective) should center on the question of how to sustain a responsible life (Rose & Dustin, 2009). Environmental education and related movements provide important research that acknowledges a need for educational pedagogies to "both develop and embody the theory and practice of sustainability in a way which is critically aware" (Sterling, 2001, p. 22). Environmental education has a central role in restoring authenticity to the human–nature relationships diminished over the course of human-industrial

development (Díaz, 2010). Outdoor activities are indispensable for developing the skills, ability, and appreciation necessary to restore connections to nature (Smith, 1968).

Drawing from the work of Faich and Gale (1971), Dunlap and Heffernan's (1975) pivotal study, "Outdoor Recreation and Environmental Concern: An Empirical Examination" theorized "involvement [with] outdoor recreat[ion] leads to increased environmental concern among the general public" (p. 19). Geisler (1977) replicated this study to address questions regarding variation in environmental concern; he found that personal characteristics account for the majority of such variation. Subsequent research has been generally supportive and has contributed to the complexity of these findings (Pinhey & Grimes, 1979; Theodori, Luloff, & Willits, 1998).

Since Dunlap and Heffernan's original study, researchers in the field have predominantly focused on cognitive and behavioral variables associated with nature (Bikales & Manning, 1990). However, a criticism to the original and modified versions of the Dunlap-Heffernan New Ecological Paradigm (NEP) has been the lack of scales to account for the array of emotional experiences that may occur in nature (Schultz, 2000; Schultz, 2001; Kals, Schumacher, & Montada, 1999). Research focused on emotion has tended to use appreciative and positive emotions in a robust manner as indicators for predicting environmental concern and behavior that is protective of nature (Kals, Schumacher, & Montada, 1999; Mayer & Frantz, 2004; Nisbet et al., 2009). By purposefully constructing items that emphasize characteristics of emotions associated with nature, Nisbet, Zelenski, and Murphey's (2009) development of the Nature-Relatedness (NR) instrument offers improvements over the NEP and similar quantitative measures of emotion. Programs that attempt to integrate nature-based activities would benefit

from research able to incorporate emotional engagement with environmental attitudes and behaviors (Berns & Simpson, 2009).

My research focus is on how emotional engagement during nature-based recreation might affect the Nature-relatedness of college students who have participated in high school interscholastic competitive sports. Through a 1) descriptive, 2) non-directional explanatory, and 3) exploratory inquiry, the research addresses the felt sense (Schroder, 2007) that develops in a natural area. For my descriptive analysis, the primary research question is: *Do different high school interscholastic sports have differing effects on the respective sports athletes' pre-test NR scores?* The second inquiry, my non-directional explanatory investigation explores the emotional associations attributed to a nature-based recreation experience. And, the third, my exploratory inquiry generates a hypothesis for how emotional engagement during nature-based recreation may affect empathetic relationships with nature.

CHAPTER 2

LITERATURE REVIEW

The following section is a review of literature on 1) Engaged Learning and Scholarship for Environmental Well-being, 2) Sustainable Sport and Recreation, 3) The Emotional Bond, and 4) Theoretical frameworks used to integrate literature and interdisciplinary domains. This literature review focuses on bringing together interdisciplinary scholarship to address emotional engagement with nature. By linking seemingly disparate ideas to describe a more sustainable relationship between students and interscholastic sports, this literature review attempts to fulfill a central function of education. Specifically, the function of facilitating well-being through outdoor recreational experiences that mimic natural existence. Such experiences reflect an intimate knowledge for the enjoyment of nature, which in turn cultivates a sustainable sense of sports and recreation among future stewards of the environment.

Engaged Learning and Scholarship for Environmental Well-being

> The Earth belongs always to the living generations. They may manage it then and what proceeds from it as they please during their usufruct they are masters too of their own persons and consequently may govern them as they please.
>
> T. Jefferson letter to J. Madison September 6, 1789

Environmental scholar practitioners are needed to monitor current ecological assessments of this era's ecological predicament and to motivate behaviors that achieve sustainable results (Bassey, 1998). For the scholar-practitioner, engaged learning and scholarship creates a theoretical framework that facilitates the meaningful pursuit of information. From this approach, the pursuit of such information incorporates a critical awareness of how interpersonal processes can enhance the capacity for participatory democracy to affect change. The emphasis on scholarship rather than learning is intended to support subsequent research across

interdisciplinary practices, which in turn facilitates communication and collaboration among different academic communities in the production of knowledge (Barker, 2004). Axinn (1997) asserts that the practitioner needs to be able to recognize his or her own normative concept of development in order to understand the forces of continuity. For instance, scholar practitioners may operate from an assumption that the most effective agents in developmental work will likely be from both the professional and academic community. Moreover, scholar practitioners may assume that the most influential agents of change incorporate insights from various cultures or societies. Scholar practitioners have the ability to critically evaluate the promotion of an industrial model that favors technologies of increasing power levels as well as progressive subjugation of the so called "forces of nature" (Laura & Cotton, 1999, p. 3).

Resource authorities have concluded "we cannot sever scientific issues of ecological management from issues of human emotion and motivation" (Anderson, 1996, p. 5). Park visitations elicit unique emotions different from the typical urban and suburban environments (Hull & Harvey, 1989; Pensgaard & Duda, 2003). Experiences of "amazement and awe are deepened with the interpretative message of ecological function, it not only vastly enriches the emotional experience but also goes a long way toward enlightening the citizenry to the need for effective, national environmental policies" (Wagner et al., 1995, p. 12). Positive feelings and greater life satisfaction have been associated with smaller ecological footprints and environmentally friendly behaviors (Brown & Kasser, 2005). The experienced qualities of a place may be partially overridden by social meanings constructed by individuals in their communities (Schroder, 2007). However, such experienced qualities are necessary to understand an individual's emotional relationship to natural places and should be included in a contextualized and politicized view of these relationships (Manzo, 2003).

Scholarship designed to engage with artifacts and actions that inform culture and lifestyles complementary to nature's gestalt (Schroder, 2007c, p. 307) should reveal the cyclical process of effects between environmental actions and experiences (Hinds & Sparks, 2008). "Once we engage in the extension of the boundary of the self into the environment, then of course, we imbue it with life and can quite properly regard it as animate; it is animate because we are a part of it" (Evernden, 1996, p. 101). Leopold (1949) defined five basic types of recreational approaches with respect to the impact on natural resources: 1) collectors in search of a "trophy," 2) nature isolation and solitude seekers, 3) pursuants of fresh air and a change of scenery, 4) nature observers, and 5) husbandry (Leopold, 1949). Leopold (1949) considered the last group, husbandry, and the most rewarding recreational experience as it constitutes a form of recreational use that enhances rather than dilutes natural resources.

Parks have many renewable resources that have been generalized into four categories: recreational, educational, scientific, and environmental (Wagner et al., 1995). The educational value of parks includes promoting public awareness about nature in the preindustrial and undeveloped world. Respectively, parks host over 120 species of threatened or endangered flora and fauna that have been recognized or suspected to exist in the National Park System (Wagner et. al., 1995). Engaged scholarship in recreational studies may enhance the common understanding of the natural and social connections formed through the games people play in a way that preserves "the integrity, stability and beauty of the biotic community" (Leopold, 1949, p. 262). Moreover, such scholarship enables people to "see, feel, understand, or otherwise have faith in nature" (Leopold, 1949, p. 214).

Natural places.

Thoreau asserted that small nature preserves located near people's residences nurture the distinct American character of individuality (Wellman & Propst, 2004). Such preserves provide relief and restoration from the urban and industrial stresses in a materialistic society (Wellman & Propst, 2004). This idea was also set forth by Catlin in 1832 for the first park to serve as a means to remove lands from economic exploitation that were "useless to cultivating man" (Catlin, 1841, p. 261). In 1853, Fredrick Law Olmsted made the first systematic policy argument for government to establish parks for people (Wellman & Propst, 2004). Because, most people lacked opportunity to access private lands, Olmstead asserted "great public grounds for the free enjoyment of the people under certain circumstances are thus justified as a political duty" (Olmsted, 1865, p. 20; Taylor, 1999, p. 431). Olmsted (1865) reasoned:

> It is a scientific fact that the occasional contemplation of natural scenes of an impressive character, particularly if this contemplation occurs in connection with relief from ordinary cares, change of air and change of habits, is favorable to the health and vigor of men and especially to the health and vigor of their intellect beyond any other conditions which can be offered them, that it not only gives pleasure for the time being but increases the subsequent capacity for happiness and the means of securing happiness (p. 18).

The first federal legislation designating the use of public land for recreation was in the 1902 Morris Act, which was designed to preserve the scenery and provide recreational use of a Chippewa Indian Reservation (Van Doren & Hodges, 1975; Meffee, et Al., 2002). Since then a historic tension has existed between the preservation of landscapes for the inherent value of nature and the use of natural landscapes for the development of economic-material well-being (Wellman & Propst, 2004). The utilitarian management goal set forth by Gifford Pinchot, First

Chief of the United States Forest Services, confounded this tension. Specifically, Pinchot argued that nature must be used to produce “the greatest good of the greatest number for the longest time” (Meffee et. al., 2002, p. 57).

Evidence of the relationship between recreational use and resources can be noted in each of the Federal Government’s four major wildland management department mission statements:

- National Park Services: "promote and regulate the use of the...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."
- Army Corps of Engineers: “manage and conserve those natural resources, consistent with the ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations.”
- Forest Service: "sustain the health, diversity, and productivity of the Nation‘s forests and grasslands to meet the needs of present and future generations."
- Bureau of Land Management: “sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations.”

Notably, each of the federal department’s mission points to an inherent preference for the preservation of public wildlands or parks for present and future generations. The government will play a pivotal role in environmental management over the coming decades. Initiatives pursued by the public will inevitably shape society’s values and motivate the government’s response to a rapidly changing world (Kraft & Vig, 2010).

Policy makers in the future will be pressured to manage the inevitable conflicts emerging from increased use of a wilderness system that is no longer growing (Aillin, 2001). Presently,

wilderness recreation is in jeopardy; its preservation requires planning for multifaceted threats and pending risk associated with global warming (Sasidharan, 2000). A forum for public input on recreational management of federal lands was established in 1958 through the Outdoor Recreation Resources Review Commission (Meffee et. al., 2002). The forum was re-commissioned in the 1963 Outdoor Recreation Act, which required:

> the preparation and maintenance of a continuous inventory and evaluation of the outdoor recreation needs and resources in the United States to assure adequate outdoor resources available for recreation called for all levels of government and private interests to conserve, to develop, and to use those resources for the benefit and enjoyment of the American people (Meffee et. al., 2002, p. 19).

Secretary of the Interior Stuart Udall established the Bureau of Outdoor Recreation in 1963 with a specific directive to assist local units of government in providing open space (Wellman & Propst, 2004). Following Udall, Secretary of Interior James Watt abolished the Bureau of Outdoor Recreation. However, Senator Wallop introduced Senate Bill 1090 in 1983 to establish the Outdoor Recreation Resources Review (Siehl, 2000, p. 426). In 1985, President Ronald Reagan authorized the Presidential Commission on Outdoor Recreation Resource Review to provide public commentary through Executive Order 12503. Reagan appointed each member of the commission to review government outdoor recreational services (Siehl, 2000).

Environmental pedagogy.

In ancient Greece, 'schole' referred to the opportunity for leisure in a "state or condition of being free from the necessity of work" (Ibrahim, 1989, p. 4). Etymologically, leisure is associated with education, conveying the belief that "learning," "study," and "scholarship" ought to be undertaken for natural or innate reasons (Peterson, 1975). Education has been, by tradition

and in theory, a leisure activity. Exploration of an individual's self-concept through leisure and physical play in nature allows for further human development through meaning, feeling, and experience (Allen & Thomas, 1977).

An emphasis on basic resources rather than social problems (Strapp, 1978) has caused some environmental education efforts to become engaged in the "ego-centric rather than eco-centric" (McInnis, 1975, p. 26). Such efforts are at times driven by a dominant interest group's hidden objective (Mappin & Johnson, 2005) or complicit in a "power laden (anti-ecological) paradigm of interventionist, reductionist science" (Laura & Cotton, 1999, p. 129). This orientation has resulted in an unbalanced emphasis on geographical and scientific information (Palmer, 1998). Thus, environmental education efforts would benefit from consideration of stakeholder perspectives "other than science and recognize that culture is no less important than science for understanding and resolution of environmental problems" (Plant, 1998, p. 81). At risk of "environmental fatigue" (Filho, 1998, p. 14) and "limited technologies available to deal with challenges to produce satisfactory resolutions" (Acar, 1993, p. 26), a "fact based approach toward environmentally responsible behaviors" (Berkowitz et al., 2005, p. 227) "to incorporate the teaching of wise use of natural resources for leisure and recreation"(Ford, 1981, p. 47) has yielded unsustainable results.

Environmental education and related movements have provided fundamental currents toward a larger and deeper movement, but have been insufficient in providing a sustainable paradigm for change (Sterling, 2001). Environmental education has principally been concerned with the biophysical environment and its associated problems. However, the pedagogical focus of environmental education should be with people who can be educated, not the environment impacted by human behaviors (Source, 2222). Indeed, according to Mappin and Johnson (2005),

> Education about the environment is generally understood to include nature studies, ecology, conservation, and environmental issues. Education in the environment is considered more as an approach to education, using the natural built environments as objects of study. Education for the environment implies application or creation of knowledge for social, civil, and political action (p. 3).

For environmental education to succeed in fostering a better quality of life, the focus should be on initiatives designed to solve environmental problems with a consideration of social and political issues (Filho, 1998). Environmental education ought to be conceived of as transcending cultural limits. Specifically, environment education must consider the ways culture perpetuates ideas about nature as an external environment (Delgado Diaz, 2007).

The environment has been broadly conceived of according to two major components: natural and social (Nwanza, 1982). These components assist in addressing environmental problems derived from the ways our social values, lifestyles, and institutions inhibit human harmony with the environment (Swan, 1974). Norgaard (1994) notes how "(w)e commonly divide the sciences into the natural and the social…we then argue that our problems are due to the weakness of the systemic sciences" (p. 8). This assertion represents an environmental criticism that the industrial society supports development rather than progress (Dresner, 2002). The distinction between social and natural systems is both artificial and arbitrary: social and ecological systems are linked in such a way that humans' well-being is inclusive of the well-being of the ecosystems with which humans are interdependent (Bowers, 1995).

Environmental Education. The founding of environmental education has been attributed to Scottish Botany Professor Sir Patrick Geddes. Geddes is credited with connecting the quality of the environment with the quality of education (Palmer, 1998; Sterling, 1992). In 1891, the

father of "nature study," Wilbur Jackson, published a curriculum called Nature Study for the Common Schools. Later, the Nature Education movement was established to develop understanding and respect for the natural environment as well as cultivate accurate observation in mankind (Stapp, 1975). In 1908, American Nature Study Society's first president Liberty Hyde Bailey put forth educational goals to 1) foster appreciation and understanding of nature through firsthand experience outdoors, 2) support conservation and encourage the use of natural areas in nature education, and 3) improve the quality of nature organizations.

Environmental education in the 1960s promoted the understanding that it was necessary to be responsible with natural resources. In a 1965 conference at Keele University, Staffordshire, the first recorded use of "Environmental Education" involved the description of a method intended for investigating conservation and its implications for education (Palmer, 1998). With the introduction of the environmental education movement on Earth Day, April 22, 1970, by Wisconsin senator Gaylord Nelson, a host of local and national environmental educational policies were initiated (Gilbertson et. al., 2006). These policies included the Environmental Education Act of 1970 (Ford, 1981). Subsequent organizations convening for environmental education have included:

- the United Nations Environment Programme in 1972 (Gray, 1990);
- the 1974 Schools' Council Project Environment, which ascribed a need for environmental education to be "in, about, and for" the environment (Palmer, 1998, p. 12);
- the Belgrade Charter of 1975, which produced the environmental education goal statement (Adkins & Simmons, 2002);

- the 1975 International Workshop on Environmental Education, which distributed the 1977 Tbilisi Principles of Environmental Education (Irwin & Lotz-Sisitka, 2005); and the World Conference on Education for All, which inaugurated Environmental Literacy for All (Filho, 1998).

In 1992 the United Nations Earth Summit convened on Agenda 21, Chapter 25 on Children and Youth in Sustainable Development, and Agenda 21, Chapter 36 on Promoting Education, Public Awareness, and Training. The goal of the summit was to provide recommendations for both formal and informal educational sectors regarding the promotion of environmental and developmental education as fundamental to learning (Palmer, 1998). This movement has endeavored to promote sustainable development education by advocating for:

> [t]he process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among people, their culture and their biophysical surroundings (Irwin & Lotz-Sisitka, 2005, p. 36).

Sustainability. Sustainability has historically been framed through a modern critique of the "tragic view of environmentalists, while, simultaneously, being rooted in an epistemology of human perfectibility and wise stewardship" (Source, 2222). The function of environmental education in and of itself is environmental literacy (Simmons, 2005). The ecologically literate person has the knowledge necessary to comprehend the interrelatedness of humanity and nature, and is able to demonstrate an attitude of consideration (Orr, 1992). Ecological literacy has been defined as an ability to use ecological understanding, thinking, and habits of mind to live in, enjoy, and learn about society (Berkowitz et al., 2005). This understanding is "driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, bountiful world" (Orr, 1992, p. 86). Becoming ecologically literate requires "a merger of landscapes and

mindscape" through an enjoyment of reading others' scholarship, as well as enjoying reading and interpreting the natural environment. According to Garrett Hardin, the achievement of ecological literacy "is the ability to ask 'What then?'" (Orr, 1992, p. 85). Boulder (1966) called for such literacy when he wrote:

> [o]ne can hope, therefore, that as a succession of mounting crises, especially in pollution, arouse public opinion and mobilize support for the solution of the immediate problems, a learning process will be set in motion which will eventually lead to an appreciation of and perhaps solutions for the larger ones (p. 7).

The concern for sustainability is located within an important class of human problems that have been identified as "no technical solution problems" (Harding, 1968, p. 1). In response, Ms. Gro Harlem Bruntland (1987), chairperson for the World Commission on Environment and Development and President of Norway, has galvanized a future oriented international movement that recognizes systems of sustainability as the "[p]aths to human progress that meet the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs" (p. 14). Systems of sustainability emphasize the

"designing of ecologically effective technologies and practices should be a systemic set of principles based on nature's laws with opportunity for regularity of diversity of expression, with regards to an eco-efficiency…[which]… primarily means doing more with less" (McDonough & Braungart, 2002, p. 51).

Sustainable education requires changing the educational culture to incorporate the theory and practice of sustainability. Developing the awareness that living is a process of cognitions linking participation in a field of relationships through multiple sign systems (Bowers, 1995).

Such a system of education involves the scientific research of ecosystems, including our personal bodily experiences with the effects of toxins in the environment (Sterling, 2001).

Outdoors education. Environmental education is able to foster environmental concern through engagement in outdoor recreational activities. Outdoor education is a method of teaching that incorporates the outdoors whenever possible (Sharp, 1968). In 1861, Fredrick William Gunn, founder and headmaster of the Gunnery School in Connecticut, laid the groundwork for early conceptions of environmental education through outdoor education. However, Joseph Cogswell at the Round Hill School in North Hampton, Massachusetts, has distinction of being the first to prescribe a specific ration of time in the natural world for physical education and outdoor activities (Ford, 1981). Outdoor education is "education in and for the outdoors . . . and includes those learning activities which can be conducted more effectively in an outdoor setting and the teaching of skills necessary for wholesome outdoor pursuits" (Smith, 1968, p. 50). Regarding the value of outdoor education, L.B. Sharp famously said "[t]hose things which can best be taught outdoors should there be taught" (Donaldson & Donaldson, 1968, p. 6).

Outdoor education, as a response and alternative to traditional classroom instruction (Knapp, 1992), has been critiqued as having no identifiable content of its own (Smith, Carlson, Donaldson & Masters, 1972, p. 30). Nonetheless, it has been described as a felt based approach used to scaffold "environmentally responsible behaviors" (Berkowitz et al., 2005, p. 227). Important aspects of outdoor education include: 1) how individuals understand and learn. 2) the interpretation of the outdoors as an environment for learning, and 3) appropriate knowledge and methods to facilitate learning in an outdoor setting with the inclusion of outdoor recreational activities (Smith, 1968).

People use the outdoors as a learning environment for group oriented activities, physical fitness, and the enjoyment of living (Smith, 1968b). According to Amedeo (1993):

> Activities and experiences ordinarily take place in environmental configurations such as settings, places, landscapes… [that]… humans apprehend, interpret, appraise, evaluate, and adapt to environments within which they enact their activities and undergo their experiences [that] underlie research investigations into environmentally significant human activity and experience (p. 83).

The use of the outdoors as a learning laboratory to teach skills for recreation requires integrating the curriculum so that an individual's study and experience represent the total relationship. Outdoor curriculum places greater emphasis on the importance of facts and ideas for knowing and appreciating nature (Sharp, 1968). Moreover, outdoor activities are used to develop conservation sensitivity and environmental awareness (Crompton & Sellar, 1981).

Sustainable Sports and Recreation

Physical activity and sports in educational institutions have typically been interpreted in historical and cultural specific "terms of health… emerg[ing] from the 'hygeia' in terms of musculoskeletal strength and cardiovascular efficiency and… defined as a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (Park, 1994, p.2). In the 1992 *Public Health Reports: Journal of the U.S. Public Health Services*, experts concluded "[s]ociety is slowly coming to the reason that the health status of children and their educational development are inextricably linked" (Park, 1994, p.15). Furthermore public health experts assert that understanding sickness and health in America should include medicine, public health, and lifestyle.

Recreation is characterized "as a type of leisure activity that re-creates and relaxes the body and mind" (Neumeyer & Neumeyer, 1936, p. 14). The leisure service delivery system consists of a network of governmental, private, membership organizations, and commercial interests (Sessoms, 1984). This network "provide[s] an arena for the negotiation of self and for the community where the subjective account of the experience is the distinct aspect of focus on the internal experience rather than the external outcome" (Kelly, 1999, p. 56). Cultural norms of play, recreation, and sport customarily emerge as interdependent with normative culture modes of leisure. Jarvie and Maguire (1994) have argued that an adequate theory of leisure brings emotions into a single framework of human sciences (i.e. physiology, psychology, or sociology). Furthermore, the authors assert "[t]he function of leisure should be viewed to serve a socially conditioned psychological need to experience a kind of spontaneous, elementary, unreflective yet pleasurable excitement" (Jarvie & Maguire, 1994, p. 142). Recreational engagement provides the leisure for being oneself, the opportunity to express abilities, and the pleasure and satisfaction of striving to fulfill potential (Neulinger, 1974).

In playing sports, the entire field is incorporated into a complex universe of 'practices and consumptions' (Bourdieu, 1990). Within sport itself, the "game is a complex system with educational and competitive activity, based on the application of physical exercises and aimed at the achievement of socially significant results" (Ponomarev, 1978, p. 18). Huizinga (1977) claims "[w]hile, play is outside of these moral parameters and is neither good nor bad, if we have to decide whether an action to which our will impels us is a serious duty or is elicit as play, our moral conscience [should] at once provide the touchstone" (p. 243). Sport structures constitute a sub-cultural system that embodies and expresses the logic associated with the social-economic sport system (Zwick & Andrews, 2001). For example, the positive reinforcement of the working

and upper middle class during the nineteenth century promoted a social construction and use of urban parks that incorporated values into definitions and management practices to emphasize the health-giving characteristics and character-modeling capabilities of parks (Taylor, 1999).

Mark Dyreson (1999) documents major functional theoretical premises for physical activity and sport in "Nature by Design: Modern American Ideas About Sport, Energy, Evolution, and Republics, 1865 – 1920." Dyreson references Rev. George L. McNutt describing parks as an "Experiment in Redemption" (1904) that creates green spaces for re-energizing the community from the strains of life and pollution inherent to the city. Dyreson (1999) also introduces Simon Nelson Patten as an example of how this era featured individuals who channeled energy toward a historic convergence of nature and civilization. Patterson reasoned that the distinctive functional value of sport is from the production of both "product" and "climax." Climax refers to the abstract representation of the forces of creation. Civic life is distinct from product, a commodity of labor in the absence of play. Play has functional value because of the intent to generate amusement. However, Patterson warned it could become problematic if the natural symbolic relationship between product and climax became detached as a consequence of industrialization (Dyreson, 1999). In the case of sport, play has evolved into a complexity of technical organization, and scientific attention to detail that the authentic play-spirit has become threatened with extinction (Huizinga, 1977).

The increase of structure from leisure to recreation, and then to sport, represents social complexity and the mounting commoditization of sport (Stewart, 1987). Modern sport systems have developed with the support of a complex network of human systems that have a high selectivity for special skills and indifference toward the defeated (Cachay, 1993). Stewart (1987) highlights the corruption and commoditization of sports as follows:

> empirical evidence of the corruption of sport, and critical assessment issues raised in the consideration of the nature and character of modern sport. . . but, also, that the corruption and dehumanization of sport is a result of both the commoditization of athletic activity and the social character and consciousness of sporting fans/consumers (p. 171).

Rowe (1998) critically argues that there is an "urgent need for new and perhaps unorthodox theoretical and empirical work" (p. 241) to keep a judicious edge for social power and for avenues of resistance made possible through sport.

Unfortunately, sports spectatorship seemed to have become a national obsession. Critics diagnosed an epidemic of "spectatoritis," because a nation of onlookers was getting their only outdoor exercise walking to the entrance gates of the ballpark stadiums (Dulles, 1965). Many Americans during "the mid-twentieth century were perhaps spending more time motoring, going to the movies, or twirling the dials of their radio and television sets" (Dulles, 1965, p. 344) than ever before. Industrialization has increased opportunities to experience as well as influenced how people engage in leisure (Neumeyer & Nuemeyer, 1936). Critical scholarship of sport contends that social-economic forces structure and shape the experience of sport, and "[w]hen industrial principles are applied to sport, the athletic body becomes a tool, a machine to be used for industrialized production" (Trujillo, 1995, p. 407). This ethos of progress has projected sport into technological development to the point where athletic competitions no longer represent anything in the natural world.

Up to the end of the 18th century, games and bodily exercises were recognized as important cultural values (Huizinga, 1977). Pierce Collier signaled the emergence of a new era in America by declaring the frontier officially closed, with the support of Luther Gulick, Joseph Lee, and others, Collier formalized the functional value of play through organized athletic

programs and practice (Dyreson, 1999). Athletics and green spaces were suggested as antidotes for over-civilization. Moreover, green spaces were used to supplement society's organization around corporate forms, providing an industrially produced path to the promised land of the creative class. This basis of sports functioned for working class communities as a "form of utopian resistance to the oppressive conditions" (Stewart, 1987, p. 184).

By differentiating observable "space" and "place" within other social systems, sports and recreational practices transform landscapes into "sportscapes" (Bale, 1993). Essentially, the delineation of space distinguishes sport from play and/or recreation, since neither requires specialized or demarcated geographical areas. Pearson (1979) differentiates types of sports as "play sport" and "athletic sport." Play sport is defined as a set of values and systems of meanings that require space to be readily and freely available. Athletic sport is described as a formally structured, rule based, hierarchical, and efficient social-bureaucratic organization with increasing competitiveness that reinforces the valued prowess of the sport. Sporting sites, often located at the geographical, economic, and cultural margins of the country, allow collective individuals to enjoy leisure, demonstrate personal preferences, and exhibit activism. To an extent, "the relationship between athlete and social environment is similar to a balancing act between being a body and having a body; action and representation merge with societal values and norms that can be experienced in sport" (Weiss, 2001, p. 398).

Forsyth (2005) comments "[i]f sport only represents institutionalized competitive athletics, we neglect many activities which individuals either have the willingness, and/or resources to participate in, organize, and/or make competitive" (p. 128). Athletic sport is an economically driven, highly commercialized, entertainment goal oriented activity that is defined by the intensification of social relations that link distant locations. This link is accomplished by

stimulating local events similar to events occurring around the world for the "integration of national economic activities in a relationship where the dynamics and interests are globally directed" (Harvey & Houle, 1994, p. 450). The modernization of physical activity in sport has resulted in a preoccupation with competition. Win/loss records that characterize organized sports deflect attention away from other benefits. Among these benefits are the development of self-esteem and character development (Green, 1997).

A necessary context for understanding leisure is through the structures of the society and ideologies of the culture that fills the voids of space and time (Kelly, 1995). The emphasis and association of the "trophy" (Kaloff, 2003) with material well-being has become a goal "rather… (than)… a complete living, (and) has retarded the development of the idea creative enjoyment of leisure" (Neumeyer & Neumeyer, 1936, p. 24). The distinction between late-industrial and emerging notions of sustainable sport provides an example of how industrial modernization influences sport and provides a context for comparison. According to Huizinga (1977):

> Real civilization cannot exist in the absence of a certain play-element, for civilization presupposes limitations and mastery of the self, the ability not to confuse its own tendencies with the ultimate and highest goal, but to understand that it is enclosed within certain bounds freely accepted (p. 241).

Expectations that contemporary leisure, sport, and recreation will continue to look the same in the future would be ahistorical (Forsyth, 2005). In the present, however, regardless of any ideology, "the question is: what kind of nature should we want and which one is to be protected from sports?" (Bachleitner, 1995, p. 297).

Shogan and Ford (2000) advocate for an alternative sport ethic. The authors assert that this ethic should be concerned with how each person makes decisions to follow or refuse specific

rules and demands of the sport. Moreover, the authors argue that sports challenges need to include a critique of how to apply that sport ethic. Segets (2000) suggests that the inclusion of an environmental ethic, should include 1) modifying sport for minimum ecological damage while maintaining enjoyment, 2) reinforcing sporting behavior to preserve the functional requirements that are necessary to continue playing the modern sport in the future, and 3) practicing sports in a humane way. This challenge to the sporting industry's hegemonic construction of sporting practices may affect the environment through the individual athlete and sport institutions that engage our ethical sensibility during the transition from late-industrial era into a sustainable sporting future.

Intercollegiate athletics.

Intercollegiate athletic competition is reported to have begun in 1852 with a boat race between Harvard and Yale. However the rise and professionalism of collegiate sport were promoted by a need for national oversight to protect college students (Shulman & Bowen, 2001). The 1905 collegiate football season resulted in eighteen deaths and 143 seriously injured students. In response, President Theodore Roosevelt lobbied for regulation and the formation of the Intercollegiate Athletic Association of the United States (IAAUS), the predecessor of the National Collegiate Athletic Association (NCAA) (Byer & Hannah, 2000). Supporting the President's call to reduce brutality in football, New York University President Henry MacCracken invited thirteen institutions that had football teams to a conference. Within a year 48 other schools joined in support the formation of the IAAUS (Crowley, 2006; NCAA, 2005).

The core mission of the IAAUS was to ensure amateurism in intercollegiate athletics by clearly defining what constitutes a student athlete (Duderstadt, 2000). The IAAUS changed the name to the NCAA in 1910, and has managed membership institutions into three legislative and

competitive divisions since 1973. Each NCAA division has policies in place to ensure equal representation of gender participation. The exception to this is Division I member institutions, which have to sponsor at least seven sports for both men and women, or may have six for men and eight for women (NCAA, 2005).

Critics have faulted the NCAA for ignoring the educational experience necessary for student athletes by underplaying the value of the educational mission of the institution and the student-athletes' academic talent. Athletic departments have been heavily scrutinized in part because of special accommodations by professors and classmates as well as the inability of student-athletes to read, and have been ridiculed as "dumb jocks" for leaving school early to play in professional leagues (Funk, 1991). Adler and Adler (1989) have documented the inherent power struggle student-athletes face. This struggle emerges from the necessity for an alien culture to eclipse other social dimensions through the collective pursuit of excellence. Splitt (2007) asserts "America's higher education enterprise should be focused on academics, not athletics, meaning tax code benefits with emphasis on learning and research, not on commercialized sports entertainment and health-spa-like facilities… (and)… should be a concern at the highest levels of our government" (p. 10).

Colleges that have traditionally relied on gate receipts, donations, and television exposure to finance their growth have been challenged to prevent athletic departments from violating rules (Frey 1987). Through such efforts, these colleges have garnered the characterization of "College Sport Inc." (Sperber, 1990). Additionally, the NCAA has been compared to a cartel in terms of setting prices, regulating length and intensity of careers, determining the quality of games, pooling profits, policing the behavior of the cartel, levying sanctions, and distributing information (Frey, 1987). College athletics have typically promoted western values of

globalization created by management practices. However, these same colleges could alternatively affect the system by providing access and creating a real intervention to inform public policy.

As the governing body of intercollegiate athletics, the NCAA has designed increasingly stringent academic reform legislation to ensure that incoming student-athletes are prepared for college and able to meet academic benchmarks for eligibility. The NCAA has instituted a number of policy changes designed to ensure academic preparedness and the successful completion of a degree among athletes. The academic reform legacy began in 1965 with the adoption of the 1.6 rule. The rule was preceded and followed by a series of national reports that called for sport institutional reform, including: the 1929 Carnegie Foundation Study, the 1952 Presidents' Report of the American Council on Education, the 1974 study for the American Council on Education, and the 1991 Knight Foundation Commission. The latest proposed model, "one-plus-three" (Knight Foundation, 1993), gives university presidents control over athletic departments for the purpose of achieving academic integrity, financial integrity, and accountability (Byer & Hannah, 2000).

Former NCAA President Myles Brand's position in his first State of the Association Address (2003) was to declare "reform" and "advocacy" as "dual guideposts to the future success of intercollegiate athletics" (p. 2). These hallmark principles outlined policy for academic reform, including: 1) integrating inter-collegiate athletics into the academic mission of colleges and universities, 2) providing presidential control of inter-collegiate athletics, 3) stressing and reinforcing the positive value of inter-collegiate athletics, 4) prioritizing the integrity of inter-collegiate athletics' unique identity, and 5) promoting norms of ethical behavior

to guide all inter-collegiate athletics. Brand also critically addressed the inappropriate use of commercialization in college sports (2003).

The NCAA has stated "institutions are to provide an environment in which the athlete and the athletics program play an essential role in the student body, to create social bonds between and among student-athlete and non-athlete" (Howard-Hamilton & Sina, 2001, p. 41). Athletic departments provide universities 1) a venue for strong emotion, 2) a means to convey and celebrate many different ideologies, and 3) cultural forms and meanings transmitted based on the histories of the institution (Byer & Hannah, 2000). Nonetheless, critics argue that historical evidence provides factual verification of claims of superiority and reveals that sport has often promoted an explicit goal of enhancing masculinity through scores, distances, times, heights, and weights (Bryson, 1990).

Engagement and disengagement with sport.

In general, engagement with community life through sports appears to lead to a deeper involvement in school (Lapchick, 1989). Student-Athletes benefit from collegiate athletic participation that incorporates Student-Athlete Engagement (AE). AE is an enduring experience where a generalized positive affect and cognitions about one's sport (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007; Hodge, Longsdale, & Jackson, 2009, p. 187) are incorporated with positive programs that value co-operative studies for the purpose and program of intercollegiate athletics (Gardner, 1960, p. 368).

The individual's social and emotional experiences in sport critically foster positive development for the athlete (Papacharisis, Goudas, Danish, & Theodorakis, 2005). Successful sports and recreation programs are loosely defined to have the following five components: quality, resources, community, opportunity, and access (Cunningham & Beneforti, 2005).

Successful athletes have been characterized has having the ability to cope and control anxiety, the capacity to focus and block distractions, mental toughness/resiliency, competitiveness, high levels of dispositional hope, optimism, sports intelligence, hard work ethic, habits of goal setting, coachability, and adaptive perfectionism (Gould, 2002).

While the excitement of being selected for a prestigious sporting venture is seen as a great accomplishment, the devastation of being cut from such opportunity can be troublesome to self-esteem (Dyck, 2003). Some individuals dedicate most of their life to sport involvement because it can satiate fundamental, life-sustaining, and social-emotional needs to feel connected to something, receive social recognition, and achieve personal validation (Parham, 1993). Leaving sports may be related to a (chronological) time factor as well as structural restrictions imposed by a particular level of competition (Blinde & Greendorfer, 1985).

> The automation and mechanism of organized games and sports that require a group to participate while physical activity and recreation are often unsuitable for most people beyond their adolescent years have made it difficult for people to have fun and engage in exercise that promotes physical development in their daily activities (Smith, 1968b, p. 65).

Early theories of sport disengagement have been based on thanatology theory and social gerontology theory (Blinde & Greendorfer, 1985; Sinclair & Orlick, 1994). Thanatology theory compares sport retirement to a form of social death for the athlete who experiences a loss in status. The social gerontology theory compares sport retirement to a traditional form of occupational retirement. This research has examined the dynamics of the athletic transition from a "crisis" orientation (Sinclair & Orlick, 1993). However, Danish, Owens, Green, and Brunelle

(1997) report an alternative view that "(d)isengagement is better understood within the context of transition for individuals and groups (e.g. athletic teams)" (p. 156).

The performance narrative of athlete disengagement from sport reveals athletes report a lack of "fit with their changing lives" (Douglas & Carless, 2009, p. 213). Feeling that they have "no alternative narrative to guide their personal life stories causes further narratives of considerable personal trauma" (Douglas & Carless, 2009, p. 213). Sport athletic disengagement entails planned or unplanned time for the transition of leaving a team and/or sport (Danish et al., 1997). The most salient of these "unique or substantial different transitions experienced by athletes are (a) not starting, or being cut, (b) dealing with primary injury, and (c) retiring from active participation" (Pearson & Petitpas, 1990, p. 7). An athlete whose sense of self is closely linked to his athletic identity can find transitions out of sports challenging (Ogilvie & Howe, 1986).

Withdrawal from sport in conjunction with other potentially significant transitions in the athlete's life raises their awareness of the intimate connection they have developed to the world of athletics (Douglas & Carless, 2009; Parham, 1993). Important factors to consider regarding disengagement "include; (a) the degree of emotional attachment and investment that the athlete has to the sport, (b) the degree of exclusivity of athletics in the athlete's life, and (c) the degree of success that they have enjoyed throughout the years" (Parham, 1993, p. 417). Athletic identity foreclosure (Murphey, Petitpas & Brewer, 1996) requires alternative avenues for maintaining identification with a sport where sport retirement is not viewed as an end to the sport role (Blinde & Greendorfer, 1985), but is more accurately conceptualized as transition in which a person disengages from one set of activities and relationships to develop or expand into other activities and relationships (Coakley, 1983).

Research on sport disengagement has focused primarily on variables that impact the sport disengagement process. Actual sport disengagement experiences have found reasons for disengagement to include normative (initiated by the athlete and are expected) and non-normative (initiated by the team, the sport, or circumstances outside the control of the athlete) (Danish, Owens, Green, Brunelle (1997). Athletes who experience this loss feel emotions (e.g., anger, disbelief, denial, resentment, sadness, etc.) from separating from their primary means of self-fulfillment (Parham, 1993, pg. 416). Typically, non-normative disengagement is when the athletes' expectations do not correspond with the athletes' expected timing of events (Danish, Smyer & Nowak, 1980; Danish, Owens, Green, & Brunelle, 1997, p. 155). Conversely, normative athlete disengagement from high school sport may be attributed to an event like an individual's graduation, which may be seen as normal (Coakley, 1983; Murphy, Petitpas & Brewer, 1996). After intercollegiate careers have ended, athletes tend to maintain involvement by making sport a high priority leisure activity while continuing to grow and develop other dimensions of their lives (Coakley, 1983).

The role of emotion in sport.

Sports provide people with the opportunity to have fun, enjoy themselves, be excited, get worked up, and feel a range of healthy and intense emotions rarely found in the daily routine of life (Arbena, 2000). In sport facilities, a function of our collective actions operated and maintained through social systems of communication, participants orientate themselves within a dynamic, real life, evolving setting with coordinated actions to skillfully follow a ball or some "sport object" with anticipation (Tagen, 2004). Even from the sidelines, fans provide an elaborate network of social support for the on-field "performances." This network also sustains

the production and consumption of an ethic of achievement through the opportunities sport offers for self-improvement (Dyck, 2003).

The interrelationships between sport and society highlight and mirror social values and prevailing cultural themes (Snyder & Spreitzer, 1978). Sport and recreation programs have the potential to reduce levels of substance use and self-harm. Moreover, these programs improve the social cohesion among local communities through specific sources of influence among the community, family, individual, non-sport personnel, and sport environment personnel (Cunningham & Beneforti, 2005). Other benefits from sport include: development of community pride through increased social integration and cooperation, enhancement of the cohesion of a collective identity, and improvements in the capacity of the community to take initiatives. These initiatives enhance confidence and self-esteem; empower disadvantaged groups; reduce crime, vandalism and delinquency, and provide environmental improvements. Moreover, these initiatives generate employment and income by encouraging and improving employment prospects alongside increased productivity from a fit and healthy workforce (Long & Sanderson, 2001).

Emotional stimuli and emotional responses can be understood in relation to people's relationships with entities other than themselves (Jarvie & Maguire, 1994). Deci (1980) defines emotions as a reaction to actual or imagined stimulus events, where they can be viewed as both an antecedent to and consequence of cognitive processes (Pensgaard & Duda, 2003). Emotions within sport emerge from both intuitive and reflective cognitive appraisals (Vallerand, 1983). Felt arousal can be individually based on a person's perception of physiological arousal and the recognizable feeling for the type of arousal (Raedeke & Stein, 1994). Emotional responses to arousal are organized into three categories: interpersonal, situational, and significant others

(Scanlan, Babkes, & Scanlan, 2005). In studying sport, emotions, and pleasure, attention should focus on two interdependent subject matters: 1) the characteristics necessary for sports, and 2) the characteristics specific types of sporting events have to satisfy these needs in societies (Dunning & Elias, 1986).

The complexity of emotional patterns may subjectively and/or objectively affect performance. These patterns may be characterized by mild to moderate threat related to approach and interactive action tendencies (Cerin, 2003). Scanlan, Babkes, and Scanlan (2005) indicate stress, enjoyment, and emotions demonstrate that coaches, parents, and peers all play a role in contributing to the management of an athlete's emotional response. Negative emotional responses have been found to decrease the desirability of an activity and increase the negative motivational consequence. Positive emotional responses may increase the desirability of an activity and result in positive emotional motivational consequences (Scanlan, Babkes, & Scanlan, 2005). For example, optimally pleasant emotions are related to availability of resources and the efficient management of resources. Pleasant emotions tend to produce strong motive and organizing effects, while unpleasant emotions associated with poorly managed and limited resources have weak motivational effects and chaotic effects on performance (Robazza et al, 2004).

Competitive athletic sport offers a rich emotional context with many potential sources of stress and enjoyment. These emotional responses are based on athletes' perceptions of the sport experience and in turn influence other emotional responses and motivational incentives (Scanlan, Babkes, & Scanlan, 2005). In the sport arena, anxiety is viewed as a complex and variable emotional state, rather than a unitary emotion. Anxiety involves substantial inter- and intra-individual variation in perceived logistical function of similar intensity levels of competitive

anxiety (Cerin, 2003). Different sports involve different body and behavioral requirements, as well as emotional responses that may occur during competitive play. Because a full range of possible emotions can be triggered with strong affective responses, athletes and teams rehearse forms of emotional inoculation and readiness to better manage anticipated situations and challenging triggers. Six emotions (tired, pessimistic, scared, angry, anxious, and relaxed) have been determined to overlap for athletes. These emotions tend to be both optimizing and dysfunctional (Pensgaard & Duda, 2003).

The Emotional Bond

> After such a voyage, the troubled angry waters, which once had seemed terrible and not to be trifled with, appeared tamed and subdued; they had been bearded and worried in their channels, pricked and whipped into submission with the spike-pole and paddle, gone through and through with impunity, and all their spirit and their danger taken out of them, and the most swollen and impetuous river seemed but playthings henceforth. I began, at length, to understand the boatman's familiarity with, and contempt for the rapids.
>
> H. D. Thoreau, 1998, p. 56.

> To the extent that each person can feel like a naturalist, the old excitement of the untrammeled world will be regained. I offer this as a formula of re-enchantment to invigorate poetry and myth: mysterious and little known organisms live within walking distance of where you sit. Splendor awaits in minute proportions.
>
> E. O. Wilson, 1984, p. 139.

The National Project for Excellence in Environmental Education emphasizes a need for affective dimensions of intrapersonal factors to facilitate an individual reflection on environmental issues. In turn, this reflection enhances the ability of individuals to act when issues/problems are determined to warrant action (Volk & McBeth, 1998). A core objective of place-based education is to look at how landscapes, community infrastructures, watersheds, and cultural traditions all interact and influence one another. Indeed, community and culture supply "(b)oth natural and built environments that impact the environment" (Sobel, 2004, p. 9). Despite

attempts from outdoor education practices to fortify an emotional link with the environment (Gilbertson et al., 2006), the affective component of environmental literacy is not being clearly represented across environmental pedagogies (Volk & McBeth, 1998). Emotions and experiences in the environment that are necessary to motivate and increase environmentally sustainable behaviors benefit from thorough investigations into the underlying contributors of affective and social-emotional connections to nature (Nisbet, Zelenski & Murphy, 2009).

United States Department of Agriculture Research Social Scientist in Forest Services, Herbert Schroeder (1996) states that natural places are highly valued for human experiences and activities. Moreover, Schroeder asserts that natural places are special places that provide habitats for flora and fauna. Unfortunately, as Schroeder (2007a) has indicated, human patterns imposed on the natural environment often alter or obscure environmental functions. In some cases, "when human actions and influences violate or conflict with the gestalt of nature, humans appear separate from nature" (Schroeder, 2008, p. 307). Field resource management studies are increasingly recognizing that the human-environment interrelationship exists as an experiential ecology, where human feelings toward natural places and environments are pertinent to "restore and sustain a re-creational experience [that] requires paying attention to the physical and biological environment" (Schroeder, 1996, p. 16). Understanding how people experience natural places is important to understanding how people are related to these environments (Schroeder, 1996).

> It is desirable that some large and easily accessible region of American soil should remain, as far as possible, in its primitive condition, at once a museum for the instruction of the student, a garden for the recreation of the lover of nature, and an asylum where indigenous tree, and humble plant that loves the shade, and fish and fowl and four footed

> beast, may dwell and perpetuate their kind, in the enjoyment of such imperfect protection as the laws of a people jealous of restraint can afford (Marsh, 1867, p. 235).

Ernst Haeckel coined the term "ecology" 130 years ago from the Greek word "Oikos," meaning "to understand and appreciate the context of the relationship between organisms, and their environment" (Burns, 2005, p. 414-415). The human mind that originates and is permanently rooted in the biological world is based on a matrix of our affiliations with other organisms (Wilson, 1984). The intimate relationship described as biophilia has been interpreted as a functional subunit of our "adapted mind" (Barkow, Cosmides & Tooby, 1992). Biophilia seems to be a universal expression of emotion that involves more than facial expression. Indeed, it represents "analogically mediated" codes that can be read by humans and by many other animals (Levy, 1982). When expressed during Friluftsliv, a Norwegian concept described as the pleasurable and harmonic feeling of being in nature, biophilia emerges from being in and having meaningful engagement with the 'open air life' (Dahle, 2003).

Hendee (1969) hypothesized that differences in human attitudes toward the natural environment may be due to variations in types of occupation. He also differentiated harvesting recreational activities, like fishing and hunting, from activities having an appreciative orientation that recognizes the aesthetic and social values of outdoor activities. Early social science research in Seattle Puget Sound found a positive association between outdoor recreational group membership and an individual's orientation toward outdoor environmental protection (Faich & Gale, 1971).

In later research, the association between outdoor recreational group membership and orientation toward outdoor environmental protection did not hold true across ethnicity. Commoner (1971) hypothesized that the disaffiliation of inner-city ethnic minorities from the

environmental movement was due to a belief that environmental protection was an irrelevant diversion of money from the socioeconomic needs of these minorities. Two years later, an MSU dissertation of on-campus black student's attitudes toward the environment claimed that 89% of them considered blacks to be less interested in or concerned about ecological problems than whites (Kreger, 1973). After further review, Van Liere and Dunlap (1980) asserted that the most salient individual characteristics associated with concern for the environment were age, education, and political ideology. Subsequently, Dietz, Stern, and Guagnano (1998) reasoned "environmental concern grows out of engagement with the environmental movement and its critics and may reflect as much the circumstances of one's community as one's personal circumstances" (p. 466). The aforementioned studies' emphasis on engagement with the environmental movement gives attention to personal, community, and cultural factors, but seems to disregard the role of engagement with natural places. This stands in contrast to Dunlap and Heffernan's (1975) pivotal study that theorized "involvement [with] outdoor recreat[ion] leads to increased environmental concern among the general public" (p. 19).

Pigram (1993) notes the following:

> If enjoyment of nature is a basic ingredient as empirical work suggests, then there is an implied obligation on management to build in these desired attributes. In creating a spectrum of fulfilling leisure environments, priority must be given to providing recreation settings which maximize opportunities for interaction with nature and the beneficial outcomes perceived from this experience (p. 420).

In different ways, the characteristics of landscapes influence the foundation of both place attachment and satisfaction. The bulk of research conducted on place has focused on the concept of "place attachment" (Williams & Roggenbuck, 1989; Williams et al., 1992). Klenosky et al.

(2007) identifies similar concepts used to research place, such as: "sense of place" (Shamai, 1991; Williams & Stewart, 1998), "place bonding" (Hammitt et al., 2003), and "special places" (Schroeder, 1996, 2002; 2004; Eisenhauer et al., 2000). Place attachment has been conceptualized in terms of two distinct but related components: "place dependence," or the functional importance of a place in supporting specific recreation activity goals, and "place identity," or the emotional or symbolic importance of a place in a person's life (Williams, 2000; Williams & Vaske, 2003). These affective relationships to places "1) encompass a broad range of physical settings and emotions; 2) are an ever-changing, dynamic phenomenon; 3) are both unconscious and conscious; and 4) exist within a larger socio-political milieu" (Manzo, 2003, p. 48). Sense of place has been defined as a multidimensional construct consisting of 1) beliefs about the relationship between an individual and place, 2) feelings toward the place, and 3) the unique behaviors specific to the place (Jorgensen & Stedman, 2001). Stedman (2003) synthesized a two-dimensional sense of place from both attachment and satisfaction, so "place attachment is consistent with definitions of identity (how strong do I perceive my linkage to the setting to be), and place satisfaction is consistent with definitions of attitude (degree of like or dislike for the setting)" (p. 676).

Place satisfaction examines degrees of satisfaction (Hammitt, Backlund, & Bixler, 2004; Lapage 196); Manning, 1999; Moore & Graefe, 1994), and has been used as an indicator of how perceived quality can be managed (Manning, 1999). As early as 1963, Lapage (1963) inquired into "how adequately the motivating needs of recreationalists are being satisfied under existing conditions of supply and demand" (p. 35). Lapage (1963) concluded that "the capacity of a forest environment to provide aesthetic enjoyment –recreational satisfaction is more basic than either biotic or aesthetic limitations" (p. 36). Propst and Lime (1982) argue that satisfaction is

dependent on three basic factors 1) physical and biological features, 2) type and management of action, and 3) social and cultural characteristics of recreationalists.

The symbolic meaning derived from a humanistic praxis of emotional bonding with nature reveals a typology of ecological values (Kellert, 2002). Feelings and insights infuse and enrich our awareness of the natural world by affecting our passions and moods. Lowenthal and Prince (1976) suggest that these may be best "explored through imaginative literature and the arts, which enlarge experience and epitomize styles of environmental organization, preference, and symbolism" (p. 117). This may be because "cognitive processes are crucial in the elicitation of an emotion… [as]…a result of an anticipated, experienced, or imagined outcome of adaptationally relevant transaction between organism and environment" (Lazarus, 1982, p. 255). Before coming into "awareness" of consciousness and memory, feelings and empathy for the environment require input from a data-processing sub-system of an organism in order to integrate symbolic information about a complex external environment (Levy, 1982). The basic method to understand this felt experience is to create a safe place for people to tell their stories and then listen to the experiences that give meaning to their words (Schroeder, 1996).

Hartig and Evans (1993) report that for humans, the aesthetic experience of the landscape is influenced by variation in "objects that symbolize prospects and refuges, the spatial arrangement of symbols, and the equilibrium between prospect and refuge symbols, among other factors" (p. 439). In general, outdoor pleasure has been found to increase with tree density and less understory density, while increases in understory vegetation density increases arousal (Ittelson, Franck, O'Hanlon, 1976). Hull & Harvey (1989) assert that the physical characteristics of tree spacing, the density of understory growth, and the presence of pathways are able to provide experiences and emotions not typically found in urban and suburban environments.

Emotional engagement in nature-based recreation privileges each person on the planet with the appreciative felt sense of place. This felt sense of place appears critical for building empathic relationships with the Earth. The disengagement of populations from nature-based places is a threat to the sustainability of humanity in these ecosystems. Empathy for nature builds appreciation and concern that can reinforce a humane relationship with the planet. Human interaction with a "sense of place" that includes variables from both "place attachment" and "place satisfaction" has symbolic and specific meaning in recreational activities. Emotional connections to nature provide a felt understanding that fosters these empathetic relationships between people and the planet.

Natural engagement.

> The successful hunt is a solemn event, and yet it is done in a spirit of joy. It puts modern man for a moment in vital rapport with a universe from which civilization tends to separate him in an illusion of superiority and independence. The natural environment will always be mysterious, evoking an awe to be shared among all men who take the trouble to see it.
>
> P. Shepard, 1999, pg. 76.

Recreational behavior in space is the outcome of an individual's cognitive evaluation of the known characteristics attributed to the recreational setting. These evaluations are able to facilitate rewarding perceptions of recreational experiences (Pigram, 1993). Conceptualizing human relationships with nature reflects the ethical demands that these relationships can impress upon people (Schroeder, 2007b). Human-nature relationships conceived through a sense of inclusion, separation, or other forms of rapport reveal an individual's experience of real places and environments (Schroeder, 2007). The organic ecological interrelationship that emerges from a basic human attitude toward the landscape found through the lens of the hunt is "a singular expression of our identity with natural processes and is carried out with veneration appropriate to the mystery of those events" (Shepard, 1999, p. 74). Shepard (1999) consequently states modern

sports provide a shallow substitute for the complex mythology of the hunt and that the ritual forms of this technological era are still immature and poorly designed**.**

Schroeder (2008) asserts that "to lose interactive contact with the actual experience loses the experiential application" (p. 68). Sports, like hunting and fishing, offer an experiential ecology for the individual to be part of the ecological experience. Marvin (2005) reports that both forms of hunting, disguise through immersion and the disruption of nature, bring about a pleasurable "state of heightened awareness of, and intensely attuned and responsive to, the places they hunt" (p. 33). This may include a feeling of being motivated to behave in ways that respect and protect the integrity of the environment (Schroeder, 2007b). The inter-subjective relationship developed from the purely aesthetic experience of observing nature comes partly from a sense of commonality and identification with the natural world (Milton, 2002). Enjoyment of harvesting sports, like hunting, comes in part from an awareness of the commonality fostered by empathy and enhanced understanding.

Through the hunt there is a "logical nucleus for the evolution of communal life with its celebrations of a biosocial participation mystique" (Shepard, 1999, p. 74). Representations given to flora and fauna can be an expression of human concerns, desires, and imaginings (Marvin, 2001). In most all regards, these sensuous and embodied relations contrast markedly with discernibly modernized forms of interactions with the natural world (Franklin, 2001). This characteristic of sportsmanship should be used to overcome obstacles and destructive practices that reflect a broader, more barbarous natural history. This history inhibits affective excess by removing passion from the quest for panoptic knowledge and an efficient political economy (Lorimer & Whatmore, 2009). As one of the first sports, the proceeding example will illustrate

how a *hunt* can deepen the emotional engagement that occurs in nature-based recreation through the following:

- Place satisfaction
    - Physical/biological features,
    - Social & cultural characteristics of recreationalist,
    - Type & management of action.
- Place attachment
    - Place identity - the emotional or symbolic importance of a place in a person's life,
    - Place Dependence - the functional importance of a place in supporting specific recreation activity goals.

The fox hunt is a socially constructed activity derived from complex symbolism and discourse about both animals and people. The fox hunt has formality and regulation, specialist consulting, ceremony, pageantry, codes of dress, and costumes that may not be easily understood by outsiders (Marvin, 2002; Marvin, 2010). Milbourne (2003) cites four main factors that sustain community support for the sport of fox hunting: functions in pest control, traditional role in rural life, provision of local employment, and constitution of a social/leisure activity. The hunting practice "nurtures a complex articulation of skills, a double blind engagement which co-privileges utilizing and respecting animated 'things,' self-interest and the cooperation within which that self-interest can be achieved" (Bird-David 1999, p. 78).

Early Sixteenth Century British sport hunters characterized the fox with qualities that imply an inner world of thought, purpose, and feeling. Hunters described the fox as an 'artful rogue' who is praised for its cunning, courage, spirit, and for the ability to invoke enjoyment through the challenges introduced to the hunt by its behavior and actions (Marvin, 2000). Over

the course of a fox hunt, the sportsmen would meet at the farmhouse or pubs to socialize while making preparations for an unknown course that the fox would bequeath to the riders and horses. The pursuit involved capturing a glimpse of a pack of dogs slaughtering the fox within its own ecological niche (Marvin, 2010). Before each hunt, domesticated dogs bred for a sense of smell, for the social skill to communicate accurately through barks knowledge of a fox's scent, and for the ability to discard civility as a wild pack of animals and give chase (Marvin, 2001).

The sport and recreation practice of hunting can bring about the coordination of the senses in relation to local spatial and biotic knowledge. This knowledge is created from an awareness of the sensual depth, complexity, and immersion into a natural relationship that emerges from honing and integrating the senses of sight, smell, touch, taste, and hearing (Franklin, 2001). For the successful hunt, spatial recognition is cultivated over time with particular locations (local bush foods, birds' nests, water spots, wallows, dangerous areas, etc.) through embodied experiences that can be expressed in the landscapes' visual terms, colors, light and shade, and in terms of smells and tactile experiences (Franklin, 2001). While the only person who could be considered to be hunting is the huntsman, all other riders following the barking hounds from a distance have no direct or individual engagement with the fox (Marvin, 2010; Marvin, 2002). The riders mounted on horses seek out a challenging, complex, and potentially dangerous landscape that is peripatetically directed by the 'wild' fox throughout the countryside (Marvin, 2010).

Although, the fox hunt results in the fox's death, the central concern of the hunt comes from and is influenced by a different meaning than the shooting, snaring, poisoning, and other forms of animal killing (Marvin, 2002). The primary interest of the fox hunter is to immerse oneself into a difficult encounter for the pleasure and satisfaction that results from overcoming

self-imposed natural challenges (Marvin, 2010). A symbolic triumph for fox hunting has been interpreted as culture overcoming wildness and as the tension between the amenities of a developed society versus the wild. The sportsman attempts to maintain engagement with a free and wild animal, and at the same time evade the focus of attention with the fox. If somehow sportsmen naturally become enmeshed into a relationship with the fox they will attempt to discreetly disengage from the fox (Marvin, 2001). Fox hunting demonstrates a sensual and emotionally charged practice for both human and animal participants that is expressed and experienced across the interconnections of landscapes and ecological environments (Marvin, 2010).

Measurement of emotions in nature.

The relationship between recreational participation and environmental concern seems to be more complex than previous research has suggested (Bright & Porter, 2001). The very nature of ecology with its complex interactions between organisms and the environment makes the subject matter difficult to assimilate and understand (Maloney & Ward, 1960). Ambiguous results in research regarding connections between outdoor recreation participation and the environment have been attributed to inappropriate distinctions between appreciative and consumptive behaviors, since most activities have behaviors relating to both types of activity (Geisler et al., 1997; Theodori et al., 1988). Consistently, knowledge seems to be more predictive of activity than emotion with regards to the moderate amount of variance in the number of environmental groups' an individual joins (Dispoto, 1977). Specifically, measures of "Eco-knowledge" have been more predictive of involvement than "Eco-emotions," and tend to have a slight negative correlation for science majors, while having a modest and positive correlation attributed to humanities majors. Dutcher, Finley, & Luloff (2007) contend that

understanding and measuring environmental attitudes benefit from distinguishing between the material and affective connections to ecosystems, as well as the biodiversity that contributes to that same community.

Affective connections. The affective connection formed in natural environments is a subjective experience that occurs through emotional attachments (Hinds & Sparks, 2008) that are created with an experiential awareness and a sense of understanding connections to a particular place that may be described aesthetically (Evernden, 1996). In an environment the cognitive processes required during observations and operations within a sport or recreational challenge may not be observable during the activity, but "feelings" demanded by the sport-recreation environment may be recognized (Tagen, 2004). Throughout the duration of an outdoor activity, multiple types of emotions may be evoked that range from positive to negative. Moreover, these reactions consist of complex subjective feelings, like being both physically exhausted and happy (Pensgaard & Duda, 2003).

Tuan (1974) had initially proposed "topophilia" to represent the relationship of the affective bond between people and place or setting. Feelings are similar to the senses of hearing and sight. Like clues, feelings can be used to understand the relationship of the affective bond (Hochschild, 1983). In the affective sense, feeling rules or emotional norms suggest the appropriate emotional response to certain environmental circumstances (Ulrich, 1983). This dynamic is influenced by social and cultural norms, which are based on internal perceptual-cognitive processing that occurs from interpretation of environmental cues, and through the appraising of the physical environment (Mehrabian & Russell, 1974).

The basic cognitive evaluations are influenced by an initial affective reaction that can be elaborated into a generalized reaction consistent with similar emotions from the appraisal of the

evaluation (Ulrich, 1983). These create the "basic affective feelings… [that constitute a]… complex set of interrelated sub events concerned with a specific object" (Ulrich, 1983, p. 806). The economy in the affective realm, according to Rail (1998) who cites Grossberg (1992), has a currency of emotional responses that are influenced by involvement with socially mediated narratives. Emotions provide a specific form of affective investment that locates people in particular experiences, meanings, practices, and pleasures.

The emotional responses felt upon entering into an environment are influenced by the stimuli from the surroundings, the individual's initial emotional states, and affective inclinations related to the individual's reactions to approach-avoidance situations (Mehrabian & Russell, 1974). External attributes or cues associated with a cognitive schema for an area activate direct interpretations of the environment for affective norms (Ulrich, 1983). This interpretation can "be assessed by asking how one is feeling right now" (Russell, 1999, p. 815). Areas attributed to perceptual–cognitive and affective meaning allow for the characterization of prototypical emotional episodes. These episodes have affective meaning able to be conceptualized as a two-dimensional bipolar space, where "the first dimension ranges from unpleasant to pleasant, and the second dimension ranges from sleepy to arousing" (Russel & Pratt, 1980, p. 312).

Mehrabian and Russell (1974) developed and validated an affective scale for the environment. From the work of Craik's (1971) 204 adjectives commonly used to describe landscapes, Mehrabian and Russell (1974) choose sixty of the affect laden words to supplement forty-five words they acquired from college students who described the affective qualities of a landscape (Russell et al., 1981). This scale has predictive and/or a criteria value for three categories from each of the six bi-polar items (Russell et al., 1981). Further adaption of Russell et al.'s (1981) scale supplied Virden and Walker (1999) with selected terms to construct a bipolar

scale. Virden and Walker's scale was constructed to measure affective meaning from a ten-item scale with a five-point Likert scale (See Appendix L).

Social-emotional based assessment scales. As an alternative to focusing on knowledge, Maloney and Ward (1960) categorized verbal commitments, actual commitments, affects, and knowledge. Maloney and Ward (1960) incorporated an attitudinal approach to develop an affective orientated scale that was able to discern "people say they are willing to do a great deal to help curb pollution problems and are fairly emotional about it, but, in fact, they actually do fairly little and know even less" (p. 585). In 1963, Hoover & Schutz attempted to formalize a set of homogenous scales that would reliably measure multiple dimensions associated with conservation attitudes. Their five-point Likert scale assessed items categorized into: 1) Assistance for the Common Good, 2) Regulation for the Common Good, and 3) Private Rights versus Conservation Groups. The authors determined that a conservation ethic benefits from the influence or maintenance of the basic value-attitudes associated with conservation (Hoover & Schutz, 1963).

The most frequently used measure of environmental concern, the New Ecological Paradigm (NEP) (Dunlap & Van Liere, 1978) scale, is based on a set of generalized beliefs about human-environment relations (Stern, Dietz, & Guagnano, 1995). The scale was designed as a measure of acceptance for NEP values. The intent was to significantly differentiate between members of environmental groups who were expected to have stronger associations with the NEP than nonmembers (Dunlap & Van Liere, 2008). According to Stern, Dietz, & Guagnano (1995), the NEP represents values that show a "link between social structural forces and socialization processes that influence them and specific attitudes and behaviors that flow from them" (pp. 738-739), and are "indistinguishable from scale awareness of consequences (AC) of

general environmental conditions, both psychometrically and in terms of its relations to behavioral intentions" (p. 723).

Reviews and critiques have found that, in addition to different worldviews to account for differences in NEP scores, the NEP better measures awareness of the consequences of human action on the environment than environmental values (Dutcher, Finley, & Luloff, 2007). The NEP, which measures beliefs about the negative impact of humans on the environment, is an aggregate for the cognitive beliefs of a population (rather than the individuals) and has questionable ability to adequately measure the affective-experiential relationship to the natural world (Mayer & Frantz, 2004). Researchers have also found that the NEP loses its ability to predict environmental behavior when associated with standard demographic factors (Scott & Willis, 1994). Further criticism regarding the NEP has addressed the lack of consideration given to the individual's meaning for the wildlife-recreational activity (Bright & Porter, 2001).

Researchers interested in measuring the emotional connection to nature need scales that more accurately measure the emotional connection, instead of measuring the cognitive connection to nature (Perrin & Benassi, 2009). Investigations of empathetic perspectives towards the environment have yielded a number of approaches (Hungerford & Volk, 1990). The intrapersonal studies of emotion and the environment by Pelletier, Tuson, Green-Demers, & Noels (1998) resulted in the creation of the Motivation Toward the Environment Scale (MTES). The scale was designed to explore three sets of issues regarding motivation toward the environment: 1) the convergent and discriminate validity of the MTES, 2) the antecedents of self-regulation, and 3) outcomes associated with autonomous self-regulation toward the environment. The MTES produced results that indicate a "lack of environmental knowledge

[that] appears compounded by an apparent lack of desire, in the general public, to acquire such knowledge" (Villacorta, Koestner & Lekes, 2003, p. 438).

Metzger and McEwen's (1999) environmental sensitivity (ES) scale has used both an affective and cognitive domain instrument to measure and document individual changes in ES. Kals, Schumacher, and Montada (1999) suggest emotional affinity toward nature is a responsibility related emotion composed of other emotions, including: 1) love of nature, 2) feelings of freedom, 3) feelings of safety, and 4) feelings of oneness with nature. Taken together, these emotions account for individual differences in nature protective behavior.

The connectedness to nature scale (CNS) measures individuals' feelings about nature. The scale has been described as an aid for activists and researchers to facilitate sustainable changes for coping and adapting to the effects of industrialization, urbanization, and the subsequent disengagement of intimate human contact with nature (Mayer & Frantz, 2004). The significant positive relationship that exists between the CNS measures and eco-friendly behavior holds, in a rather robust manner, for most people (Mayer & Frantz, 2004). Mayer and Frantz (2004) argue that the CNS predicts ecological behavior better than the NEP because: 1) CNS scores are more strongly associated with actual ecological behavior, since connectedness to nature is based on the experience of being in nature, 2) affective relationships with nature have a stronger effect on ecological behavior than more knowledge-based information, and 3) stewardship behaviors are impacted by the degree of "we-ness" existing between an individual and the object of concern.

Mayer and Frantz (2004) designed the CNS scale to tap into the affective dimension by using the word "feel" in items throughout the CNS. The CNS scale, a synthesis of earlier models of measurement, uses seventeen items to measure general feelings as part of the natural world

(Mayer & Frantz, 2004). The CNS enables researchers to measure beliefs about the connection to nature, although it is "best described as a measure of people's beliefs/attitudes (i.e. cognitions) about nature" (Perrin & Benassi, 2009, p. 435). Furthermore, where physical engagement in the human nature relationship is absent, the CNS is able to facilitate research. The CNS is an affective measure of community involvement with nature that measures a sense of inclusion or closeness with nature on both an emotional and cognitive level (Nisbet, Zelenski & Murphy, 2009).

Many environmental scales tend to be sensitive to the potential costs of not being environmentally aware. These scales focus on environmental problems, rather than focusing on the benefits of enjoying the natural connection as captured by Nature Relatedness (NR) (Nisbet, Zelenski & Murphy, 2010). To explore the overall benefit of this connection with nature, Nisbet et al. (2010) designed the NR questionnaire as "a self-report measure to assess the affective, cognitive, and physical relationship individuals have with the natural world" (p. 719). The uniqueness of the NR scale is that it measures something different than other environmental scales (NEP, MTES, ES, and CNS). It is also a better predictor of (self-reported) environmental behaviors, environmental activism, and an environmentalist identity (Nisbet et al., 2009).

The designated use for the NR instrument was to take into account both the positive and negative feelings that make up an individual's relationship with nature (Nisbet et al., 2009). The NR also captures individual and respective differences in environmentally responsible behavior (Kaplan, 2000; Nisbet et al., 2009). The affective, cognitive, and experiential aspects of NR are represented in three groups.

> "NR-Self represents an internalized identification with nature, reflecting feelings and thoughts about one's personal connection to nature; NR-Perspective reflects an external,

> nature-related worldview, a sense of agency concerning individual human actions and their impact on all living things; NR Experience reflects a physical familiarity with the natural world, the level of comfort with and desire to be out in nature" (Nisbet et al., 2009, pp. 724-725).

Nisbet et al. (2009) report that positive natural experiences in the past and present, including both care and sympathy, have been identified as predictive indicators of environmentally friendly behaviors.

Theoretical Frameworks

The scholar-practitioner may be able to influence and/or legitimate fields of inquiry, by projecting time-space structures for people, within the complex relationship that takes place during fieldwork and reporting processes (Katz, 1994). Engaging sport and recreational activities in an environmentally-aligned manner incorporates a complex examination of felt experiences to nature that can contribute to the emotional fortitude necessary to confront environmentally wicked challenges. Sports and recreation "arenas facilitate culturally permissible and managed constructed discourses of appropriate and inappropriate responses and behaviors in expressing emotion and/or the training of emotion" (Harding & Pribram, 2002, pg. 418). Sports and recreation activities create opportunities to collect emotional content from the emotional relations of people who are temporarily brought to awareness by personal emotional performances within the heightened emotional setting (Anderson & Smith, 2001). Space created for sports and recreation foster a host of felt experiences that communicate information to individuals and others who may have an interest in the quality and characteristics of emotional engagement within an environmental place. This exploration of nature-based recreational experience is to evoke the imagination, create intimacy, provide a source for individual

identification, and to develop an avenue for community involvement with the environment that are all possible from interscholastic athletics (Anderson & Stone, 1981).

Campbell's (2002) definition of "emotionally engaged research" draws upon "feelings for scientific purposes and valuing and utilizing the kinds of knowledge that can be revealed through careful attention to the affective experiences of the researcher and the participants" (pg. 125). In order to facilitate an authentic "feeling" and "caring" for nature, my "emotionally engaged research" approach drew from ethnographic theory to understand a cultural phenomenon that reflects a system of knowledge and meaning associated with emotion. A Symbolic Interactionist framework reflects inner values (Stryker & Vryan, 2003) that can foster an epistemology of participation, empathy, and connectivity (Laura & Cotton, 1999). Evers (2006) postulates this "inter affective experience is how we learn to behave, come to belong, and know what is happening" (pg. 235).

Theoretical understanding of emotional experiences that occur in nature-based recreation should identify individual representations of social cultural understanding to felt space. Drawing from Symbolic Interactionism Theory, Systems Theory, and Emotional Geographical approaches may facilitate insights into emotional experience of the mental associations attributed to physical stimuli for felt experiences that can be mapped through physical engagement with the natural world. Symbolic Interactionist Theory provides attributes to the individual and social meaning relevant to the location of the experience. Systems Theory informs the embedded hierarchy of relationships that result in human meaning and impacts associated to the environment. Emotional Geography with an exploratory analysis maps emotional phenomena for individual or academic disciplines that may be new or unfamiliar with certain sensations.

The proposed interdisciplinary research interpretative framework is to provide perspective that enriches the human - nature dynamic, by incorporating elements of emotionally felt phenomenon with different methodologies to frame sports and recreation in an environmentally meaningful manner. A mixed methodological approach can facilitate interpretations of emotional data that is relevant for understanding nature based recreation that goes beyond traditional academic disciplinary boundaries to construct meaningful and potentially sustainable change. In the relationship to the natural world, emotions occupy a primary nexus between the internal mind and the external body. Emotions reveal how we relate to the planet through connections to the environment that affect quality of life, as well as influence our relationship with other life sharing this eco-sphere.

Symbolic Interactionist Theory.

Symbolic Interactionist theory in sport research explores individual meanings created through the relationships between the social and physical sports environment. Symbolic interactionist research focuses on how individuals reconstruct and describe their experiences through their participation in the sports industry (Coakley, 2007). The Symbolic Interactionist Theory explores meanings through individuals' interactions in sports through meaning, identity, social relationships, and sub-cultures. Implications for understanding Symbolic Interactionist Theory, according to Weiss (2001) have not been fully realized, however, this theory can frame research experiences for athletes and how they define and make sense of their sports participation (Coakley, 2007). Scholar-practitioners who utilize this approach explore what experiences imply about the settings and cultural expectations of normative and deviant emotions (Fields et al., 2007).

The Symbolic Interactionist Theory methodological position holds that "social action must be studied in terms of how it is formed; its formation is a very different matter from the antecedent conditions that are taken as the 'causes' of the social action and is not covered by any specification of such causes" (Blummer, 1969, pg. 57). Symbolic Interactionist Theory can illustrate how social conditions affect the expression of emotions and reveal how emotions can be socially influenced (Zurcher, 1985). Kidder (2006) demonstrates how a symbolic interactionist description and analysis of how Alleycat bike racing produces affect-meaning and facilitates values that are internalized as objective and real. Another case study showed how the military reserve training institutionalized emotional scripts highlighted the interface between micro and macro approaches of social worlds for providing instruction in a situated context to develop expectations of expression, facilitates procedural preparation for the expression, and engagement of rehearsed emotional performances (Zurcher, 1985).

Through the use of the body to illustrate experiences and feelings surfers have while engaged with differing aspects of the surf, Evers (2006) reveals how ethnographic sensual data of the researcher's body can be integral in the interpretation of sport practices and cultures. For example, Evers describes how "effects and reef embed themselves in the body to be recalled later when our bodies remember" (Evers, 2006, pg. 237) to demonstrate the shift from researching *about* bodies to a research *through* bodies. Evers (2006) postulates "this inter affective experience is how we learn to behave, come to belong, and know what is happening" (pg. 235). Recreational research has illustrated how guides can promote group identification, mediate feelings of danger, and elicit desired emotional responses among novice rafters' (Holyfield & Jonas, 2003).

As a tool, Symbolic Interactionist Theory uses emotions to aid researchers in the analysis that explores the insights implicit to situated feelings. Emotional responses can be included as an analytic resource to be used by the researcher during fieldwork to sensitively interact with research participants (Bondi, 2005). Sports have an ability to satisfy an individuals' need for "identity reinforcement, [and] motivation [that] is based on external satisfactions associated with displaying specialized skills in sports to the approval, status, or materialistic rewards for performing well" (Weiss, 2001, pg. 393). Emotions in sports, however, are more than a facet of personality, but a functional gesture in social interactions (Hochschild, 1979). Feeling rules establish the value ascribed to a range of gestures and help to understand processes within groups, organizations, cultures, and networks (Fields, et al., 2007).

Systems Theory

Systems philosophy concerns itself with a systems view of the world and uses an explanation of systems thinking to approach theoretical and real-world problems. A systems perspective enables the exploration and characterization of a system of interest in its environment, along with its components and parts (Banathy & Jenlink, 2003). Three steps necessary for a systems approach include: 1) the identification of a whole system for which the subject to be explained is a part, 2) the explanation of properties and/or behaviors for the whole system, and 3) an explanation of properties and behaviors of the subsystem explained with regard to the function(s) or role(s) (Ackoff, 1999). Systems fluctuate between unstable or stable states to structurally manage embedded hierarchies of cybernetic networks that communicate "negative" or "positive" feedback to the system (Bawden, 1997). Boundary judgments made explicit set procedural systemic critique for both the descriptive "is" and in the normative "ought" mode (Ulrich, 1998). Systemic intervention, therefore, is purposeful action by an agent

to create change in relation to perceived boundaries (Midgley, 2000). After all, "Systems exist in the mind of the beholder" (Bawden & Ison, 1990, pg. 12).

Within systems research, "(t)wo simple but powerful principles form the core of the systems message: (1) systems are composed of interrelated parts; and (2) systems function is related to systems structure" (Grant, 1998, pg. 68). Complexity, a property of systems, emerges from a formal system's inadequate ability to embed real world properties and behaviors (Mateos, et.al. 2002). Bawden & Ison (1990) state "the unit of interest of the systemist . . .. is both the 'it' and the 'other' as well as the relationships between the two. . . systemists typically think in three . . dimensions . . . the subsystem. . .the whole [system of interest]. . . and the . . suprasystem . . plus all the sets of interactions within and between these three levels" (pg. 3). A system is a set of two or more components where the: 1) behavior of each component affects the behavior of the larger system, 2) behavioral effects of each component are interdependent on the larger system, 3) smaller system components affect the behavior of the larger system (Ackoff, 1999). Performances of systems are dependent on the interaction of components interdependent of each other, and when a system is taken apart the essential properties are lost (Ackoff, 1999). However, "when the component parts of a system interact together within the boundary of that system, the process results in the emergence of properties which are different from the mere additive effects of those parts, and unique to that particular system- the system is different from the sum of its parts" (Bawden, 1997, pg. 2).

In systems thinking, the emergent property essential to open systems, like human beings, are non-mechanistic and self-organizing processes that assimilate inputs from the environment and create output products that maintain identity (Midgley, 2000). The open systems characteristics for human systems are ideal-seeking and purposely guided by their own vision of

the future and are; 1) sustained in relations that have been nested over time, 2) interdependent with the environment, and 3) are whole systems composed of smaller systems (Banathy & Jenlink, 2003). Goal-seeking or purposive systems have unique responses within environments to achieve particular pre-determined goals (Bawden & Ison, 1990). The main and basic feature in any social system is human activity (Checkland, 1981). Regardless of an individual's mastery of a human system, "the behavior of systems at one level in a hierarchy is influenced by the behavior of systems at other levels" (Bawden & Ison, 1990, pg. 15). For humans, critical systems researchers report that "below the surface of expert knowledge and professional behavior, there exists a deep symmetry of all claims to knowledge and rationality, whether professional or not" (Ulrich, 1998, pg. 7). Therefore, the metaphor of community has a unique role in critical learning systems (Bawden, 1997) which are constituted through by four types of activity: practical, communicative, cognitive, value building and orientation (Checkland, 1981).

From a systems perspective, sports facilities are embedded expectations grounded in choices concerning the use or non-use of sporting spaces, equipment, and movements that mediate changes to these structures and connect the embedded expectations (Tagen, 2004). Ponomarev's (1978) systemic analyses of the social functions "characterized as a game, educational and competition activity, based on the application of physical exercise and aimed at the achievement of socially significant results" (pg. 18) reveal the complex social possibilities of structures and content in sports and recreation. In any complex system, the following properties are required: 1) emergence and auto-organization, 2) open systems, 3) limited decomposability, 4) nonlinear adaptive relationships, 5) long-term dependence, 6) absence of determinism, and 7) complex systems connections (Mateos, et al., 2002). Pearson's (1979) analysis of behavioral functions involved with sports illustrates how play-based behaviors are nested in social-

organizational complexity and provides a rationalization for why universities offer collegiate sports social-actors (i.e. Presidents, Athletic directors, Coaches, Players etc., etc.,) to facilitate the institutional management of these sports through various interrelated roles and responsibilities (Frey, 1987). Systems theory has implications for interpretations of education and sports – recreation research through "the development of principles concerning the use of systems ideas in problem-solving in real-world situations" (Checkland, 1981, pg. 160).

Emotional Geography

> Our voyaging into geographical unknowns, a perennially satisfying venture, for perhaps, the most fascinating terrae incognitae of all are those that lie within the minds and hearts of men.
>
> Wright, 1947, pg. 15

Emotions are physiologically and socially constructed, deconstructed and reconstructed in a fluid, plural, emergent process that embodies experiences and emotional histories that are produced across space and place (Askins, 2009). The body is the location of both emotional experience and expression and is the most immediate and intimate geography (Davidson & Milligan, 2004). Emotions provide a crucial context for contact with the world that accounts for feelings of engagement with places (Saville, 2008). "Emotions are vital (living) aspects of who we are and of our situational engagement within the world; they compose, decompose, and recompose the geographies of our lives" (Smith, Davidson, Cameron, & Bondi, 2012, pg. 10).

In "Geography, Experience, and Imagination: Towards a Geographical Epistemology," Lowenthal (1961) was the first to explicitly consider the '*terrae incognitae'* and the relationship between the outside world and the mental representations that take place in the minds of individuals. Tuan (1974) points out that late 17th and 18th century philosophers and educators described the laws of nature through the laws of reason, but Tuan proceeded to map

characteristics and differences of the modern environmental experience from a dialectical perspective in "Topophilia: a study of environmental perception, attitudes, and values." Wood and Beck (1976) were the first to articulate a method for "Talking with Environmental A," a method described as an experiental mapping language that effectively "proved to be a mapping language sensitive enough to measure consensus feelings about the city's different sub-areas; and recommended that further use is made of the language in future empirical research in environmental perception" (Spencer & Dixon, 1983, pg. 373).

Emotional geography provides scholars an analytic space with organic and social composition that accounts for the ability of emotions to transcend the dualisms of "mind/body, nature/culture, public/private, and conscious/unconscious" (Bennett, 2004, pg. 416). An emotional geography is the socio-spatial mediation and articulation of the experiential and conceptual characterization of emotion (Bondi et al., 2005). Emotional geography has been conceived to support exploration beyond subjectivity and objectivity, towards caring without value judgment (Pile, 2010). Relationships between people and their worlds constitute patterns of emotions that communicate personal and social meaning (Bennett, 2004). Emotional geography's mapping language encapsulates culture, history, seasonality, psychology, and biology in an economy of emotions to transform assumptions and actions embodied in ordinary daily walking, driving, reading and sports recreation practices (Smith, et., al. 2012).

Historically, the marginalization of emotion, in part, has been attributed to gender politics, where studies of "detachment, objectivity and rationality have been valued, and implicitly masculinized, while engagement, subjectivity, passion and desire have been devalued, and frequently feminized" (Anderson & Smith, 2001, pg. 7). Emotional geographies, however, encompass a growing interdisciplinary scholarship that integrates knowledge and insights for a

systemic perspective of how our interpretations/cognitions of the world are mediated by feeling (Thien, 2005). Early (1820s) references associated with emotion (affections, passions, interests, appetites) began to recognize emotion as an over-arching category of importance (Smith et. al., 2012). Emotions in and across specific time periods and cultural spaces locates emotions "as part of the (re)production of culture and subjectivity as constitutive of culture and subjectivity, and culture and subjectivity as constitutive of emotions" (pg. 424). Emotional geographies provide a context to re-conceptualize emotions as structures of feeling to facilitate complex personal, social, and cultural relations (Harding & Pribram, 2002).

Emotional geographies inform discourse of how emotions in qualitative research depend on the "researchers' capacities to forge effective and appropriate interpersonal relationships with other research participants" (Bondi, 2005b, pg. 236). Emotional geographies inform discourse of how emotional data in qualitative research depend on the "researchers' capacities to forge effective and appropriate interpersonal relationships with other research participants" (Bondi, 2005b, pg. 236). The researcher is expected "to overcome the immediacy of people's corporeal experiences in relation to the demands of migration, exile, integration and resettlement by acts of will and intellect" (Anderson & Smith, 2001, pg. 9).

The capacity to reflect on emotional experiences inclusively and non-prescriptively enriches research practices in a variety of ways (Bondi, 2005b). Emotional attachment to a "sense-of-place as a byproduct of the . . . the humanly modified landscape or locality – being sensed is not something frozen, but continuously becoming a byproduct of individual (and collective) active participation in the time space flow of the structuration process" (Pred, 1983, pg. 53). Emotional geographies attempt to demonstrate subjective elements that can be incorporated into the main empirical tradition with a mapping language that traces the

development over time of both individual and consensual feelings about places (Wood & Beck, 1976).

The task of constructing emotional geographies is to examine how "modes of representation mobilize, produce, and seek to shape emotions" (Bondi et. al., 2005, pg. 10) in the environment. With an awareness of emotions, the context of particular places for understanding emotions and sense of place it is "useful to speak of an emotion-spatial hermeneutic" (Davidson & Milligan, 2004, pg. 524; Milligan, 2005). Two critical challenges for the emotional geography traditions to address are: 1) how can emotional geographies connect and engage with expressions of emotion, and 2) how can emotional geographies connect and engage with everyday emotional life without equating emotion to individualized subjective experience (Bondi, 2005).

Encouraging research practitioners to find new ways to experience and move in places builds knowledge of these movements and feelings to create depth and intimacy for emotional engagement with space that could facilitate future possibilities for sustainable enjoyment (Saville, 2008). Realizing the inherently emotional nature of embodiment has led researchers to explore how we feel, as well as how we think through the body (Davidson & Milligan, 2004). The emotional geography of reflexive engagement with emotion can inform assumptions about how to frame and approach situations (Bilson & Thorpe, 2007) that may illustrate how Nature Relatedness (NR) may be affected by nature-based recreation. My research used qualitative and quantitative assessments of student's emotions to construct an emotional geography (Bondi, Davidson, & Smith, 2005) of emotional engagement during nature-based recreation.

Mapping the exterior. Learning about the environment through the process of compiling information includes the spatial relations among the environmental objects, including the socioeconomic, cultural or other meanings of significance (Wood & Beck, 1976). Whatever the

epistemological framework scholar-practitioners choose to perform, emotion work will be involved with their research (Bondi, 2005b). During fieldwork, researchers can affect and be affected by the emotions of others (Bennett, 2004). Cultural discourses of emotion, through psycho-social narratives, and emotional subjects who co-produce inter-subjective meaning negotiate an experience of a place in the world (Tuan, 1974). The "external physical activity that steers an individual through specific temporal and spatial locations involves engagement with environmental consequences in internal mental activity where emotions and feelings are experienced" (Pred, 1983, pg. 47). Emotions are a matter of where we are and what is expected of us (Beatty, 2005). Specific locations can be socially constructed in ways that are saturated with emotion, "sometimes wild and frightening, sometimes aesthetically pleasing and relaxing, sometimes dependent on ideas about rootedness" (Urry, 2005, pg. 6).

Mapping the interior. Emotional geographies encourage thinking through feelings and emotions from the world we know and live in (Anderson and Smith, 2001). As individuals learn how to induce or suppress their feelings through 'emotion work,' they tune into the demands and needs of the social-emotional environment (Hochschild, 1983). Feelings provide an essential perspective on processes occurring between people that are able to produce a felt belonging for individuals through the interpretative narrative of bodily sensations, thoughts, and fantasies (Bondi, 2005). Reflective self-monitoring by researchers can unveil a broad range of emotions flowing between and among places and people that include the researched and the scholarship of other researchers (Bondi, 2005).

Conventional techniques to access an individual's understanding tend to elicit cognitive maps that are unresponsive to affective images and favor the inclusion of factual terms (Wood & Beck, 1976). Hargreaves introduced emotional geographies as a framework for "the closeness

and/or distance in human interactions and relationships that help to create, configure, and color the feelings and emotions we experience about ourselves, our world and each other" (Hargreaves, 2000; 2001, pg.1061). The spatial mediation and articulation of emotions in emotional geographies (Powell, 2009) are concerned with developing new dimensions for understanding patterns of emotional differences that re-construe rather than construct an idle definition of emotions (Smith et., al. 2012). Conceptualizing socio-spatial mediation and articulation with specific interiorized subjective mental states provides understanding of the emotional experience (Bondi, et. al., 2005). This helps enable emotional geography to transcend the dualisms of "mind/body nature/culture, public/private, conscious/unconscious that divides scholars and disciplines as an analytic space with organic and social composition" (Bennett, 2004, pg. 416).

Mapping place performance. Performance space establishes boundaries for emotionally charged events in public settings that are usually reserved for private settings (Wood & Smith, 2004). Performances promote emotional venues for the power of emotions to shape social embodied experiences into performing space, so that individuals can attend to, be immersed in the world of emotional geographies, and experience being part of a positive, life-enhancing world (Wood & Smith, 2004). Embedded expectations emerging from institutional spaces act as a forum for competing values and discourses that could be transformative to institutions (Hemming, 2007). Participation in play spaces facilitates the accessibility of emotions (Powell, 2009). These emotionally heightened spaces mediate social relations through feelings and sensibility and can provide opportunities to track emotional geographies into less explicit emotional domains of life (Anderson & Smith, 2001).

CHAPTER 3

METHODS

Case Study Background

This case study is an initial investigation to gain insight into how past sports and recreational practices may have an influence on the emotional engagement individuals can have with natural areas, and the subsequent empathetic relationship to nature that develops. The case study was conducted on the campus of Michigan State University (MSU) to investigate emotional engagement during nature-based recreation in Baker Woodlot. The case study drew from a population of ethnically diverse college students attending the university who have participated in high school interscholastic sports. Culturally sanctioned and managed discourses, like interscholastic sports, facilitate cognitive perceptions, behavioral expressions, and can facilitate the training and projection of emotions (Harding & Pribram, 2002). Students with interscholastic sports experience were chosen because their history with sports may have influenced their behaviors and emotions toward the natural environment (Pigram, 1993). This assessment of emotional engagement and the empathetic relationship with nature was carried out through a field experience consisting of nature-based recreation.

The specific study site was a 78 acre "Category 1" natural area (managed for the highest level of protection and lowest level of usage) determined by the "MSU Campus Natural Areas Committee" to be one of twenty-seven natural areas on campus (Michigan State University Campus Natural Areas, n.d.). The study area was located in a beech-maple forest on the south-central section of the main campus that serves "community and friends as a place to learn, explore, and reflect" (Michigan State University Dept. of Fisheries and Wildlife, n.d.).

A case study method was chosen to promote scholarship for an emerging grounded theoretical knowledge of emotional engagement in nature-based recreation that systemically addresses the emotional relationship of sport participation to nature (MacKinnon, 2010). This case study was intended to create a 'roadmap' for building theories (Eisenhardt, 1989) and to be "hypothesis-generating, not hypothesis-testing" (Gersick, 1988, pg. 36). The goal of this case study was for an "intensive analysis of an individual case to elucidate causal mechanisms" (Gerring, 2007, pg**.** 233). Case studies attempt to provide comprehensive knowledge of an object of study to facilitate the development of general theoretical statements from observed regularities and irregularities (Fidel, 1984). As a "preferred method of research . . . epistemologically in harmony with the reader's experience and thus to that person a natural basis for generalization" (Stake, 1978, pg.5), the case study method accounts for the different ways an event may occur that have relevancy to the observation (Fidel, 1984). Based on expectations about the context-dependent knowledge of sports (Flyvberg, 2006), this case study of athletic students explored possible emotional associations that may be relevant to a larger population (Gerring, 2004).

Recruitment of Study Participants

Case studies may use a variety of participants to represent a study population. In one study on diversity and environmental concern, Kreger (1973) used 28 ethnic student minorities to explore quantitative connections to nature on the Michigan State University campus. And Emmons' (1997) qualitative research study chose 10 subjects in a case study for assessing environmental sensitivity and concerns. Based on the methods of these prior studies, I sought up to 15 research participants who were university students who had participated in interscholastic sports while in high school and identified themselves with an ethnic status.

The case study has followed Chavez' (2000) suggestion to invite ethnic minorities to participate in nature-based recreation. Electronic and print fliers were used to recruit study participants (Appendix A). Social contacts of the researcher within university clubs and organizations that included but was not limited to: campus based multi-cultural organizations, Recreational Sports and Fitness Services, libraries, residential halls, and the Student Union were informed of the study, and asked to provide referrals to the study when possible. Research participants were selected if they met the following criteria: had participated in high school sports, represented both males and female, and represented some ethnic diversity. Although, a total of 15 students were sought, participants were chosen through a rolling selection process, resulting in in 10 participants who completed all components of this study.

Monetary incentives have been useful to increase participation rates and may increase rates among individuals who are typically unlikely to take part in research projects (Guyll, Spoth, & Redmond, 2003; Zusman & Duby, 1984). The literature shows lottery incentives commonly appear in institutional research and that incentives improve response rates with little or no biasing impact on survey responses (Porter & Whitcomb, 2003, pg. 404). This survey method was adapted into my recruitment strategy; I offered a financial incentive of $5 for each participant and an entry into a lottery for a one–night accommodation at a local bed and breakfast, and a fitness pass for Recreational Sports and Fitness Services. Two personalized emails were sent to participants to increase participation rates, as recommended by Porter & Whitcomb (2003).

Participants for the study were asked to schedule a time to experience nature-based recreation by taking a 35 min. – 1 hr. walk in Baker Woodlot. Afterwards, participants were expected to be available for another 15 to 30 minutes to answer questions about their experience.

Each selected participant was asked to create an alias name to ensure that all responses remained confidential. Research participants were informed that their participation was voluntary and they could choose not to answer any questions and/or withdraw from the study at any time.

Selected volunteers for the study were notified by letter (Appendix B) of the requirement to read and register consent to participate with a signed consent form (Appendix C). An original confidentiality statement was acquired during initial stages of the project and used to ensure confidentiality. Trust is important for participants who reveal sensitive information critical to research studies and provides the researcher with knowledge that may reduce the potential of participants in the study from being identified or exposed to risk during the study (Gibson Benson, & Brand, 2013).

Two volunteers selected did not provide the completed agreement for the study and were thanked for their time and interest (Appendix D). They were not invited to fill out a survey or respond to any post-study questions and they were not eligible for any compensation. Eligibility for incentives required submission of all questionnaires and instruments provided during the research project. Research participants who submitted a consent form were given two email appointment reminders of eligibility for $5 research compensation and an entry into the random lottery for a one night stay in a Bed and Breakfast. A second research participant was selected to receive a "Two Semester Unlimited Fitness Membership for 2012" to the Recreational Sports and Fitness Services.

Data Collection

In this mixed method design, both qualitative and quantitative paradigms were used to acquire data in an effort to enrich analysis and interpretation. Hammersley (1992) proposes that social researchers be selective and utilize different research methodological approaches and

theoretical frameworks. Johnson & Onwuegbuzie (2004) cite Turner (2003) to point out that the fundamental principle of mixed methods research is to collect diverse data sets using different strategies, approaches, and methods in a manner that combines complementary strengths and avoids non-overlapping weaknesses. The use of a mixed method approach enabled a multitude of perspectives to investigate multiple aspects of nature-based emotional experiences reported by research participants (Figure 1).

My mixed method research incorporated qualitative research techniques that included personal field notes and focused journaling as sources of data. This study has employed a reflexive attitude that systematically locates the self socially, emotionally, and intellectually to influence these relationships with oneself, with research participants, and with one's readers, audiences, and epistemological communities (Mauther & Doucet, 2008). Auto-ethnographic data were collected concurrently along with participants' data to provide context for emotional interpretations. Qualitative methods included participant observations and open-ended questions during a post-experience interview. Research participants' inter-subjective perspectives, interactions, and conversations provided a resource for analysis of felt experiences that were coupled with individuals' values and perceptions about emotions (Bennett, 2004; Kleinman & Copp, 1993). The primary quantitative measurements, the "Nature Relatedness Instrument" and the "Affective Meaning Instrument" were used to describe changes resulting during the study.

Method of Collecting Data

Auto-ethnographic Data Collection.

An auto-ethnographic perspective was used that drew "upon the experience of the researcher for the purposes of extending sociological understanding" (Sparkes, 2000, pg. 21) to facilitate interpreting the environment. Auto-ethnographic journal field notes of personal

experiences with affective/emotional instruments were used to inform the researcher's interpretations of study results concerning subject's emotional engagement and empathetic relationship with nature (Anderson, 2006). Prior to the research participants' field experience, from Aug. 11 – Aug. 24, 2012, I visited the research site between the hours of 6 am and 10 pm to conduct fifteen observations that each lasted two hours. These thirty hours of participatory observations were recorded in my journal field notes; I specifically observed the flora, fauna, and ecosystems in the natural area. Field notes were collected of the emotional aspects of self, perspective, and experiences participants had during this interpretive experience of the land's elemental moods (humidity, clarity, stillness, wind, thunderstorm, rain) (Abram, 2010). Other note taking in the natural area was from listening and observing in Baker Woodlot to identify multiple perspectives. Additionally, ethnographic field notes were used to write both initial and then integrative theoretical memos to be further reflected on in the discussion section (Emerson, Fretz, & Shaw, 1995). This method of managing detailed field notes was to conduct a "specific form of critical enquiry that is embedded in theory and practice" (McIlveen, 2008, pg. 3) (Appendix E).

Procedure and data collection for participants' pre-experience.

Selected volunteers for the research study were required to read an on-line consent form (Appendix C) and acknowledge that "By clicking on the button below, you indicate your voluntary agreement to participate in this research." Volunteers who agreed to participate were sent an electronic link (Appendix D) to a pre-experience initial survey (Table 1) asked research participants to enter an Alias Name for confidentiality, provide demographic information, complete surveys (Environmental Behavior Lifestyle and a Nature Relatedness survey), and

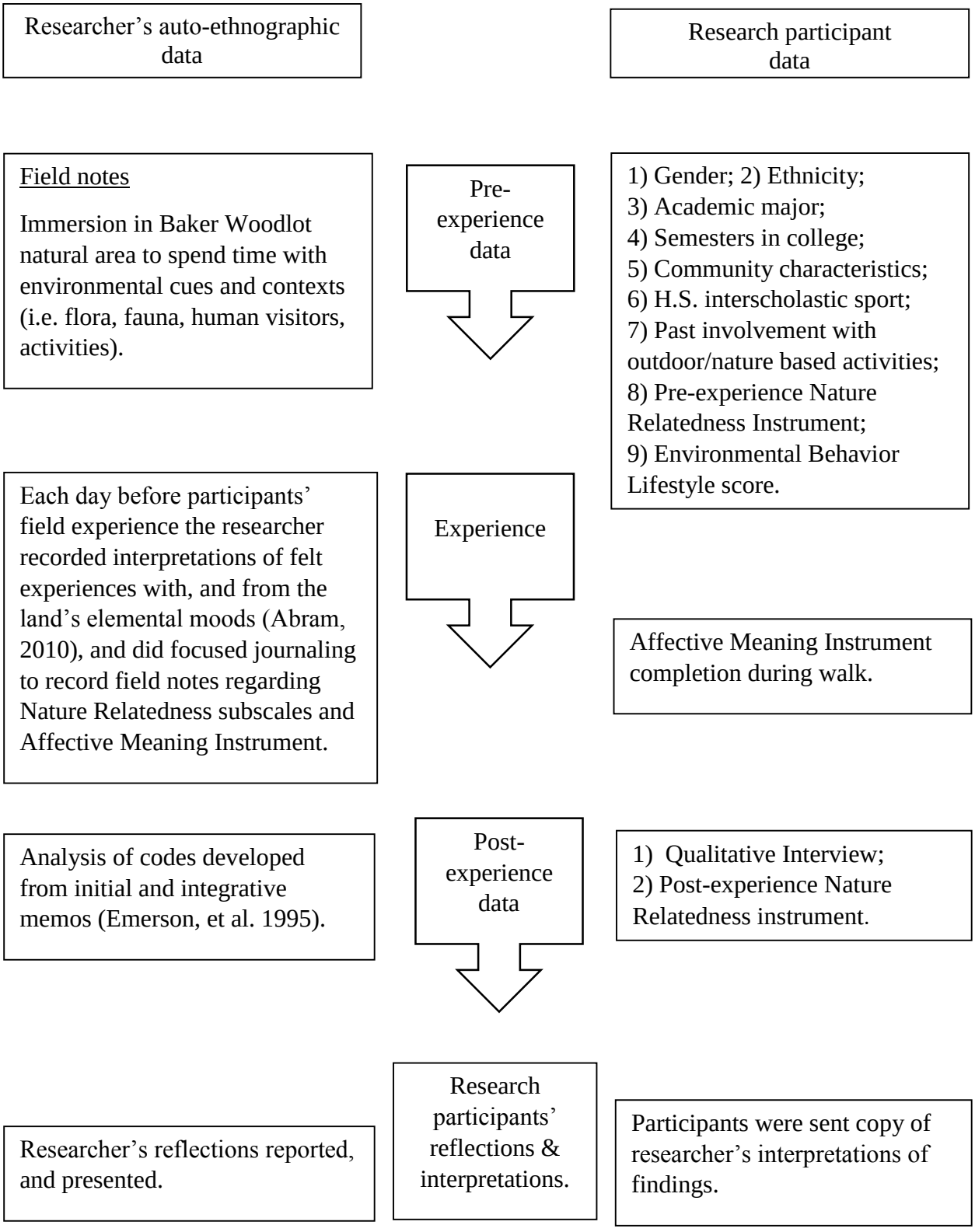


Figure 1: Study stages for managing data collection and process for representation.

respond to an open-ended questionnaire asking for any considerations and/or suggestions (Appendix G). Completion of the pre-experience survey took approximately fifteen minutes. After research participants finished responding to the background questions, they were directed to schedule an appointment for the experiential phase of the research project. Reminder notes with directions and suggestions for on-site parking accommodations were provided, as well as specifications for research compensation (Appendix H).

***Table* 1: Pre-experience Objectives and Data Collection**

Data Collected	Objective
Alias Name	Ensure confidentiality
Demographic information	Collect background information
Environmental Behavior Lifestyle	Assess environmental behaviors
Nature Relatedness	Assess connection to nature
Scheduled meeting in Baker Woodlot	Confirm study participation
Open-ended questionnaire	Receive respondents input and feedback

Notes: Pre-experience data were collected through a web-based survey.

Demographic and background data collected provided a context for interpretation during qualitative and quantitative analysis. The initial stage asked for respondents' past involvement in nature-based outdoor recreation, type of community which was the setting of their high school (e.g., Urban, City, Suburban, Village, Country, Other), the number of semesters at MSU, academic major, gender, ethnicity, and participation in high school interscholastic sports (e.g., football, basketball, volleyball, golf) (Figure 2).

Quantitative survey questions included items collected during stage 1 including the Environmental Behavior Lifestyle and the Nature Relatedness instruments to measure the following constructs:

The Environmental Behavior Lifestyle (EBL) instrument is a combination of the Environmental Behavior Indicator and an adapted Recreational Involvement indicator to assess how an individual interacts with the environment (Johnson, Bowker, & Cordell, 2004). The EBL scale has been constructed with questions such as "I participate in environmental and conservation groups," and using a 3-point Likert-type response scale for environmental behavior to collect responses to survey items; (example "(1) never, (2) sometimes, or (3) frequently") (Johnson et al., 2004, pg. 168) (Appendix I). The construct of EBL is operationalized through four items: environmental reading, household recycling, participation in environmental or conservation groups, and participation in nature-based outdoor recreation activities (Johnson et al., 2004, pg. 167). The outdoor recreational involvement indicator was adapted to provide specific information on the types of outdoor recreational activities that Davidson & Stebbins (2011) describe as "nature challenge activities."

Nature Relatedness (NR) has been defined as the affective, cognitive, and experiential-'trait like' aspects of an individual's connection with the natural world (Nisbet et al., 2009). NR explores the appreciation for and the understanding of an individual's interconnectedness to all living things on Earth (Nisbet, Zelenski, & Murphy, 2011). The NR measurement was developed with a multi-dimensional scale and 5-point Likert-type items (e.g., "I feel very connected to all living things and the earth: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree) (Nisbet et al., 2009) (Appendix J). The 21 items include subscales for Experience, Self, and Perspective assessments. The Self sub-scale is designed to assess the

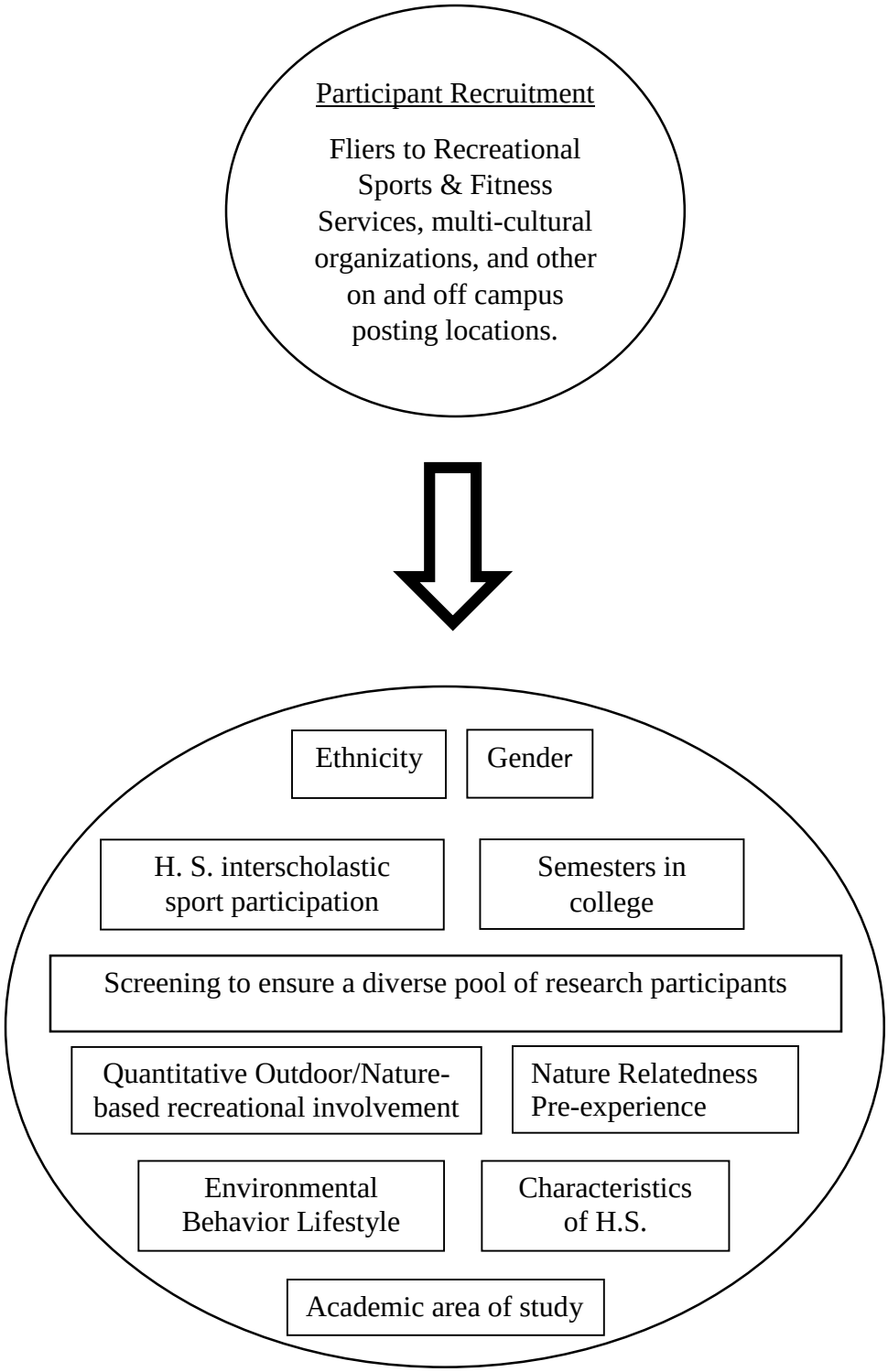


Figure 2: Variables of interest in participant pre-experience surveys.

extent of how intimately people identify with the natural environment. The Perspective sub-scale is used as an indicator of the relationship with the environment determined by attitude and behavior. And the Experience sub-scale is designed to gauge the physical familiarity and attraction people have to nature. In past studies, the NR survey items have yielded the following Cronbach alpha levels of reliability: for the full NR scale (a= .87), and the subscales Experience (a=.80), Self (a=.84), and Perspective (a=.65). Previous research by Nisbet and others has used total and subscales means to calculate NR. NR was assessed both before and after the natural area experience. Pre-test NR scores were used to explore NR comparisons among students who took part in different high school sports. I then compared pre- vs. post-experience scores to ascertain if nature-based recreational experience affects NR.

Procedure and data collection during participants' nature-based recreation activity.

Research participants were asked to review a copy of their consent to participate and sign a hard copy of their form at the scheduled appointment time. Participants were given a pen and a pocket-sized card with the Affective Meaning Instrument (AMI) to record the affective meanings they associated with the natural area during their walk. Participants were given a timer and instructed to turn it off and record their responses to the AMI when the timer signaled 20 minutes had passed. Then, based on Herbert Schroeder's (2007b) work on "felt sense," participants were instructed to "Focus on your thoughts and feelings about nature and the 'felt sense' that arises from your immediate, perceptual contact with an environment." Participants were encouraged to return at their leisure for the conclusion of the study once they completed the AMI. Participants were asked if they had any questions, given a map of Baker Woodlot (Appendix K), and advised to walk the outer loop trail (35-40 minutes average time of walk) then to return to the northwest Baker Woodlot gate. Time of entrance and subsequent time of exit were recorded.

The AMI developed by Virden & Walker (1999) was used to assess emotional meanings given to the natural area experienced during the study. The AMI is a 12 item 5-point, Likert-type scale, based mainly on semantic differential items adapted from Russell, Ward, and Pratt (1981). The AMI survey asked respondents to mark the numerical indicator that was the best representation of how they felt (e.g., Safe -- (1) (2) (3) (4) (5) Threatening). This instrument differentiates emotions that may occur in nature in a way not accounted for in other instruments that measure an individual's relationship with nature (Appendix L). Virden & Walker report that the level of significance for the affective meaning scale was a *p-value of* .0042.

Procedure and data collection after participants' nature-based recreation activity.

When research participants exited the woodlot, they were offered a bottle of water. Each individual was given a post-experience NR survey to complete, and asked to return the survey with their finished AMI into a closed box. In a focused interview with each research respondent, six brief qualitative emotional/affective questions were asked, and were followed with at least one semi-structured probing question that could lead to open-ended ad hoc conversations relevant to their emotional experience in nature (Appendix M). Research participants were informed that qualitative data responses were recorded by a digital voice recorder for later transcription. At the completion of the interview, participants were thanked and compensated for their time with $5. All research participants were informed that they were entered into a lottery and that at the end of the study, a winner would be selected and contacted.

Analytic Framework

Becker (1958) identifies three stages of field analysis to include: 1) the selection and definition of problems, concepts, and indices for the emotional relationship, 2) establishing the frequency and distribution of emotions during engagement, and 3) the incorporation of

individual findings into a model of the empathetic relationships with nature. A fourth stage of analysis, according to Becker (1958), involves the presentation of the evidence and proof that will be demonstrated with an emotional geography for nature-based recreation in the natural area. In this study "emotional engagement" was operationalized through "Affective Meaning" (Virden & Walker, 1999). And, emotional engagement data were collected from the qualitative interview. Emotions were lumped together to construct major emotional relationships with nature (Corbin & Strauss, 1990). "Empathetic relationship" was the term used to denote an appreciative approach consistent with Hendee (1969) and Dunlap-Heffernan (1975). (See Figure 3: Conceptual model of constructs).

Triangulation.

Research regarding outdoor recreation and environmental attitudes has tended to draw inferences from various terms that correspond to "environmental concern," however, there has not been a consistent differentiation of the constructs (Berns & Simpson, 2009). Triangulation is considered a strategy to use multiple methods or data sources to enhance the validity of research findings by strategically utilizing "convergent, inconsistent, or contradictory techniques to assist in the construction of reasonable explanations and to construct meaningful propositions" (Mathison, 1988, pg. 15). The most significant rationale for using multiple data analyses tools is to improve representation and legitimization (Leech & Onwuegbuzie, 2007). The multiple aspects revealed through triangulation can increase the dependability of the boundaries and relationships of the subject being researched (Flick, 2002). Triangulation "attempt[s] to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint" (Cohen & Manion, 1986, p. 254). This can be done for "analysis [that] benefits from the perceptions drawn from personal experiences and firsthand observations" (Jick,

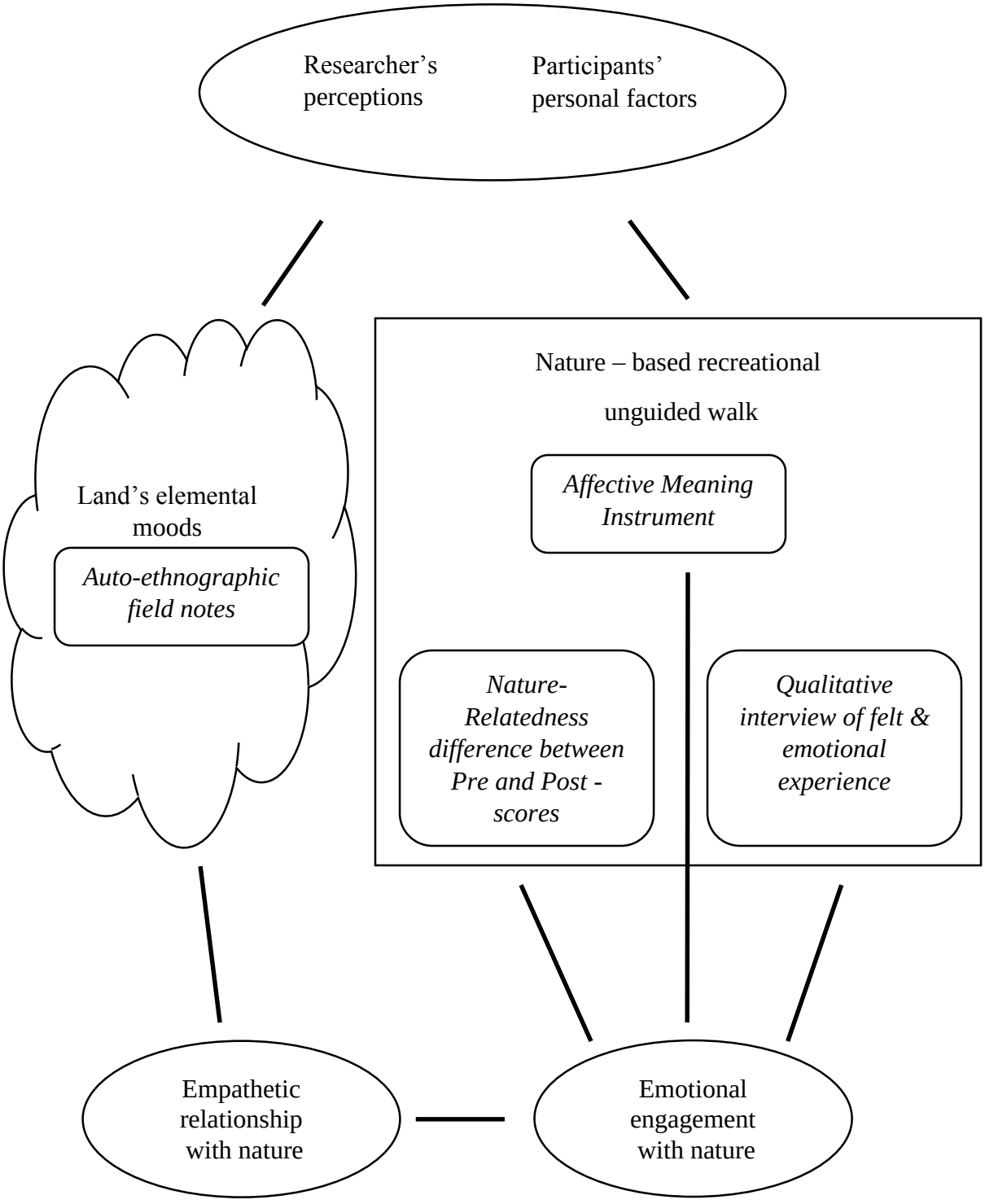


Figure 3: Conceptual model of constructs.

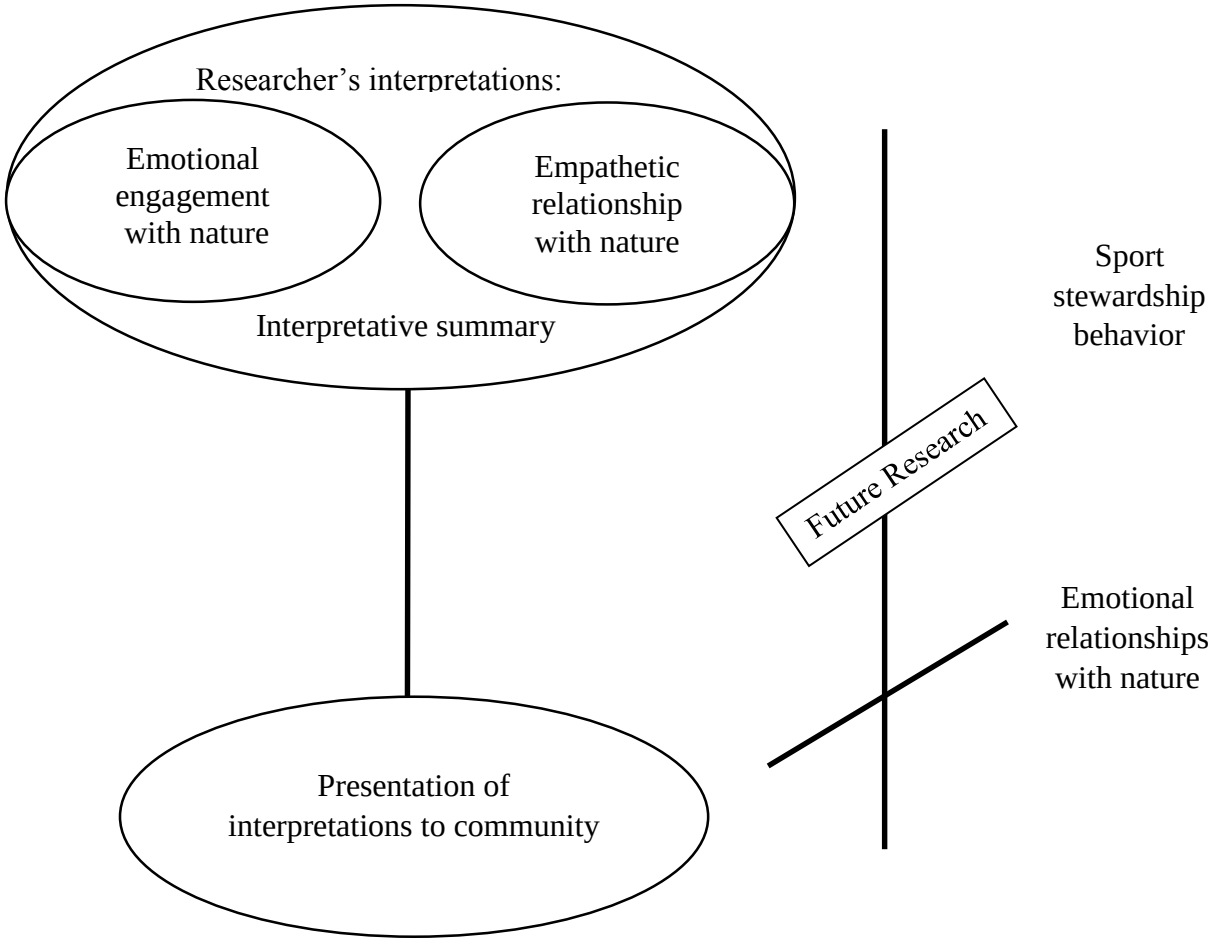


Figure 4: Researcher's interpretative summary of participants' emotional relationship with nature.

1979, pg. 609). The increased rigor this method provides will be for qualitative interpretations to supplement quantitative results and provide more meaning and trustworthiness to analysis (Jick, 1979).

Qualitative analysis.

Analytic induction was the principle method used to formalize themes and discern contrary evidence that improved initial concepts by refining, sharpening, and elaborating, confirming and disconfirming evidence (Ragin, 1994; Katz, 2001). Ragin (1994) has suggested

that analytic induction is actually an analytic "retroduction," where inductive and deductive processes are used to construct representations from an interaction between analytic frames and concepts with ideas and evidence. Robinson (1951) has discussed analytic induction as a qualitative research procedure that directs activity in the field by providing a method of causal analysis that can be used as a method for proof. Analytic induction is a systematic examination of similar characteristics used to develop new hypotheses by directing researchers to seek evidence that conflicts or disconfirms whatever hypotheses are being developed (Smelser & Baltes, 2001).

Ethnographic results were analyzed through a standard model of analytic induction (Robinson, 1951) in the discussion, as Cressey (cited by Znaniecki, 1934) suggests by following six steps:1) generate a tentative definition of the phenomenon to be explained, 2) formulate a hypothesis about the phenomenon, 3) consider all instances to determine if the hypothesis fits the data, 4) if the hypothesis fails to be confirmed, the phenomenon is redefined or reformulated to include the disconfirming instance, 5) repeated instances confirm hypotheses and degrees of certainty about hypothesis results, and 6) when each non-conforming case no longer requires reformulating hypotheses a universal relationship is established. Conflicting cases were used in reformulating the a priori hypotheses and to analyze with the same procedure until nothing new was established (Williams 2000).

Computer aided qualitative data analysis software, NVivo 10, a popular program developed by Qualitative Solutions and Research International (QSR), assisted in the qualitative analysis. Computer-assisted qualitative data analysis software like NVivo 10 can be used for frequency counts and has the ability to assist the researcher in recognizing gaps while coding data (Duff, 2005), as well as facilitating quick recognition of salient, but less voiced viewpoints

during analysis (Bringer, Johnston, & Brackenridge, 2006). Choosing NVivo 10 was influenced by Walsh's (2003) recommendation that NVivo incorporates organizational and technical skills that have wide applicability, beyond dissertation research. NVivo 10 was also chosen because extensive technical support, literature, and videos were available online, and training workshops were held locally. And, NVivo 10 was chosen because of accessibility within the Department of Community, Agriculture, Recreation and Resource Studies (Figure 4) (See Table 3 for operational terms for Figure 4 constructs).

CHAPTER 4

RESULTS

Because the research focus was to broadly explore emotional factors among athletic students that may contribute to an appreciation for nature, and because of the small size of the study group, in this study, participants, when referenced, were identified as "Respondent" and were differentiated by numbers 1 - 10. At times, to highlight particularly rich or poignant data from respective respondents, data were reported with a code to maintain anonymity and to emphasize sociological constructs and to de-emphasize the personal relationships. As long as the labels are not offensive, Angeli, Wagner, Lawrick, Moore, Anderson, Soderlund, & Brizee (2010) recommend describing participants by the measures used to classify them in the study.

Participant Recruitment

Accessing athletic, multi-cultural students in recreational settings presented unexpected challenges for the recruitment of participants for this study. With the consideration of time and the amount of paper resources necessary, it appears fliers were not effective for recruitment, since only six tabs were noticed to be removed from posted fliers. Fliers were posted in academic and recreational buildings, although the campus Student Union was undergoing remodeling and was inaccessible to post announcements and may have reduced student recruitment opportunities. The Psychology, Sociology, and Kinesiology Departments and Recreational Sport and Fitness Services had numerous other student recruitment fliers for more participants than other department buildings. Other locations and buildings (i.e., Chemistry, Education, and History), with postings that targeted students, had posted more free and/or for-payment services and opportunities for volunteer work or paid employment. The lack of

normative culture for research recruitment in these other academic departments may have been a barrier to recruitment.

Observations near posting locations revealed, in general, that students would briefly look at postings and then move away. The students who spent the longest amount of time looking appeared to be the ones who were posting, and then, as I experienced, would have to post over other postings due to lack of space available. Due to the volume of postings in some buildings, a building staff member indicated that all postings would be removed every other Thursday. To conserve paper and to reduce my frustration from the slow turn-around to meet recruitment goals, I made modifications to my recruitment outreach procedures. The fliers were shrunk to 3 in. x 5 in. sheets to differentiate research study fliers from other announcements and to conserve paper. The smaller cards were left in locations where the general student population had been observed and where students could find them including: study tables, business and laundromat counters, and other establishments that catered to student populations. In discussing lack of apparent recruitment success with colleagues, it was suggested by colleagues that $5 was not a strong enough of a motivation to participate; in fact I noticed other research recruit postings that offered incentives up to $50. Additionally, while the lottery incentives for the study were described as nice by participants, in reality, the odds of winning were highly unlikely and may have been a poor motivator for subjects to participate in my study.

Upon approaching my participant recruitment goal, the recruitment strategy focused less on the general population and more on targeting specific gender and ethnic populations. Ethnic group referrals through multi-cultural organizations were initiated by contacts and student group leaders who were receptive to providing access to their respective communities. For instance, immediate referrals were made to people in their respective offices who agreed to participate and

provided their contact information. However, a lack of follow-through by the potential respondents was considered a lack of interest and was considered justification for no further contact with respondents.

Lack of community involvement from the researcher with student populations may explain the low rate of recruitment. While targeting subjects via recreational activities on campus, I noted certain ethnic recreational patterns; for instance Asian and Hispanic–American females seemed to be underrepresented and/or segregated into homogenous ethnic groups' recreational activities (i.e. Tai Chi and Dance classes).

Demographic Results

As an interdisciplinary case study that is "hypothesis generating," consideration was given to mixed methods of analysis for this study. Quantitative results were used for descriptive purposes. The final pool of case study participants included four females and six males (Table 2) who completed online and paper surveys. The student participants represented multiple ethnicities, specifically (3) African–American, (3) White-Anglo Americans, (2) International students, (1) Hispanic–American, and (1) Asian–American (Table 2). Students were enrolled in these colleges/majors: Social Sciences, Arts and Letters, Education, Business, James Madison, and Agriculture and Natural Resources. At the time of the study, subjects had been enrolled between a minimum of three semesters and a maximum of more than nine semesters. No subjects reported living in the Country; students lived in (2) Village, (6) Suburban, and (2) City/Urban communities.

The Environmental Behavior Lifestyle (EBL) Instrument was used to determine the extent of environmental behaviors engaged in by respondents (Table 3). No respondent claimed to "Frequently" engage in all behaviors, and one subject claimed to "Never" engage in any of the

***Table 2*: Descriptive Demographics of Study Group.**

Gender	Ethnicity	Major	Semesters	Community
M	Asian-AM	Economics	3	Suburban
F	African-AM	Social Relations/Policy	9+	City/Urban
F	African-AM	Kinesiology/Pre-Optometry	7	Suburban
M	African-AM	Theater	6	Suburban
M	Hispanic-AM	Accounting	9+	Village
F	International	Social Sciences	3	City/Urban
M	International	Packaging	4	Suburban
F	White -AM	Social Sciences	5	Village
M	White -AM	English	6	Suburban
M	White -AM	Social Sciences	7	Suburban

Notes: M = Male, F= Female, AM = American.

behaviors. The most "frequently" reported activity was "Household Recycling," whereas two of the respondents indicated they "Never" recycle household materials. Participation in an "Environmental and Conservation Group" had involvement from six subjects "Sometimes," and four "Never." "Environmental Reading," also, had six respondents that would "Sometimes," and four would "Never" read environmental literature.

In this study, participants reported taking part in many outdoor recreational activities. Participants who reported 0-3 activities were assigned a "1," if they reported 4-7 activities they were given a "2," and if they reported 8-11 activities they were given a "3" for "Outdoor Recreation." The study population showed a diversity of EBL indicator configurations, eight unique scores were represented. The "Environmental Behavior Lifestyle Total" was calculated, by averaging each participant's sub scores, in order to have a composite score for environmental behavior.

Respondents in the case study participated in eleven different high school sports for between one and five plus seasons (Figure 5). Basketball had the most respondents with seven, while ice hockey and soccer had respondents involved in the sport for the longest times (5+ seasons). Three was the average number of seasons respondents were in a high school sport.

***Table 3*: Environmental Behavior Lifestyle Instrument Scores for Study Group**

Environmental Reading	Household Recycling	Enviro. & Conser. Group Participation	Recreational Involvement	EBL Total (Mean score)
1.00	3.00	2.00	2.00	2.00
2.00	3.00	2.00	1.00	2.00
1.00	3.00	1.00	1.00	1.50
2.00	3.00	2.00	3.00	2.50
1.00	3.00	1.00	1.00	1.50
2.00	1.00	2.00	3.00	2.00
2.00	3.00	2.00	2.00	2.25
2.00	3.00	2.00	2.00	2.25
1.00	1.00	1.00	1.00	1.00
2.00	3.00	2.00	3.00	2.50

Notes: Enviro = Environmental, Conser = Conservation, EBL = Environmental Behavior Lifestyle, 1 = Never, 2 = Sometimes, 3 = Frequently.

Thirteen different outdoor recreational activities were participated in by respondents (Figure 6). Biking and running trails were the most frequently reported activities, each having six participants.

Nature Relatedness was initially used to test the effect and relationship between "Sport" and "Nature Relatedness," and the NR Subscales "Experience," "Self", and "Perspective" (NR-ESP) and for a NR-Total. Due to the unanticipated result that participants having played a range of sports (1 to 7), determining the effect of sport on Nature Relatedness was more complex than anticipated. The category "Primary Sports" was determined from each subject's report of most seasons of most participation, with the exception of Football/Basketball/Baseball as major sports because two participants had each reported playing an equal number of seasons for their greatest amount of time in high school sports.

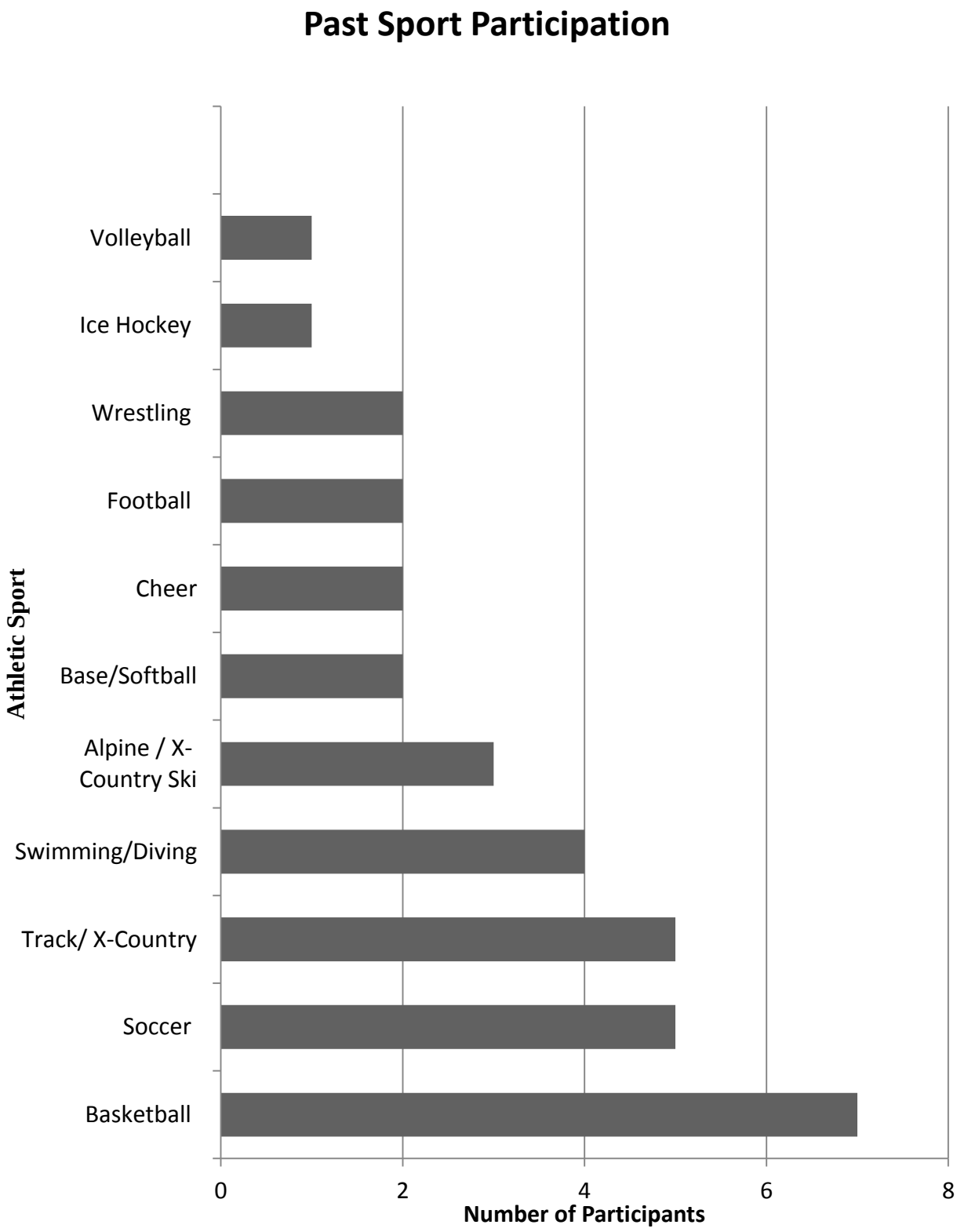


***Figure* 5: Number of people who had participated in various athletic sports in the past.**

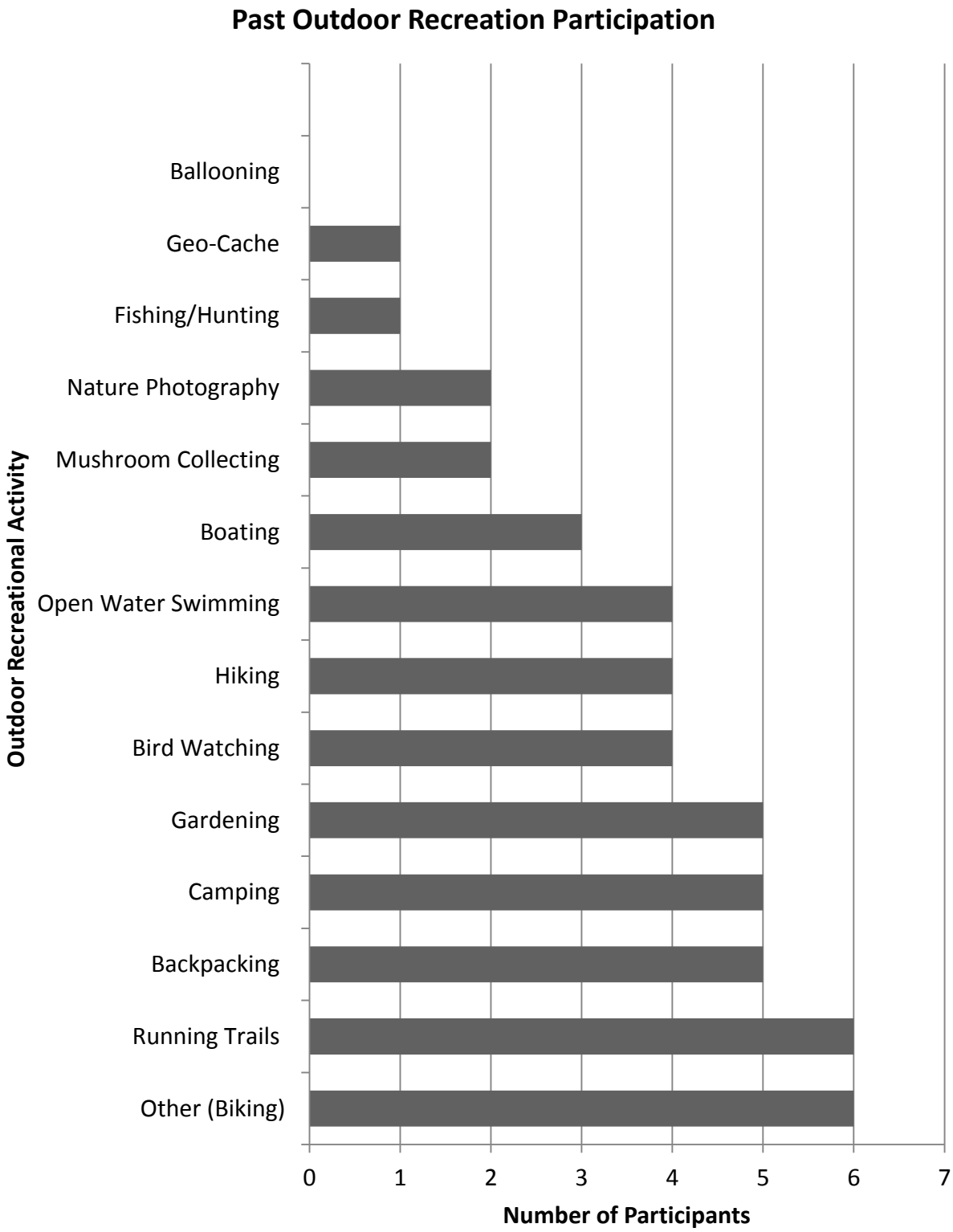


***Figure 6*: Number of people who had participated in various Outdoor Recreational activities in the past.**

NR subscale scores were calculated from the average of reported items in each category (Table 4). NR- Total was a calculated average of each NR subscale score. Soccer had the highest average NR- Total score (3.66), NR- Experience (4.0) on subscales. Soccer, also, shared the highest NR- Perspective score (3.29) with Soccer/Basketball. Track/X-country and swimming had the highest NR- Self subscale (4.37), and Hockey had the second highest NR-Experience subscale score (3.33).

Table 4: **Major High School Sports and Nature Relatedness Pre-Experience Scores of Study Group**

		Pre NR			
Primary Sport(s)	**Number of Participants**	**Total**	**Experience**	**Self**	**Perspective**
Soccer	4	3.66	4.00	3.75	3.29
Football/Basketball/Baseball	2	3.24	2.67	3.75	3.15
Track/Cross-Country & Swimming	1	3.62	3.83	4.37	2.57
Soccer/Basketball	1	3.1	2.83	3.12	3.29
Hockey	1	2.9	3.33	2.75	2.71
Track/Cross-Country	1	2.67	2.50	2.87	2.57

Notes: NR = Nature Relatedness

Change in NR subscale pre and post subscale experience scores were calculated from the difference of pre-experience scores minus the post-experience scores for each category (Table 5). NR: Experience Difference scores were all within one point of one another, and three of the participants had lower scores on the post test results (-0.66, -0.17, -0.17) All, but one participant, had NR: Self Difference scores that were within one point of one another and two of the participants had lower scores on the post test results (-0.50, -0.12). NR: Perspective Difference scores were within one point of one another, and two of the participants had lower scores on the

post test results (-0.14, -0.14) than on pre-test. The average difference in Natural Relatedness on pre- and post-test scores for participants was least for NR Perceptive at .16, both NR-Experience at .32 and NR-Self at .23 were higher. The total change in NR was a positive difference of .70.

***Table 5*: Change in Nature Relatedness Pre and Post Experience Scores**

Total	Experience	Self	Perspective
0.61	-0.66	1.12	0.15
-0.64	0.00	-0.50	-0.14
1.56	0.50	0.63	0.43
0.47	0.33	0.00	0.14
1.18	0.00	0.75	0.43
0.13	-0.17	0.00	0.30
-0.06	-0.17	0.25	-0.14
0.92	0.50	0.13	0.29
0.84	0.84	0.00	0.00
2.02	2.00	-0.12	0.14

Notes: NR = Nature Relatedness

The average emotional score for the affective measure was toward the positive emotions for scales: "Inviting – Repelling" and "Peaceful – Hectic" (1.2), "Pleasing – Annoying" and "Beautiful – Ugly" (1.4), "Joyful – Depressing" (1.5), "Safe – Threatening" (1.6), "Orderly – Chaotic" (1.8), "Active – Passive" and "Powerful – Powerless" (2.3); except for "Awe-inspiring – Uninspiring" and "Stimulating – Relaxing" (2.5), and "Mysterious – Unmysterious (3.1). Inviting and Peaceful were the "positive" emotions with the lowest score, while Unmysterious, Unispiring, and Relaxing were the "negative" emotions with the highest score (Figure 7).

Qualitative Data Collection

The multiple step procedure to manage the collection of qualitative data entailed organizing, analyzing, and summarizing data. In this study, to develop familiarity with communities within the geography of Baker Woodlot, August 6 - August 20, 2012 from 6am to 10 pm, I spent 15 two-hour sessions to observe activities in Baker Woodlot. In a field journal,

natural observations were collected as field notes; these notes were elaborated on during transcription. Additionally, qualitative interviews were conducted with participants while sitting

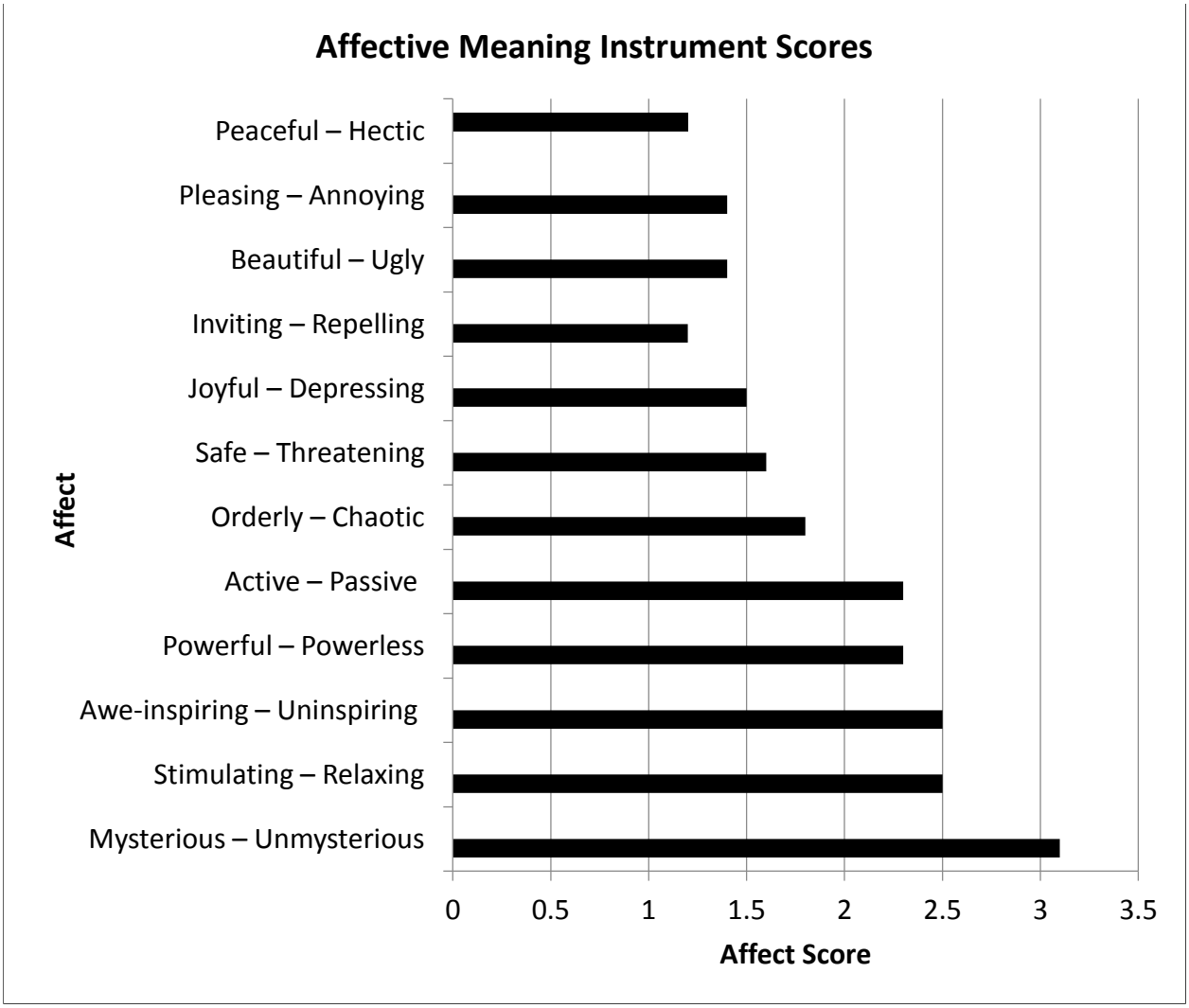


Figure 7: **Affective Meaning Instrument scores.**

on large boulders just off the trail near the entrance of the woodlot. Due to the cold temperature (ranging from approximately 31 - 61 degrees Fahrenheit) during the experiential phase, respondents were given the choice to have the interview inside at a nearby academic building. However, each respondent was willing to complete the interview outdoors. During the interview, a few respondents did show visible signs of being cold through body language such as

folded arms. It is not apparent how temperature affected the interviews that ranged from 12 to 35 minutes in length.

Prior to the interviews, there was a concern that being outdoors might create distractions from interview questions. This seemed to be unfounded. During the interview, respondents illustrated points they were trying to convey by using outdoor visual or auditory stimuli to make associative references. Audio recordings of respondents' post-experience interviews were paired with short, written responses collected prior to the experience that were transcribed and reviewed multiple times to ensure accurate representation of responses. This was also done to record and develop analytical 'memos' of first impressions of significance, relevance, and usefulness of the data with regard to research questions.

Qualitative Data Organization

Codes were developed and applied to field notes, interview notes, and transcripts based on themes determined from the Literature Review section (Table 6: Code Categories and Characteristics Part 1-4). Codes that overlapped, could have been combined, or should have been removed for lack of contribution to the analysis, were revised during the analytic process to enhance their meaning relevant to research questions. Coding and analysis were performed based on the approach by Corbin and Strauss (1990) and aided by the use of NVivo 10, a program developed by Qualitative Solutions and Research International (QSR).

Open coding was first used for each of the interviews. This process allowed for breaking down, examining, comparing, conceptualizing, and establishing initial categories (Corbin & Strauss, 1990). Then, these initial categories were created for the first analysis of the transcripts. NVivo 10 was used to assist in merging data categories into larger encompassing categories and to

***Table* 6: Code Categories and Characteristics for Analysis of Qualitative Data.**

#	Code	Concept	Definition	Rule	Example
1	PBF	Physical/Biological Features (Propst & Lime, 1982)	Characteristics of Baker Woodlot or other Natural Area.	When a respondent expresses recognition of physical features associated with Baker Woodlot.	"…I saw trees."
2	TMA	Type of Management Action (Propst & Lime, 1982)	Characteristics identified by respondents that reflect management for sport or outdoor recreational activities.	When a respondent describes or recognizes management of sport and outdoor recreational activity.	". . . .if they keep chopping down trees."
3	SCR	Social, Cultural, and Recreational Characteristics of Participant (Propst & Lime, 1982)	Characteristics attributed to demographic, community, and/or social groups that reflect the background of the respondent.	When a respondent discusses past, present, or future recreational activities for self, family, or their local communities.	"…every summer my family would go to Lake Michigan."
4	FE	Felt Experience (Schroeder, 1996)	Emotional or subjective recognition of sensations.	When a subject discusses or exemplifies an emotion or subjective state of being.	"…the walk could have been better, if the weather was warmer."

***Table* 6 (Cont'd).**

#	Code	Concept	Definition	Rule	Example
5	PI	Place Identity (Williams, 2000)	An emotional or symbolically important place in a person's life.	When a respondent discusses or exemplifies an emotional or symbolic connection to a place in a one's life.	"…One of the things I love about Michigan State it's nice to have a commitment to maintaining natural areas."
6	FV	Felt Value (Schroeder, 2008)	An immediate felt sense of value given to a place having personal meaning that has embodied experiential validity and personal valence.	When a respondent describes or recognizes personal value given to natural areas.	"…if I didn't play a high school sport I wouldn't probably wanna be outside, or be willing to want to stay outside."
7	PD	Place Dependence (Williams, 2000)	The functional importance of a place in supporting specific recreation activity goals.	When a respondent discusses or exemplifies importance of a place for specific recreation activity goals.	"…Maybe if you take them out of their room or something and walk through a place like this could change their lives."

***Table* 6 (Cont'd).**

#	Code	Concept	Definition	Rule	Example
8	PS	Play Sport (Dyreson, 1999)	A set of values and systems of meanings that require space to be readily and freely available.	When a respondent describes meaningful activity that is freely available.	"...I just bring my ball and kick it around."
9	CL	Climax (Dyreson, 1999)	The abstract representation of the forces of creation and civic life.	When a respondent expresses recognition of self in an "awe" experience.	"…There's no better feeling … being outside …, dealing with the elements ...you, ponds, and hockey."
10	AS	Athletic Sport (Dyreson, 1999)	A formally structured, rule based organized practice for competitive activity.	When a respondent describes recreational activities with a goal other than play.	"…these are very typical to where we used to have cross-country meets."
11	PRO	Product (Dyreson, 1999)	A commodity of labor in the absence of play.	When a respondent describes a sports and recreational outcome to achieve sport's goal.	"…we did do a number of conditioning exercises, running."

***Table* 6 (Cont'd).**

#	Code	Concept	Definition	Rule	Example
12	DIS	Disengagement	Individuals' barriers to and transitions from recreational activity in nature.	When a respondent discusses or exhibits lack of cognitive, behavioral, affective, and experiential awareness in sport and recreational experience.	"…hard to find time to get away from studies."
13	EN	Emotional Engagement	An enduring experience with generalized positive affects and cognitions about one's activities.	When a respondent expresses experiential affective, cognitive, and behavioral, awareness with natural areas.	"…when you're here (natural areas) you feel kind of more nature as you play."
14	EC	Emotional Concern	Emotional or subjective recognition of value for nature's well-being.	When a respondent expresses experiential affective, cognitive, and behavioral, sentiments of well-being for nature.	"…I feel that nature is also threatened."

refine the data sub-categories (Corbin & Strauss, 1990). NVivo 10 was used during the organization of data to assist in sorting similar keywords and statements. NVivo 10 had a limited capacity to make intuitive associations required to synthesize context and cultural meanings associated with language during the interpretation of emotion.

Qualitative Data Analysis

To address research questions, emotional associations that could be attributed to differences in nature-based recreation on Nature Relatedness pre- and post-test were explored through the systemic approach of emotional geography through an analysis of "Exterior," "Interior," and "Place Performance" data. To analyze interview transcripts, participant responses were organized by using keywords in context the organization and development of themes and constructs were facilitated in an emotional geography. As illustrated in the "Flow Chart of Major Qualitative Themes and Codes Used to Organize Data" **(**Figure 8**)**.

- Theme 1, Exterior Category: Perceptions of nature. Sub-Categories: Type of Management Action, Physical and Biological Features, Social and Cultural Characteristics.
- Theme 2, Place Performance Category: Disengagement & Engagement with Nature. Sub-Categories: Athletic-Sport, Product; Felt Value, Emotional Concern for Nature.
- Theme 3, Interior Category: Empathic engagement with Nature. Sub-Categories: Felt Experience, Place Dependency; Play- Sport, Climax, Place Identity.

Mapping the Exterior Perceptions of Emotional Space.

Type of management of natural area. During the warmer weeks of summer and fall, a single waste container at the entrances was often found to be filled with plastic water bottles. A

sign near the gate offers a history of the woodlot and provides educational background information regarding migratory pathways for birds. At each of the three major entrances to the woodlot there is a sign prohibiting bicycles from entering the natural area. The staggered gate openings had poison ivy at the entrance and slightly off the path. It was also found throughout the woodlot. University faculty were observed conducting lessons in the woodlot, and two of the study respondents indicated they learned to do field observations in Baker Woodlot during a previous college course.

In addition to the 10 research respondents invited to be part of this study, nearly 30 males and 20 females, predominantly white (only 4 were of different ethnicities) crossed my observational path; professors, faculty, and students with backpacks walked through the woodlot. Classes studying forestry, and friends from the larger regional community were there and claimed to be there to reconnect with nature. Runners stylized in the latest fashionable athletic gear appeared from around bends in the trail and would just as quickly disappear. The wildlife was just as quick - and was easily overlooked unless I stopped to make time to observe. A few cordial walkers, which included bird watchers with binoculars and keen ears, were found to be generous in sharing their knowledge and resources regarding avian sightings.

During the observations, a group that was particularly curious lingered in the south-eastern part of the forest around a tree that had fallen across a fence bordering the outskirts of the woodlot. My preconceived expectation was that the group had been part of the grounds and/or maintenance department and was there to assess potential management decisions. After further observation, I could see a man's walking stick that looked like an old branch and seemed to have a soft glow from being polished by years of human touch, and another individual wearing a Detroit Lions baseball cap. These sightings were enough to provoke my curiosity to the point

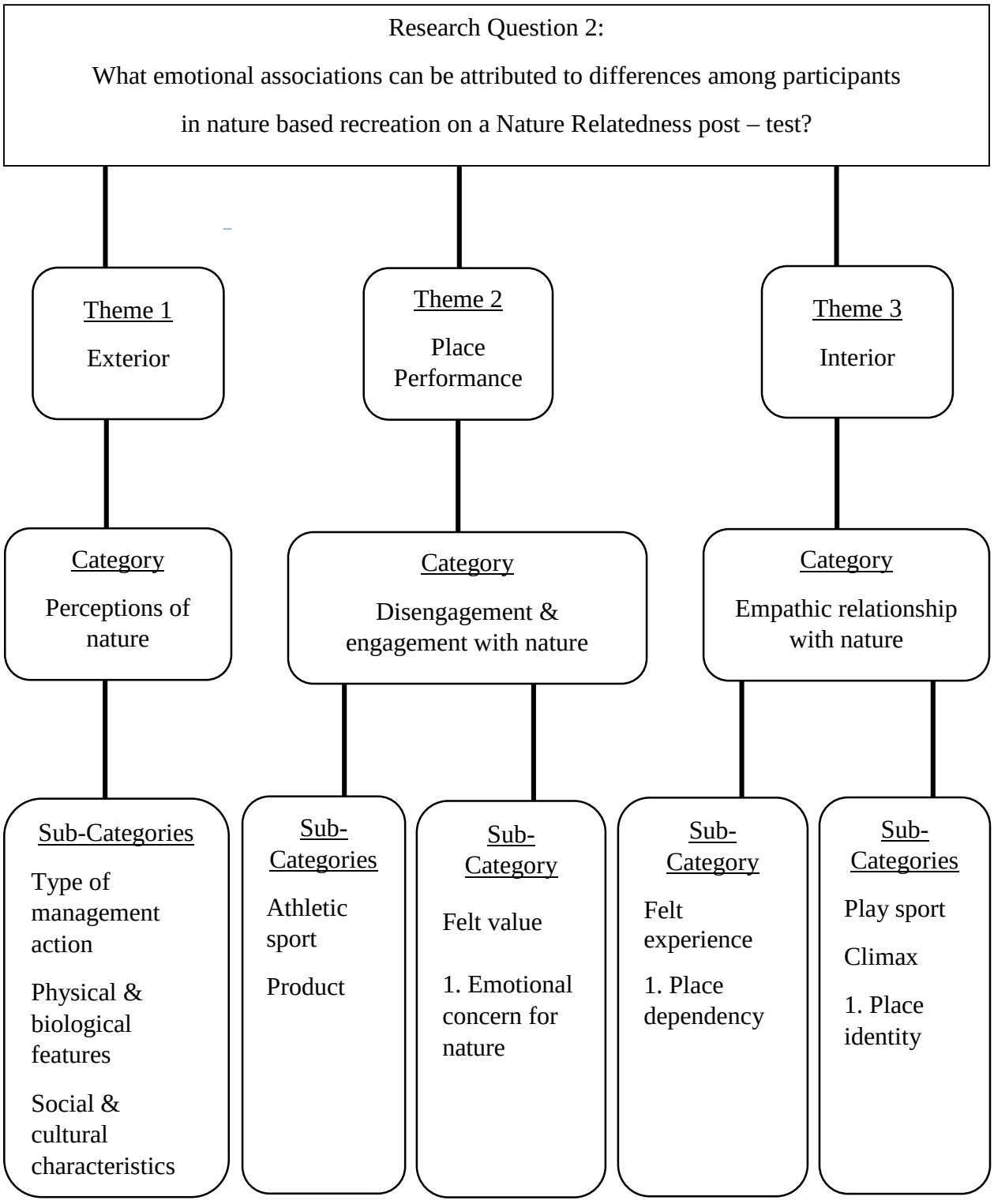


Figure 8: Flow Chart of Major Qualitative Themes and Codes Used to Organize Data.

that I decided to interact with them. Upon offering a comment about the weather- reluctantly based on one of their retorts - I followed by pointing to a tree and asking - if they thought that "that one there. You think they'll cut it down?" The one with a walking stick calmly explained that it was a conservation area, and he expected "'that one there' to be 'there' longer than any of us would be here." I nodded my head as a gesture of hopeful acknowledgment that future generations would be able to appreciate the natural area, and asked him what recreational activity brought them here today - to which he responded that it was a "Geo-Cache."

Physical and biological features of Baker Woodlot. During the field observations, cloudy skies often obscured direct sunlight from warming the ground. I felt a pinch of soil to gauge its temperature moisture and to assess the ground's capacity to absorb the water fallen from the sky. At the time of the research exercises (Oct. 10 through Nov. 16, 2012), the "fall" weather and change of temperature to the region brought cold rains and strong winds that likely affected my observations of biodiversity. Within a matter of weeks and throughout the duration of the data collection, the nature area had been transformed from lush greenery sprinkled with a mix of bright colors into a collage of predominantly reds, yellows, and browns set against a blue and cloudy sky that had only recently become visible on account of the absent leaves that had fallen to the ground. Personal observations and, more accurately, the sounds that emerged from the woodlot became more, if not, just as important to my felt sense and emotional engagement

The map at the entrance of the north-west entry fairly accurately represents most of the trails, at least the ones that seemed to be managed for visitors to find. Evidence of fungi, birds, amphibians, mammals, insects, and a colorful array of plants were found during the fall in Baker Woodlot. Six vernal ponds showed evidence of wildlife activity (scat, tracks, insects, as well as

other plant and animal sightings); however, since the ponds are not all on the map, the wildlife signs could be missed by those who stay on the walking path.

During one observation, a male senior citizen proudly shared that he had run these trails for 65 years. He described how in the spring, the soil can become saturated and when the water covers the trails it is more difficult to traverse, although it is not impossible. He described how he would place logs on the path where the water was so high that going through they would result in "wet ankles." Only one other visitor was observed sitting stationary in the woodlot while I sat on a fallen tree taking field notes. At one time, two voices, a male and a female, could be heard hidden under a tent-hammock tied between two trees. The majority of people observed in the woodlot were walking or running on the path. A number of people were walking dogs; approximately two-thirds of these people had dogs on leashes and the other third allowed their dogs to roam unbound. With the exception of people, dogs were the only other domestic presence accounted for in the verbal reports from the respondents.

Respondents in this study saw little evidence of wild animals; most of their sightings were of fox squirrels and a few birds. A White Anglo-American respondent "wonder[ed] about . . . the absence of wildlife." An international participant in the study was "hoping (to) hear birds, but there was nothing out there," and described how the trails at home in Africa were structured and maintained differently than Baker Woodlot. Other respondents to the study stated they heard birds, however, minimal detail was provided to describe any physical or behavioral characteristics of actual observed birds. In most cases, the birds were heard and not seen, although a few would "catch your eye when they fly away," said a White Anglo-American who thought bringing binoculars would have facilitated seeing more birds.

In the absence of wildlife sightings, respondents described physical indications of wildlife. For example, an African-American respondent "wonder(ed) what animal dug a little in the dirt" that had been noticed on the trail. There were also imaginary possibilities like the Hispanic-American respondent who had recently viewed a cable news segment of a bear attacking someone in a National Park and had hoped that "a bear doesn't come out and attack me right now."

Social and cultural characteristics of respondents' sport and outdoor recreation.

Respondent 1, a hockey player, grew up walking paths similar to Baker Woodlot in his neighborhood. He remembered growing up with his neighbors in that "everyone would be outside riding their bikes around, and using the trails to go to stores, going to play baseball at a new baseball field, playing basketball in a driveway, or at the high school." He said, "I love to snowboard, snowmobile, swim, go boating, skateboarding, etc. I love being outside in general. . . I guess . . . I was spoiled into nature being able to go out on the boat or go skiing." The respondent's dad had repeatedly reminded him during outdoor recreational outings that he "hopes you (he) remember(s) this." He described his dad as being "really into the outdoors; he played Jr. Hockey, he loves snowmobiling, skiing, and he used to build [an ice] rink in the backyard." This respondent said the two of them would "always play hockey, or go just ice skating on the ponds around the neighborhood."

Respondent 2 played basketball, soccer, and track/cross-country in high school and said he "grew up playing outdoors at local parks daily." This included lunch time recess, playing on local soccer teams, and going to summer soccer camps. He also remembers that spring was an "awesome time of the year" for baseball, and how he and his neighbors would often play "capture the flag," or "ghosts in the graveyard" until dark. And the respondent stated that in the

summers, he would "go swimming and bodysurf the shore break of Lake Michigan," and in the winter, go "up north" to "ski for brief weekends." He reported his high school sports experience was not very natural because of the proximity of roads, parking lots, "artificial light," and constant sound of traffic. As a college student, the respondent found it increasingly difficult to find a "pick up soccer game" that did not cost money and asserted that this is a common problem among colleges and universities across the Midwest. He suspected that "working middle class folks" from his community leave town for "peace of mind," to "go canoeing . . . and . . . . to connect with nature in terms of acquiring the gadgets" for "unknown amounts of time."

Respondent 3 participated in basketball, cheer-leading, volleyball, and track/cross-country in middle school and high school. She remembers attending running competitions that would require athletes to "run through different types of trails throughout the woods," including trails that "were muddy and full of fallen leaves." The respondent reported coaches would have teams "use more wide open spaces rather than (areas) with the trees" to do "tempo runs." Her team would consider these days to be more relaxed, and she describes them as "freer" and "easy." The respondent stated that if people in her community had daily access to outdoor-based recreation, it might help them to be less stressed or worried about finances.

Respondent 4 played basketball, soccer, and track/cross-country while in high school. She described her local climate as being similar to Baker Woodlot and found the trails reminiscent of the trails she walked near her home. The respondent described her community as using outdoor recreation space "to the max." She stated "it is used to the fullest, they use anything -whether it's dribbling, kicking, passing, you know - a ball, or riding bikes, running, walking, jogging, um, doing calisthenics. They use just about any space they can." The

respondent identified camping, hiking, trail running, and "catch-and-release fishing" as past outdoor recreational activities.

Respondent 5, a soccer player and wrestler, remembers playing in the woods often and had observed "a lot of little bugs and animals" when he was younger. Now he recognizes that people in his community fish, bike, and run on trails for outdoor recreation and that "a lot of people use it (nature areas) to go work out." The respondent said he has "gone canoeing" and has "explored the woods with my friends on a few occasions."

Respondent 6, a basketball and soccer player, was also a swimmer and diver. She came to the United States for college and reported she "enjoys spending time outdoors on a regular basis," and that "Outdoor recreation is very relevant in my life." The respondent indicated in her "neighborhood there was a big green area in the middle of town that the community would use for neighborhood committee meetings and social events" with friends (i.e. make music, sports, social activities, and smoking cigarettes). She stated that wildlife was rarely observed in her city, and unless her team was invited to play in an outdoor tournament, all her high school sports were on concrete and/or indoor courts.

Respondent 7, who listed soccer and track as his high school sports, came to the United States in middle school and remembers that since childhood, he was "always . . . going and cutting some herbs and experimenting with them" in the woods. The respondent said that he had farmed from an early age and had always had a garden. When he was younger, he said he enjoyed "collecting herbs for tea," and considered this to be a way of life for him – with the inclusion of a "quick soccer game and then back to the farm." The respondent reported that his childhood community did not have outdoor recreational space, but had unmanaged natural areas that he described as "a park with trails, but not really." He also indicated "people don't really

use those (parks) . . . I don't hardly see people actually going to the parks, but people would go to the beach." The respondent said that "football" (soccer) fields and local "bars" were the managed settings that provided most of the recreational opportunities in his childhood home community.

Respondent 8 had participated in a variety of high school sports including: alpine/cross-country skiing, basketball, swimming/diving, cross-country/track and had spent a lot of time with nature in a large forest that backed up to the property of her childhood home, a place she describes where "people would cross-country ski . . . and . . . would sometimes (ride) horses." As a cross-country runner in high school, one of the things she most enjoyed was "being out in the fresh air and running the trails, which were often wooded." She stated doing physical activity outside is something that's been with her a long time, and even today she continues to "enjoy being in the forest for hiking and running," and to "go for long walks."

Respondent 9 played baseball, basketball, and football in high school and feels he could have taken better advantage of the few local parks that are rarely used by the community because they "ain't much of a woods." The respondent suspected that neighbors use cabins "up north" and "they go out . . . on lakes, hike, and four wheelers and that kind of stuff." He indicated his parents recently moved across the street from a state park that has ponds/lakes for swimming and fishing.

Respondent 10 participated in a variety of high school sports (alpine/cross -country skiing, baseball, basketball, cheer-leading, football, swimming/diving, cross-country/track, wrestling) and grew up in a large, Midwest city with "a lot of natural areas." He reported that he is from a community with a diverse population that has an interest in taking walks in nature, "just too so-to-speak take in the beauty." He commented that he knew "a number of people who'd be

interested . . . to take in the beauty, to enjoy it (by) taking photos, sketches and things of that nature." These people included some friends who were cross-country runners, and that "one of their favorite activities was to simply run in nature." The respondent remarked he was an active member in his community as an Eagle Scout for the Boy Scouts of America and had participated in a number of outdoor recreational activities, including extended water and land trips throughout the Midwest. The high school the respondent attended offered an outdoor education class and an outdoor adventure class he was able to successfully complete for academic credit.

Play sport and athletic sport and engagement with nature. Play sports, similar to outdoor recreation, allow individuals the opportunity to participate in activities free from the constraints of modern society (Pearson, 1979). Respondents' comments described freely available, meaningful activities that were lumped together and facilitated understanding of unstructured interactions with the environment. One respondent articulated that "doing physical activity outside, I think it's always kind of been with me, because I still like to do those things today, either run outside or go for long walks." This respondent from a village, described how "kids would play back there," in the forest behind his/her home. Another village respondent indicated that "when I was a kid I remember I used to play in the woods a lot, I used to see a lot of little bugs and animals" (Respondent 5). Another respondent described how while living in a village that "sometimes, I just bring my ball and kick it around" the green space close to home. A rural respondent indicated feeling that "I think everybody should have more opportunities to get outside walk around and swim in natural lakes, as opposed to going to the gym and just working out in the gym with headphones on and swimming in a pool inside." It was reported by a suburban respondent that "it's always something I like to do, you know, . . . I don't mind going out of the way taking time to walk through and kind of look at trees and stuff."

Differences between outdoor recreation and athletic sport were described by respondents. Sports were characterized as being more "intense," because you have to think about your race, and there's more stress. Differences in athletic sport were also identified through comparisons of sport fields and natural areas; it was indicated that "the topography of most high school sports is played on flat surfaces, compared to the up and down of the little variation of Mid-Michigan" and other outdoor recreational settings. Athletic sports were differentiated from outdoor recreation, in that for athletic sport participants are able hear the sounds of society, play is dependent on artificial lights, have equipment costs and fees to to manage a highly regulated sport environment. It was stated that "The high school venue is typically . . . very close to a road [and] still you'll really hear the traffic, the constant sound" to illustrate a difference between the nature sounds versus the traffic sounds. Further, it was observed that

> "the lack of artificial light, and um, I guess in a way I really associate high school sport with artificial light. Especially, the indoor ones, but even the outdoor ones, [when it] get[s] to be towards dusk and those big bright lights in the bleachers. They go bang, so loud." (Respondent 2)

Playing hockey was described as having "a bit of control over it [the environment] rather than, you know, if the rink's too hot the ice might get a little chippy and melt a bit, but other than that you still kind of can control what's going on around you."

Most respondents found very little, if any similarities between athletic sport and the environment. One respondent reported playing soccer in high school, but noted that he/she "didn't even have thoughts of high school sports as I was walking" in the woodlot. A couple of respondents expressed the common sentiment that "being outside in the environment was the only thing that was the same or similar." The social component of athletic sport, a wrestler

indicated, was different for wrestling than others sports; he found being "solo" on the wrestling mat was what he felt to be the most similar to the experience of being in Baker Woodlot. A distinction was pointed out for football and baseball was that they could be characterized as "pastoral sports," but this respondent indicated he felt there were "no real similarities, since there isn't much walking" in these sports. Another respondent stated that sport requires "working my body a lot harder than just walking. I guess the other physical aspect [would be] about it being sweaty and [getting] tired and here it is relaxing." However, a female respondent illustrated similar benefits stating "if I didn't play a high school sport I wouldn't probably wanna be outside," and felt at the time of the study:

> "It's a beautiful day; most people wouldn't think it's a beautiful day, but it's a beautiful because it's not raining or snowing to me (laugh). I appreciate that, if you've played out in this temperature in shorts, socks, and t-shirt you'd think this is beautiful."
>
> (Respondent 4)

Cross-country runners expressed the most familiarity with natural areas from their sport, and it was pointed out that a cross-country runner "would be more interactive with places like this," by a respondent who played college sports in the case study. Another cross-country runner indicated that while "cross-country . . . definitely changed who I was, having those opportunities to go out and run in natural rural areas. . . in running cross-country we ran a lot on forested trails. . . these are very typical to where we used to have cross-country meets." Another cross-country runner reported that "when I was running I felt like I'd forget about everything . . . while I was here I kind of felt like I forgot about everything . . . they (sport and walking in woods) put me in the same mindset."

Respondents who had used natural areas to cross-train for multiple sports, before attending college, also expressed a strong familiarity with natural areas. It was described by one respondent who cross-trained for sports that "we did do a number of conditioning exercises, running" in natural areas. Another respondent stated that "occasionally, we would run outside - so in that sense it is similar, but umm so to speak, the action, the feeling of walking and being in nature on a trail like this was foreign." It was commented by another respondent who would cross-train in the woods and who "tripped over roots hidden by leaves," that there were "a ton of similarities. . . I'm standing up vertically outside perceiving things on the same plane moving my body through space." Another respondent who cross-trained, enthusiastically reported "Absolutely, I was thinking about running - I mean putting on my shoes and running through here - you know. I trained like that when I was in high school, that's pretty similar to what I did." A hockey player having experienced cold weather said:

> "When you get offered some time to go play everyone goes and plays. Any real hockey player would when you see it - you just relate and would love to be there with the mountains in the background, on the ice shoveling snow, getting to play. There's no better feeling than being on the rink when the game started and you just love being outside, you know, dealing with the elements, and when you're playing hockey and it starts snowing, gets a little chilly, the sun goes down, you break out the lights and you're just out there - you, ponds, and hockey." (Respondent 1)

The connection one respondent described from being present in Baker Woodlot was "a connection to where I'm walking and where I am in the environment," and in contrast, described how during "sport it's more of a connection to people versus a tree or leaves or actually where I'm at. So, I feel more peaceful here than in a sport."

A respondent who had participated in track reported that being in Baker Woodlot was reminiscent of the "freer" days when the track coach would hold practice in "open fields." Running track, it was indicated, does not afford the opportunity to explore the diversity of nature because of the sport's focus on time and the subsequent effects on performance. Running in outdoor natural areas may enable individuals to go "farther because you have the scenery to look at . . . and running on a hard surface like the track can get tiring practice after practice" (Respondent 3).

Barriers to engagement with nature included visitors who had: a focus on health and fitness orientations, were smoking and participating in other illicit activities. Furthermore, negative value was attributed to the use of equipment in natural areas, by a respondent who expressed a disregard for "a lot of people (who) connect with nature in terms of acquiring gadgets and (the) . . . equipment that goes along with these different varied outdoor adventure type(s)." It was, also, pointed out by a respondent that he had noticed in Baker Woodlot an unnatural dress of an "exotic species of woman wearing a cameo with a small backpack with a hand gun on each thigh and she was posing kind of risqué." An aspect of outdoor play sport that was different from athletic sport discussed by respondents was the need of "specialized equipment" that formalized sport, and how matching uniforms represent being a member of a team.

Mapping Place Performance of a Natural Area.

Emotional Disengagement and Engagement with Natural Areas.

Disengagement with natural areas. The construct disengagement with the natural world was identified by barriers and differences respondents described with outdoor recreational activity. Disengagement by the respondents was interpreted from the interviews and reflected in

three major themes: 1) Three respondents expressed a disdain for the sound of traffic and noticeable signs of industry within the woodlot. Although, it was noted that once one got into the middle of the woodlot, the impact from the traffic was no longer present. 2) Environmental apathy was attributed to the weather and a consequential reduction in observable wildlife. Not seeing animals was a disappointment for some, while others noticed plants, trees, and the woodlot aesthetics. And 3) A lack of familiarity with natural areas and not having knowledge of Baker Woodlot may have been a barrier for respondents and/or others who directly indicated that it was hard to find time to get away from studies and work to go for a walk. As a result of these difficulties and others, a respondent indicated that "It is hard for people to realize . . . how nice it is being able to breathe fresh air."

During the study in Baker Woodlot, respondents described how time constraints had prevented them from having "walked through the woods." One respondent indicated having "been down to get around this kind of stuff for a while." It was felt by another respondent that disengagement with nature may occur because

> "people forget about things, you know, some of the simple things in life. I think back in the day, or previous years, when people appreciated it a lot more. They felt a lot more you know in tune with it, you could say; but now I think there are so many things going." (Respondent 9)

One respondent reasoned barriers to engagement with nature included lack of appreciation, because

> "if someone never heard it (nature) or experienced . . .[it]. . . it would affect them . . . they might be more willing to not preserve something like this, because they wouldn't really think there are squirrels that live in there, or birds that live in there. They might just cut it

down to build something, a building. So, I mean if they're not exposed to it, I think just on that they wouldn't appreciate it on an environmental conservative level. And, if they are exposed to it - they would probably want to preserve it and protect it and grow more trees." (Respondent 4)

However, a lack of protection of natural areas was reflected as a concern; an international respondent felt that areas like Baker Woodlot will not exist if "you guys keep cutting every wood down." In regard to disengagement, one respondent stated:

"I don't think right now - I want to say I like it here, because if I say I like it here - because maybe the next time there will be a lot of people. It happens to all my favorite places and then they get cool, and then there's all the tourists and I don't want them to be here." (Respondent 2)

Engagement with natural areas. Engagement with nature was characterized by generalized positive effects and cognitions about the respondent's involvement in outdoor recreation. A respondent described how

"when you're out here, you just experience it . . . it's like nature itself, you know, it could start raining if it wanted to and you have to be subjected to it, you can't really do anything about it when . . . you go for a walk, the temperature, the wind, uh what the trees, you know, if trees fall you have no say over that it's kind of you have to experience the elements. . . the environment around you, . . . when you're here (natural areas) you feel kind of more nature as you play." **(**Respondent 1**)**

At this time of year, another respondent felt that being submerged "in the middle of fall with all the colors - it's quite beautiful. I enjoy . . . the experience of being alone …re-immerse yourself being here on campus away from civilization. . . and get this peaceful feeling back." One

respondent described Baker Woodlot as a place that "would definitely improve it (your mood) . . . It would make people feel less stressful, and kind of make their moods happier." While another respondent felt

> "having the opportunity to look at the beauty of the creation of the natural world. . . . It makes you feel good. . . . I think it's lifted my spirits. It's stimulating and it gives you energy." (Respondent 8)

City/urban and suburban respondents who may have had less exposure to the outdoors articulated a strong appreciation for nature. A city/ urban respondent in the study described that "every experience with nature brings me closer to it. So, this was definitely one of them that brought me closer to it. . . . I was mostly thinking about plants. I just thought about plants, because I'm around trees and stuff and I really like trees." She also felt "just being out here at a different time of year and with the fall with leaves coming down as I was walking, and just seeing the vastness of it," made her want "to get lost." Another city/urban respondent stated that

> "You know, for me when I walk through [nature areas] I can let everything go and just focus on a squirrel, where maybe if you have someone [else] brought from the city they might be afraid of a squirrel if they never saw it [before]." (Respondent 4)

Two of the suburban respondents described their movement through the woodlot as deviating from the recommended path. One respondent indicated that "actually, when I'm out in the woods I'm all over, I'm just natural (Laugh)." And, another respondent left the trail because of "the difficulty of trying to go silently through the Baker Woodlot this time of year," because "the leaves are crunchy it's very difficult to walk silently."

The most detailed description of engagement with the Baker Woodlot came from a respondent who described searching the tree canopy to find a "Hawk-like" bird. A respondent reported in a vivid narrative description of the hunting habits of predator birds that

> "I saw - wondered about the loud noise, heard an 'awk' three times, like a hawk thing. . . I looked up but I couldn't find it. . . I could just find it with my ears. I wondered what that was doing and where that lived and if it was hunting." (Respondent 2)

This narrative was one of the most detailed reflective accounts offered by respondents; when explaining why Baker Woodlot "felt pretty good," this person said:

> "It's very nice the breeze it has kind of slowed down a little bit for today. It has been very, very, windy recently. The breeze has slowed down enough, but I can tell that it's up in the tops of the trees still, but not really in my face like how it was. The sunset is less dramatic because of that - I find the sunset dramatic and just awesome when the wind is full tilt on my face. In Michigan the air is always noticeably fresh and crisp on your skin. So, for this late of a date in November it's a very rare day." (Respondent 2)

Environmental concern for natural areas. Environmental concern was mostly reflected through respondents' expressions of compassion for the loss of natural areas. One respondent characterized a future for nature areas that "could go either way, I mean there could be no places like this in the future . . . I guess it depends on . . . if our generation appreciates this kind of stuff. I mean- if they don't there could be no places like this." Environmental concern was best expressed by a respondent in the following manner:

> "I think, unfortunately just the simple fact of civilization and humanity that we have sadly taken many these areas and developed them into developed land buildings, farmland, and things of that nature. If you look at the Midwest and perhaps the majority

of [the] United States it used to look like this area right here - completely covered in forests, as far as the eye can see. And, the idea that it's only such a small portion today because of the encroachment of man. I think that slowly but surely areas like these areas must be dwindling up." (Respondent 10)

The loss of nature was expressed as a concern with regards to the physical wellbeing of future generations. One respondent commented that younger students are "doing none of that (outdoor recreation) - you know, let alone thinking about gardening, farming. I mean for them it's not cool. I don't know it's scary." It was felt by another respondent that

"unless something is done before future generations even get here, there might not even be that much space for them to engage with nature, because we are polluting, taking down so many trees, and minimizing so many forests - just deliberatively that maybe they won't even be there after today." (Respondent 6).

It was described by another respondent that "there's problems in schools; the kids aren't even doing physical exercises anymore, I mean let alone wanting to go in the woods and touch the ground." A respondent described a tension observed by indicating

"there is some growing awareness that we need untouched spaces for our own good, for our own survival, for our health, for our spiritual health. But, I think there are also a lot of people who enjoy artificial environments, man-created environments. So, I feel that nature is also threatened." (Respondent 8)

Environmental concern was indicated by a female respondent who concluded

"I think human existence is tied to nature's existence because what we eat, raw materials, resources, space, everything, is given to us by nature. So, if we destroy it we're kind of destroying our habitats. I mean, yeah, we can live in an apartment opposed to living in a

tepee. Sure, but just how many apartments can you build until you don't have any trees to get enough oxygen around you?" (Respondent 10)

Competition for access to and awareness of natural areas was felt to be in jeopardy; one respondent shared a concern that, because of "high profile sports," like basketball and football, concern for nature may

> "dwindle down. I mean with more sports like people focus more primary sports like basketball and football, and those are - like the more stand out sports. They may not get a chance to explore other options and they miss out on an opportunity to be out in nature to be one with nature, rather than just doing sports" (Respondent 3).

A respondent philosophized that "you can relate sports to a tree growing; you start small and work your way up. Take a first step and you move on. I mean you see everything from the root through the whole life cycle." One respondent who said; "I love walking in the woods. I will continue doing that" described how "we are part of nature, you know, when you throw yourself in there, it's a different kind of feeling," suggested that

> "if people just sit for awhile and see a tree. And, just for a good -maybe minute - whether they are clouded by all the thoughts or not. Um, if they can really focus on a tree they can notice its roots, they can notice its leaves, they can notice the way it's growing, and maybe you know the tree tells a little story of itself, and knowing that can affect you and make you reflect on something of yourself" (Respondent 6).

It was suggested by one respondent that "say, instead of soccer, I was on a hiking team or something it would definitely bring back memories being out here," and felt sure "people would be affected positively if people did more sports that were more directly related to nature."

Mapping the Interior of Emotional Space.

Felt experience with Baker Woodlot. In the interviews, respondents noted 10 different negative emotions and 20 different positive emotions during the post-experience interviews. Selective coding of emotions into categories was determined by similarities that resulted in the negative categories of fear, irritation, strange, angry, and tired. Selective coding resulted in positive emotions classified into appreciative, excitement, freedom, humor, hope, and relaxing categories. The most commonly reported emotion was "appreciation" (14 times) in reference to the weather, environment, nature, conservation, wildlife. The second most mentioned emotion was an appreciative "love" (9 times) in reference to being outside, walking, looking at trees, and natural areas. It was noted by one respondent that Baker Woodlot is "one of the things I love about Michigan State." Another respondent seemed to express an appreciative concern as he "wondered about the absence of wildlife" and how future generations may not have opportunities to appreciate nature, such as what is found in Baker Woodlot. Both "Strange" and "Fear" (4 times each) were the negative emotions most referenced in the post interview. Lack of familiarity with the place and nature seemed to be associated with "strange," "Fear" was associated with real and imaginary possibilities perceived from being in nature.

Factors that negatively affected mood were most often associated to the weather, as represented by a respondent who thought "the walk could have been better, if the weather was warmer." Another respondent found the weather made "it worse, because it was kind of [an] annoyance - me being cold, kind of, affected part of my thought process. I don't really know what I was thinking about. I was like - it's so cold that it hurts. The cold kind of affected [me], like; it kind of brought my mood down a little bit." Proximity of society to the woodlot was another negative factor described by one respondent who said that it "would be nice if there

weren't parking lots and that type of [thing] within sight. It definitely feels like a chunk of nature in the city." Positive factors associated to visual details were attributed to pleasant sensations such as the respondent who noticed "some really pretty light on the leaves. The sunlight hitting the leaves and the cool breeze felt really good on my face." Most respondents expressed similar sentiments to that of "just breathing the fresh air was really nice," or felt "breathing the clean air was refreshing." A few reflected an appreciation for the "feeling it gave you breathing the clean air and experiencing that connection."

Place dependency with natural areas. The functional importance of Baker Woodlot to support specific recreation activity goals was primarily described as facilitating a "really comforting" environment. Respite provided by nature was described by a respondent to work "naturally and effortlessly in a way - just because the body, mind, and soul is prepared to take on your week vs. being in a constant state of behind and not having all your needs met." Describing the mindset of being in a natural area, one respondent indicated that while "I'm in the woods I feel that way. I just let my mind wander, you know, it's just calming not seeing all the commotion, like cars driving by or different things." Another respondent who reported "It's nice to, so to speak; re-immerse yourself being here on campus away from civilization so to speak, it's hard with classes and things to do. Being busy, it's difficult sometimes to just take a break. And it's nice to be re-immersed and get this peaceful feeling back."

A respondent stated that "I've always, I think, had a good relationship with nature, but for me today, personally, it was nice to come out here and walk around and take a break from everything that I've been doing [school and work related responsibilities], and, um, I think it's lifted my spirits." "The beauty," another respondent felt made it "nice to be in the middle of all this nature, you feel quite awe-inspired to see these massive trees that have been here for

decades." It was also commented by a respondent that it "felt good because I saw a couple of people, I was a little nervous and apprehensive just because I've never been here before, then it felt good. It felt peaceful; it calmed my mind." A respondent described that it "felt peaceful, it's nice to be in the middle of wilderness away from civilization. And to know that they [wildlife] are around you . . . this would be an ideal camping ground. .. I enjoy that," and having the opportunity to look at "the beauty of the creation of the natural world."

Other functions attributed to lack of outdoor recreation included "people from the city or suburbs [who] could come out to the nature and become more one with nature, and they wouldn't be as stressed or worried about finances." Spending time in natural areas, it was suggested could get people in the "community to think less about finances" and provide a "good retreat for intimate and family relationships." For instance, one respondent thought "guys should tell their girlfriends and girls tell their boyfriends go out in nature. I don't know it's probably a good thing for each other and the relationship." Another respondent commented on the therapeutic possibilities, remarking that "Maybe, someone who's always been on a computer, always on computer or whatever they do, playing video games or whatever they do and stuff like that. Maybe, if you take them out of their room or something and walk through this it could change their lives, it really depends on the person." However, a respondent who had been an Eagle Scout described a number of possibilities of creating tools and toys from the natural resources in Baker Woodlot, however the respondent felt that people "unfortunately might abuse this area as a way to get away from so to speak unwanted attention from police or neighbors to partake in illicit activities (laugh)."

Felt value of natural areas. The immediate felt value given to natural areas that have personal meaning and are "full-bodied… with 'experiential validity and personal valence" was

reflected through a generally positive impact on "quality of life" from being in nature areas like Baker Woodlot. Baker Woodlot, a respondent described, "felt great. I really enjoyed it, because I enjoy being outdoors. I think nature has always been relaxing for me and stuff . . . [it makes people] . . . healthier just from being out and being active. I love looking at the trees, I enjoy being outdoors . . . me closer to it … around trees and stuff and I really like trees."

Value given to the experience of open parks to play in was in juxtaposition to socio-economic development, as one respondent indicated that "if money gets as tight as people think it might get, you know they could tear all this [Baker Woodlot] down and use it." A respondent who "loves looking at the trees" felt that "nature is not a priority. Money is a priority." It was remarked by one respondent that "some socio-economic populations from the city environment don't get out seeing nature or exposed to it." Another respondent surmised that "I don't think they'd have the same, I don't want to say appreciation - but they wouldn't have any knowledge of it. If they never saw it, it could be freaky to someone with no experience." One respondent described experiences in nature as being "really bizarre how things [outdoor recreation] can become just for the wealthy or even the ultra-wealthy in that case."

Nature areas offer an embodied experience that can be very intimate and personal. One respondent described how "It's kind of nice getting lost in the midst of all the, you know, homework and stuff you gotta do during the week- just being out here at a different time of year, and the fall and leaves coming down." Conversely, empathy from the Baker Woodlot was articulated by a respondent who was searching for a "Hawk-like" bird when he felt concern for the bird in that he was "glad I don't have to stalk any prey, I can simply go to the grocery store."

Place identity with Baker Woodlot. The emotional and symbolic importance of Baker Woodlot was illustrated as a generally positive and engaging experience which the respondents

felt was relevant to the respondent's lives. One respondent asserted that he values the botanical gardens on campus and that these are "one of the things I love about Michigan State;" he further identifies with Baker Woodlot in the statement that "It's nice to have a commitment [from MSU] to maintaining natural areas ... because they should be here for future generations to enjoy and to take part in [the natural experience]." The natural experience was described by a respondent as "at different times of the year and during the fall, seeing the leaves coming down as I was walking, it's something I always connect with." Being in a natural area motivated a respondent who had "been down to get around this kind of stuff; [because] it's really nice to be here." Another respondent said, "It's actually nice to have, you know, it makes me realize how important it is. I guess sometimes you don't think about it day to day. But when you're really here you feel like we really do need to preserve these areas. It's really fortunate that we do have this area here."

While most respondents seemed to have a favorable perspective of the woodlot, female respondent indicated some hesitation about returning to the woodlot and said "maybe I will come back out here. I didn't know about this lot, so it was a good experience." And, although another respondent who did not express a positive emotions indicated that "if we destroy it (nature) we kind of are destroying our habitats . . . (and) . . . it makes me sad, and just mad." This expression of an empathetic relationship with nature shifted from a passive "sad" to being "mad," and the respondent seemed potentially emotionally ready to act in a way that fights for nature and the individual's emotional well-being. Another respondent stated that "Even today when it's nice out, there's nothing better than when me and the guys at the dorm go play . . . outside. We just kill for that day rather than sit inside and sit on the computer and do nothing. There's nothing better than being with your friends out on the pond having a good time playing . . . when you

play you get a feeling of awe." A similar sentiment to protect green space was reflected by another respondent who asserted "that around this community if there weren't free outdoor places to play soccer locally, there'd be a riot."

Emotional Understanding and Empathy for a Protected Natural Area

My third research inquiry used a c case study methodology to formulate the hypothesis that "if emotional engagement with peace and curiosity in nature are increased then the empathetic relationship with nature will increase." I investigated this question by analyzing results with a standard model of analytic induction and the triangulation of auto-ethnographic, ethnographic and quantitative data. Respective to their individual past sports and recreational relationship with nature, experiences in Baker Woodlot are a unique opportunity for visitors to engage with nature.

Participants in the study reported a concern for the loss of nature to: encroachment by industry, commerce, and other indicators of modern development that were felt to threaten nature, and affect future generations' ability to eat, breathe, and recreate in nature. Participants in the study recognized a need for collective responsibility, and differentiated themselves from those who "chop down trees" and who prefer to recreate "man-made environments."

Initially, to deviate from the work of Dunlap and Heffernan (1975) and other theorists, I surmised that positive emotions would be related to an empathetic relationship with nature. In this study, participants, in general, reflected a number of positive emotions associated with nature. Spending time in Baker Woodlot fostered emotional engagement with the environment, nature, weather, and wildlife. The qualitative data revealed a felt sense of having "loved" the experience was associated with being outside in nature. Since, participants, also, reported

negative emotions (i.e. mad, sad, and uncertainty) that were associated with a desire to protect natural areas, the hypothesis was reformulated to achieve a more specific emotional rule.

I then surmised that emotional engagement would be a better predictor of an empathetic relationship with the environment for the student than positive emotions. An example of emotional engagement with nature was described as "a different type of feeling," a feeling that is intricately bound to human existence, since "we are part of nature, because of what we eat, and the natural resources we use." Engagement from spending time in and reflecting on nature was nicely expressed by one study participant through the symbolic metaphor of a "tree". The conveyed sentiment was that "if people were to spend time in nature with a tree, and whether or not their thoughts were 'clouded' by other things (including sports), they could focus on tree growth. By starting at the roots in the ground, then feeling the trunk and bark of the tree, and then notice the leaves, thus learn about the tree's whole life." However, protection of natural areas was, also, associated with disengagement from nature. Participants had positive memories of spending time in nature as a child and expressed remorse of not being able to "get out into nature," because of time constraints or lack of knowledge of natural areas on campus. It also was felt that disengagement with the woodlot by others would preserve the natural setting.

Finally, I undertook a reflexive attitude to systematically and emotionally immerse myself, as a researcher and scholar-practitioner, into the social experience of the community (Powell, 2009). A self-reflection of both personal and community spheres was done, in order to empathize the social, emotional, and intellectual relationship to myself, research participants, other readers, audiences, and epistemological communities. Reflecting on my own personal experiences in Baker Woodlot resulted in a number of positive and negative emotions, and I

began to comprehend how the participants in this study also reported generally positive emotions with a few negative emotions for nature.

However, my own curiosity to understand the emotional relationships people develop with the natural world drove the research study, and in the same regard shaped the questions that were asked of the participants. With some consideration of the sense of place, I remembered the mission of Baker Woodlot to serve "the MSU community and friends, a place to learn, explore, and reflect." Asking the participants to respond to these questions required they reflect and conduct a personal inquiry about these relationships. So, the hypothesis was reformulated after reflection of the field and analytic notes. The quantitative analysis was used in this research to find answers to statistical questions related to how much, how often, how many, when, and who that can be measured from collected data. Since, all methods of data collection have limitations, using multiple methods can complement for the weaknesses in other methods. The use of quantitative methods was to address research questions that describe emotions and to pilot research instruments, in order to make broad generalizations about the type of emotional engagement that affects Nature Relatedness.

Statistics provide a numerical description of characteristics of a variable or of variables from a sample of a larger population. Statistical techniques were used to describe and analyze variation in quantitative measures. In this study, statistical analysis assistance was provided by a Statistical Consulting Center for the inferential statistics. Inferential statistics were used to estimate the likelihood of a statistical result derived from data of a random sample representing the population the sample selected. The main benefit of using statistics is that it provides a way to separate out the large number of confounding factors that often obscure the main qualitative findings. However, in this study the sample was too small to confidently determine a

relationship between variables, but preliminary indications suggest that variables relaxing and passive were the best indicators of Nature Relatedness subscales Experience and Self (Appendix N).

In this study an ANOVA was used to provide a statistical test of whether or not the means of several groups were equal, and therefore to generalize a t-test to more than two groups. ANOVAs are used to compare, by testing three or more variable means for statistical significance. If the ANOVA assumptions hold true, then further analysis is possible that can determine whether the type of emotional engagement having the highest mean score had a significantly higher Nature Relatedness score than the emotional engagement receiving the next highest mean score. Additionally, in this study multiple simple linear regressions were conducted to inform a hypothesis of emotional engagement with nature. From a simple linear regression and correlation, this analysis allows for the investigation of how a set of explanatory variables are associated with a dependent variable of interest. For instance, the null hypothesis (H0) is that the coefficient relating the explanatory AMI (relaxing and passive) variables to the dependent (NR) variable is 0, and therefore there is no relationship between the explanatory variable and the dependent variable. The alternative hypothesis (H1) is that the coefficient relating the AMI (relaxing and passive) variables to the NR variable is not equal to zero, therefore some kind of relationship exists between the two variables.

CHAPTER 5

DISCUSSION AND CONCLUSION

Overview

In the final chapter, I will first provide a summary of the specific findings of the study organized by the three major research lines that I addressed. Then, this chapter will offer a discussion of the major themes that emerged in the results from the study in light of the theoretical lenses presented in the literature review, and a discussion of variations in the findings related to this study. The third section will identify and discuss limitations to the study. The final section will conclude with implications for future research to 1) increase sample pool, 2) specifically identify natural conditions, 3) refine instruments, and 4) engage community.

The results of this study present a systemic analysis (Figure 7) of how emotional engagement during nature-based recreation might affect environmental concern of college students who have participated in high school interscholastic competitive sports, and to assess the strengths of the proposed instruments for theoretical assumptions about emotions. The selection and definition of problems, concepts, and indices were created to assess *different high school interscholastic sports' effects on sports athletes' environmental concern*. My non-directional explanatory investigation was to understand the emotional associations attributed to a nature-based recreation experience. Frequency and distribution of emotions during nature-related recreation were associated with change in Nature Relatedness. The specific focus on emotions, rather than on values was for the exploratory inquiry to generate a hypothesis of how emotional engagement during nature-based recreation may affect empathetic relationships with nature, in order to incorporate individual findings into a model of the empathetic relationships with nature that benefits interscholastic sport and environmental education. My research

demonstrates how emotional engagement during nature-based recreation might affect the environmental concern of college students who have in the past participated in high school interscholastic competitive sports. Through a 1) descriptive, 2) non-directional explanatory, and 3) exploratory inquiry, this research has addressed the felt sense (Schroder, 2007) that develops environmental concern while recreating in a natural area.

Sport and the natural environment. The first line of research questioning was to determine how an exterior influence of high school interscholastic sport may be related to college students' pre-test Nature-relatedness scores, and to consider what past experiences and expectations may have influenced students' perceptions of nature. The broad pool of student research participants was selected to incorporate the perspective of a diversity of ethnic and cultural populations (African–American, Asian–American, Hispanic–American, White-Anglo Americans, and international students) and included representation from 11 different sports. The case study had a diverse representation of gender, major, semesters of study, and types of community. Most participants engaged in some of the Environmental Behavior Lifestyle indicators; 80% frequently participated in household recycling, while only 60% did environmental reading or would sometimes participate with environmental clubs.

While in high school, few of the participants had natural areas near their homes, but most had some type of "green space," or a trail system that was close and accessible. The participants' high school communities had green areas nearby that were primarily used by local neighbors for physical activity, and less so for viewing wildlife, and even less often reported was outdoor recreation that incorporated daily activity. Participants used the green areas for many different reasons: sports, social activities, deviant activities, physical workouts, and relaxation. Green spaces in participants' communities were frequented by themselves, their families, with

neighborhood friends, or through community sports organizations for outdoor physical activities. During high school, green areas were used primarily for conditioning exercises; for instance running in green spaces with few to little trees was characterized as providing a relaxed place to run/workout for athletic sport.

Participants as a group reported involvement with 13 different outdoor recreational activities, and 60% had involvement in four or more outdoor activities within the past year. Biking and running were the most frequently reported activity, with 60% of the study group. The most often reported among the study participants was basketball (70%). Soccer and track had a 50% participation rate and were the second most frequently mentioned sports. Soccer athletes had the highest average NR- Total score (3.66) and NR- Experience (4.0) subscales. Soccer also shared the highest NR- Perspective score (3.29) with Soccer/basketball. Track/cross-country and swimming had the highest NR- Self subscale (4.37). Some participants expressed familiarity with being active in natural areas since early childhood, and all expressed a desire to continue outdoor activities; like outdoor running or long walks in nature areas. Cross-country running that requires athletes to run on different types of trails throughout the woods, and sport cross –training in natural areas were described as common practices among participants. However, the feeling of walking and being in nature on a trail was considered foreign to the experience of being on an athletic field, because of the inconsistent terrain and environmental conditions that produces an uncertainty for what to expect, as illustrated by an individual who "tripped over roots hidden by leaves."

The students were reminded of both play and athletic sport enjoyment being outside on the trails and breathing the fresh air in Baker Woodlot. Cross-country runners seemed to have the most familiarity with the natural area, since their sport required running in natural areas.

Cross-country runners reported thinking that simply running in nature was a popular activity. However, running in athletic sport did not provide opportunities to explore the diversity of nature because of competitive pressure, even though athletic sport could put people in a similar mindset to outdoor recreation, in which they could forget about "daily life" and be "in the moment."

Respondents described having felt that the built environment of the sports field, location, and equipment were key barriers to connecting with nature. During discussions, participants recognized and illustrated a host of similarities and differences. For instance, it was expressed that because of the experience of being in outdoor weather from playing sport there was a motivation to participate in outdoor settings even in bad weather. Playing athletic sport in shorts, socks, and t-shirt brought about an appreciation for the weather and natural world. A specific similarity noted between sport and outdoor recreation was that some sports, like wrestling, are individual or "solo" events. Sports in open green spaces were identified as "pastoral sports," and did not require much walking. The lack of rigorous physical activity during the Baker Woodlot study resulted in less stress, fatigue, and sweat than participating in athletic sport. And, outdoor recreational activity generated more peaceful feelings than athletic sports.

Emotional engagement with nature. The intent of the second research line was to address the interior emotional engagement of students in a natural area. This was accomplished through investigating an emotional geography of participants' felt experience in Baker Woodlot. Major ideas that emerged from the interviews were that participants' perception of the natural area was peaceful, and in need of conservation, and a description of barriers to participation. Participants in the study, also discussed how familiarity with nature helped them manage their emotional engagement with nature.

The opportunity to immerse oneself in nature on campus, by being in a natural area like Baker Woodlot allowed individuals to experience nature, which in turn improved individuals' energy, made participants feel good, and invigorated a spiritual self. Engagement with nature was characterized by generalized positive effects and cognitions about the participant's involvement in outdoor recreation. Experience with nature brought participants closer to nature, illustrated by participants who described how past felt experiences as well as this experience in Baker Woodlot resulted in; getting lost and feeling the sunset, having the wind blowing in the trees and against their skin, walking silently on crunchy leaves, focusing on animals, and searching for birds.

Nature was described as a place to disengage from the pressures of modern life, and have a positive therapeutic effect, as well being able to distract the mind in ways that increase running performance. In Baker Woodlot, individuals were able to directly experience the natural area, despite distractions from the sound of traffic and noticeable signs of industrial development within and surrounding the woodlot. However, because of a concern that too many people may visit the natural area, and because of people who may not be appreciative of nature it was hoped a lot of those type of people would not visit the area, in order to conserve nature that. Previous generations were believed to appreciate nature more than current generations. Participants expressed feeling a desire to prevent people from destroying habitats, but, also, described how disengagement with nature could occur because people may forget about nature. Primarily, on account of the greater complexity of today's lifestyles compared to the "simpler" times in the past when people had more appreciation for nature. Participants felt that a lack of familiarity with natural areas, and an over-dependency on equipment used in outdoor recreation contributed to people's disengagement with nature.

This study noted 20 different emotions acquired during the woodlot experience; in the post interviews; 10 of the negative emotions were grouped into five categories, fear, and irritation, strange, angry, and tired. The emotions of "strange" and "fear" were attributed to a lack of appreciation for nature. Both lack of knowledge and experiences in nature, participants thought could potentially be bizarre and create apprehension for someone with no experience in natural areas. Negative emotions were most often associated with the weather or not having the time to visit the natural areas because of school and work-related responsibilities. Losing natural areas was described as scary, because if 'our' generation doesn't appreciate them, there could be no such places left for future generations.

Curiosity was expressed when the students in this study wondered about the absence of wildlife in the study area and expressed interest in evidence of wildlife. Even though it was thought that some people might be afraid of wildlife, the students felt that walking through the natural area helped them to let everything go and facilitated focusing on nature. Appreciation in reference to the weather, environment, nature, conservation, and wildlife, and a love for being outside, walking, looking at trees, the weather, sunlight on leaves, wind on face, breathing fresh air, and natural areas were associated the most often as positive emotions.

Baker Woodlot was described as being relaxing, comfortable, peaceful, and provided peace of mind. Participants felt fortunate to have a natural area on campus to help with intra- and interpersonal relationships, because of the area's ability to have a therapeutic effect on emotional moods. The students perceived that not seeing industry and not being stressed in the natural area lifted the students' spirits peacefully in the natural area. Participants enjoyed spending time outdoors on a regular basis to appreciate looking at the trees, freely walk around the woodlot, take photos, create sketches, or to simply run in nature. Participants felt that it was

important to sustain these areas for future generations' enjoyment through taking part in the stimulating energy that natural areas like Baker Woodlot can provide.

Reflexive engagement with the environment. The third line of research questioning was to develop a hypothesis for how emotional engagement during nature-based recreation may affect empathetic relationships with nature. The intent of generating a hypothesis is for the development of a future model of the empathetic relationship with nature for sport that can be tested. An ethnographic data set revealed that participants expressed concern over the reduction of society's play space and natural areas, as well as concern about protection for people and the planet. It was felt that everybody should have more opportunities in natural areas, rather than only exercising in a gym wearing headphones. Doing "high profile sports," like basketball and football, were considered to be potential barriers toward exploring and connecting to nature.

Being outdoors in Baker Woodlot provided a passive and relaxing time to think and reflect about the environment, in a way that was conducive to letting the mind "wander" freely in nature. Participants described the experience as less intense than sport, and considered the natural area to offer relief from societal pressures. Opportunities in outdoor recreation are necessary, so that individuals can emotionally engage with nature and develop the empathetic relationships with nature for conservation. Examples from the study can be found that show how emotional engagement with peace and curiosity in a natural area may affect empathetic relationships with nature. In one instance, a participant's description illustrates how a "tree. . . tells its own story and knowing that story can have an effect that makes you reflect on something of yourself, like how much development is necessary before we realize there are not enough resources available." Or, similar to the "tree," by reflecting on a hawk hunting its prey, a

participant generated a symbolic representative model for the convenience of the human food system.

Sustaining recreational opportunities through an authentic appreciation of outdoor sports should focus on the following three priorities: 1) ecological values directed toward qualities of the natural environment, 2) technological values that emphasize the importance of equipment, styles, techniques, and forms of outdoor sports, and 3) individuals' personal enjoyment of outdoor sports as a fun, adventurous, flow experience, and dynamic activity (Vanreusel, 1995). The third of these priorities distinguishes between the intrinsic and extrinsic qualities of sports and offers perspective on the irrational and emotional dimensions of the human spirit (Arbena, 2000). As such, the final hypothesis for future studies is that "if emotional engagement with peace and curiosity in nature are increased then the empathetic relationship with nature will increase." If the hypothesis is confirmed then peaceful opportunities that evoke curiosity in nature should be incorporated in the instruction of physical education and natural science to support developing the basic ecological technique of awareness to make abstract concepts concrete (Mappin & Johnson, 2005). The hypothesis identifies a way to address the need for schools and sports to provide opportunities for physical exercise in natural areas where nature can be felt, so that future generations will have an authentic ecological perception or awareness of the dynamic relationships in nature.

Discussion

Dunlap and Heffernan's (1975) pivotal study, "Outdoor Recreation and Environmental Concern: An Empirical Examination" theorized "involvement [with] outdoor recreat[ion] leads to increased environmental concern among the general public" (p. 19). In this study, involvement with an outdoor recreational activity showed an increase in participants' Nature

Relatedness on subscales scores for Experience, and Self, but not for Perception. This was unexpected, since Van Liere and Dunlap (1980) suggests that level of education can influence concern for the environment. Villacorta, Koestner & Lekes (2003) found a "lack of environmental knowledge" is compounded by a lack of motivation to acquire environmental knowledge. This could not be supported by the data from the case study; however it is worth noting that Nature Relatedness Perspective subscale was poorly reflected among participants Nature Relatedness subscales, and was reinforced by participant's reporting that they do not read a lot of environmental literature.

This study did not conform to Geisler's (1977) proposition that personal characteristics (such as gender and ethnicity) can account for a majority of variation of scores that assessed concern for the environment. Nor did the results indicate support for Kreger's (1973) conclusion that African –Americans are less concerned about ecological problems than whites. However, to the contrary all ethnicities had comparable Nature Relatedness subscales for Experience, and Self. Additionally, gender indicated the strongest relationship for Nature Related subscales Experience, Self, and Perspective.

Dietz, Stern, & Guagnano (1998) noted that environmental concern develops from critical engagement with the environmental movement, as much as it does from the circumstances of one's personal and community context. However, participation in various athletic sports did not appear to have an effect on overall Nature Relatedness. The results in this study suggest personal sports and recreation background do not affect Nature Relatedness. In athletic sports, negative emotional responses have been found to decrease the desirability of an activity and increase the negative motivational consequence (Scanlan, Babkes, & Scanlan, 2005). However, in my study regarding outdoor recreation this does not seem to be the case. Even

students who had negative emotions still had a conservation mindset toward natural areas. Positive emotional responses motivated participants to continue to recreate in natural areas, and the desirability of the outdoor activity was associated with an emotional orientation to protect nature.

The meaning an individual gives to wildlife-recreational activity, as argued by Bright & Porter (2001), was supported in the qualitative data for cross-country runners since their sport has the most time in natural areas. However, qualitative data suggests the participants in this study are preoccupied with other responsibilities and may tend to forget about nature. Meaning was associated with an empathetic relationship with nature when the personal emotions of passiveness and relaxing were present.

Limitations

Limitations and delimitations shed light on possible threats to the study's validity and provide acknowledgement of existing flaws in the research design. Limitations provide a reference for limiting conditions in the research design, and delimitations refer to the generalization of findings (Locke, Spirduso, & Silverman, 1987). There are major limitations to this study. First, I was limited by the size of the study group and by the challenges of recruiting students to participate. The specific nature of the sample consisted of a small number of 10 college students who had participated in a high school interscholastic competitions, the population of students was much larger who attended the University, approximately 50,000 students enrolled from all 83 counties in Michigan; all 50 states in the United States; and 130 other countries (MSU, n.d.). In only considering selected research participants, the proposed study describes only selected participants' emotional engagement and empathetic relationships to nature in one specific natural area.

Second, a reliance on the Nature Relatedness and Affective Meaning Instrument was limited by the reliability of these instruments. Even though, the reliability was acceptable, it was not perfect. In past studies the NR survey items have yielded the following Cronbach alpha levels of reliability: for the full NR scale (a= .87), and the subscales Experience (a=.80), Self (a=.84), and Perspective (a=.65) (Nisbet et al., 2009). Therefore, excluding the possibilities of untested emotions and constructs having an effect on the empathetic relationship with nature was not possible. Also, an immediate sense of emotional experience with nature could be affected by factors outside of the natural area (family, friends, and work) and could affect emotional data collected from the Affective Meaning Instrument during participants' time in nature.

Finally, a number of other limitations may be attributed to this study; the time of the year and the subsequent weather conditions resulted in a change in the nature and biodiversity present in the woodlot. Therefore, generalizing findings across all natural conditions at the site is not possible. Additionally, the random contextual cues (e.g., road construction, horns honking, and trains) outside of the natural area that may have permeated participants' perceptions of "nature" and could affect emotional experience was a limitation to this study.

Future Research

Various aspects of Nature Relatedness were examined during this study to gain insight into the role of emotions for developing empathy towards nature. A result of this study was that a hypothesis was established to be tested, and following suggestions are improve the study. In order to achieve a more comprehensive overview of the impact that different athletic sport backgrounds may have to connect individuals with nature, a larger sample will be necessary. Enrolling participants in the case study was a major challenge, future studies will need to have

more student involvement with the research, so that the method may include inferential statistics, and have findings that can be generalized to larger groups.

To broaden outreach to more diverse populations, future studies should incorporate into measurement/survey tools emotional language, like "cool," common among contemporary students. Nevertheless, this case study of past high school athletic-students offers critical insight into a selective population which has been influenced by contemporary sporting practices. Student recruitment in this case study found fliers on tables to be more effective than bulletin board postings. Recruiting students from other colleges and universities could be a means to broaden the sample population. Researchers should ask participants "where" and "how" they became aware of the research opportunity would be a benefit to future research. The development of new avenues to facilitate recruitment, such as a university based website that posts all research projects in need of participants on campus, would reduce paper waste during recruitment, and could contribute to community-based research in the University.

The Baker Woodlot location provided an insight into the emotional engagement of students in the natural area in the late fall. During this study, the environment of Baker Woodlot was a unique ecological setting because of the time of the year and the changing weather conditions. Although the setting was a natural area, the extensive change brought about by the weather drew sharp attention to the complexity of defining "nature." The change in the foliage, insect life, and sounds left the impression that selecting natural areas of different sizes, locations, and at different times of year would be necessary to assess emotional engagement that could be specifically associated with nature. To generalize to other natural areas and seasonal conditions, future research should be conducted at different times of the year and in multiple natural areas.

And, a control study in a natural area without the contextual cues would be a better indicator of the environmental factors' effect on emotions.

The research instrumentation drew heavily from pre-existing instruments (Environmental Behavior Lifestyle, Nature Relatedness, and Affective Measure). The instruments provided systemic methods to investigate emotional engagement with nature. Adaptations to these instruments will be beneficial for future research. For instance, the AMI had twelve emotions represented, however some emotions (cool, funny) found during the qualitative analysis were not represented on the scale. In order to generalize the effect of emotions a more specific research line could target the effects of specific emotions (e.g., peaceful and curious). Furthermore, when assessing environmental reading, the EBL instrument fails to include the internet as a source of environmental reading. The Nature Relatedness instrument was effective for achieving an understanding of how sports may affect Nature Relatedness, although a further analysis of how other instruments contribute to an understanding of emotional engagement with nature would be valuable, specifically "Environmental Sensitivity" (Metzger & McEwen 1999). "Environmental Sensitivity" may complement Nature Relatedness, particularly the subscale "Perception."

For the scholar – practitioner, qualitative research and the role of researcher has a critical effect on the results of a study. In this case study results were influenced by an interdisciplinary literature review, mixed methods, and an analysis of emotions. In the analysis, the use of emotional geography was helpful to organize data, and is recommended for future studies. The emotional labor to produce this dissertation for the emotional rules for empathy with nature was assisted through an engaged scholarship, in order to develop a working hypothesis, identify effective measurements instruments, and give consideration to the practicality of a theoretical praxis of emotional engagement and environmental empathy for sport.

A community based participatory research project can facilitate the conditions for individuals to learn from their own experiences and then share that information with others (McTaggart, 1991). The incorporation of community-based participatory research projects between the community and university potentially offer a more detailed, multi-dimensional experience for each contributor than a traditional social scientific study (Sandman 2006). A community-based participatory research praxis should be used to scaffold the development of my future research praxis towards building the capacity of emotional engagement for students in higher educational institutions to address, respond, and affect concern for nature (Sandman, 2006). This future research regarding emotional engagement with nature-based recreation should employ principles from community participatory research identified by Israel et al. (2003) to understand emotional responses during a participant's actual physical engagement with a natural area. For instance, great lengths were undertaken to keep this study as sustainable as possible; for instance, conservation of paper to reduce environmental waste, bicycle transportation, and the use of natural sunlight for lighting was used as much as possible during research and scholarship. In this study paper was recycled through the University's recycling program, and recycled-content paper was used whenever possible. Future studies would benefit by monitoring their environmental footprint to facilitate a reduction of the environmental impact of doing research studies.

APPENDICES

Appendix A. Research recruitment flier.

Research Participants

Needed for an

Outdoor Research Study

August 20th – September 21th

Did you participate in High School Sports?

If so, please consider participating in a research project in Baker Woodlot on MSU campus, fill out surveys, and answer questions about the experience.

Qualifying participants will be eligible for a $5 monetary stipend, and will have name entered into a lottery for a chance to win accommodations in a local bed and breakfast, or

(2) a "Two Semester Unlimited Fitness Membership for 2012-13."

Any questions? Please call Dwight Washington (XXX) XXX-XXXX

Limited opportunities are available! Please Act Soon!

Appendix B. Informational Letter Directing Participants to On-line Consent to Participate Form

Date: 8/28/12 - 11/4/12

Dear Research Participant:

Thank you for your interest in this research project. I am a PhD candidate at Michigan State University in the Department of Community, Agriculture, Recreation, and Resource Studies. I am looking for volunteers to participate in a case study about experience in outdoor recreation. My goal is to study emotions of people engaged in nature-based recreation.

This study will ask for participants to respond to an online survey, walk through Baker Woodlot, and record reactions to your experience on a survey. All participants will have an Alias name to maintain confidentiality of data. Finally, you will be asked a few questions about your experience, which will be recorded with audio recording equipment. The walk and interview should take between 1 and 1.5 hours.

Research findings will be reported in a manner which prevents identification of any participant or person mentioned in the interviews. If extracts from interviews are quoted in research reports, the names of interviewees and of people they have mentioned will be changed. After the research is complete the audio tapes of recorded interviews and contact information for participants will be destroyed.

Please read and electronically validate an electronic "Consent to Participate form" at

https://docs.google.com/spreadsheet/viewform?fromEmail=true&formkey=dHBwQ25lb1lWZ01yZkxKcWYwaTR4RXc6MQ

At any time, please feel free to provide any comments you deem necessary or relevant to improving the study. Your response and time are greatly appreciated. Thank you!

Sincerely,

Dwight Washington

Michigan State University

Community, Agriculture, Recreation, and Resource Studies

PhD candidate

Appendix C. Copy of Consent Form for Research Participation

Consent Form for Research Participation

Title: Sports and the Environment: Engaging the emotional bond.

Introduction: I, _____, have been asked to participate in this research study which has been explained to me by Dwight Washington. This research is being conducted to fulfill the requirements for a doctoral dissertation in Michigan State University, College of Agriculture and Natural Resources, Department of Community, Agriculture, Recreation and Resource Studies.

Purpose: The purpose of this study is to explore the emotional relationship between sports and recreation to the environment and to explore the influence on nature relatedness.

Procedures: Participation in this study will involve responding to an on-line survey; including scheduling a walk in a nature area located on campus. During this outdoor research exercise participants will be asked to answer a short survey on their experience. Upon their return from the walk, participants will be asked to respond to another survey, and take part in a one-on-one interview (approximately 15 minutes). During the interview, notes will be taken, and the interview will be audio-recorded. Participants will be notified of findings through email, and given the option to attend a follow up meeting and/or provide comment by email.

Risks: The online survey will be collected through www.surveymonkey.com and will only be accessible by the researcher. Survey response is processed and stored in the United States; therefore the US government, courts, or law enforcement and regulatory agencies may be able to obtain disclosure of the data you provide in this survey through the laws of the United States. However, nothing in this survey is considered to be controversial in any respect.

Benefits: 1) Benefits associated with outdoor recreation (Cognitive, Physical, and Spiritual). 2) Student engages with Michigan State University protected natural areas for outdoor recreation.

Compensations: With submission of all questionnaires and instruments provided during the research project, and after a walk in Baker Woodlot participants will be compensated ($5) upon completion of the interview. Participants will then be eligible to win one of two prizes from a random lottery selection as an appreciation for involvement in study. After completion of the study, two participant will win one prize of 1) a night of lodging in Wild Goose Bed and Breakfast Inn, East Lansing, MI, or 2) a "Two Semester Unlimited Fitness Membership for 2012-13."

Confidentiality: This interview will be kept confidential: only an Alias name will be linked to the comments made during this study. The audio-recording will be kept in a secure location, until it has been transcribed, at which time the recording will be erased. All information generated and submitted during this study, including; the interview, analyzing of data generated during interview, and a written report will be presented as findings. All documentation will be kept strictly confidential.

Withdrawal: Thank you for your voluntary participation in this study. If you choose to withdraw or not answer any question at any time, your right will be respected. If you have any questions about your participation in this study, please contact Dwight Washington at 517-974-1658, or e-mail at washin18@msu.edu. You may also contact the supervising professor Dr. Rick Paulsen at 517-775-1945(email at paulsen@anr.msu.edu). Or, **Harry McGee,** the institutional review board**,** Social Science, Behavioral, Education Chair at 517-355-2180 (email at irb@msu.edu).

Consent: By clicking on the button below, you indicate your voluntary agreement to participate in this research study.

_____	_____	_____
Participant's printed name	Signature of participant	Date

Appendix D. Dismissal Letter to Case Study Participants

Date11/05/12 - 11/20/12:

Dear (name):

Thank you for your interest in this research project. Subject recruitment can be a daunting experience for new researchers. Although, you are **not** being selected for this study, your willingness to participate in research at MSU is appreciated by myself and others whose intellectual pursuits are supported by contributions like yours.

Sincerely,

Dwight Washington

Appendix E. Copy of Field Notes

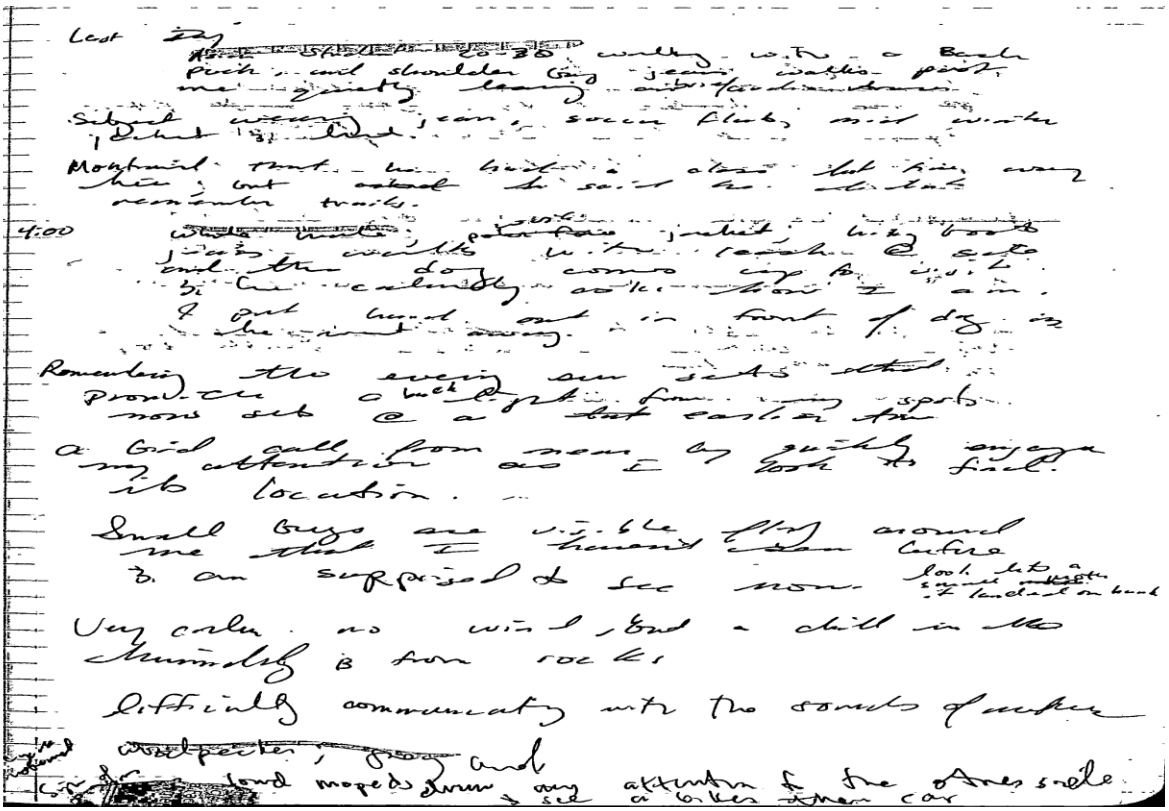


Figure 9.Copy of field notes.

Legend: Last day : 4:00pm. Asian Student 20-30 walking with a backpack, and shoulder bag, jeans, walks past me. Subject wearing jean, soccer flats, mid-winter jacket and hat. Mentioned that he had a class last time was here; but said he didn't remember trails. White male winter jacket; hiking boots, jeans, walks dog with leash at side and the dog comes up to visit me, he calmly asks how I am. I put hand out in front of dog and he went away. Remembering the evening sunset that produced a back light for my spot now sets at a earlier time. A bird call from nearby quickly engages my attention as I look to find its location. Small bugs are visible and fly around me that I haven't seen before. And, I'm surprised to see now. Looks like a small moth has landed on my hand. Very calm, no wind, but chill in the air and humid enough to show on rock. See Woodpecker, Grey owl. Difficulty communicating sounds of nature. Motor cycle in backckground. 2 loud mopeds draw my attention to the other side of the fence and see biker and then a car. Sign of the times?

Apendix F. Invitation Letter Directing Participants to Online Pre-experience Questionnaire

Date: 8/29 /12 – 11/6/12

Dear Research Participant:

Thank you for submitting the electronic "Consent to Participate form." The following link will connect you to the "Pre-experience" survey. Before you can submit the survey you will be asked to schedule a time for the field portion of the study. Please consider your availability within the next week before you begin to respond to survey questions.

https://docs.google.com/spreadsheet/viewform?fromEmail=true&formkey=dHRHMTdNbUlmWTZYRS16REUyMVlLdXc6MQ

Thank you, please feel free to provide any comments you deem necessary or relevant to improve the study.

Sincerely,

Dwight Washington

Appendix G. Pre-experience Survey

Demographic

1) Female ___/ Male___ (please check one)

2) Which ethnic group(s) do you most identify with? (Please check all that apply).

__ African American __ Asian American __ Hispanic American

__ Native American __ White-Anglo American __ Other (Please identify) _____

3) Academic major _____ 4) Semesters in university _____.

5) Which description best represents the community you lived in during High School. (Please check one).

___ Urban ___ City ___ Suburban ___ Village ___ Country ___ Other (please specify) _____

6) Which interscholastic competitions did you participate in during High School? (Please indicate number of seasons to all that apply).

Track/ X-Country _____ Cheerleading _____ Basketball _____

Baseball/Softball _____ Volleyball _____ Soccer _____

Swimming/Diving _____ Gymnastics _____ Football _____

Ice /Field Hockey _____ Tennis _____ Wrestling _____

Alpine /X-Country Ski _____ Golf _____ Lacrosse _____

Other (please list)_____
_____.

7) Please briefly describe your past involvement(s) in nature-based outdoor recreation

_____

_____

Appendix H. Appointment Reminder Letter sent to Case Study Participants

Date: 10/1/12 - 11/15/12

Dear Research Participant:

This is a reminder that you are scheduled at _____ to meet at Baker Woodlot for

less than an approximated 1.5 hours for a research study. The nearest available parking will be the Physical Plant Storage lot located north of Service Road. There is bike parking available at the northwest entrance of Baker Woodlot, where we will meet.

Directions: Drive south on Farm Lane. Take first right past Service Road onto Green Way and Physical Storage Plant. The northwest entrance to Baker Woodlot and Rajendra Neotropical Migrant Bird Sanctuary is across the street on Farm Lane.

Please be prepared to walk outside. You will be more comfortable if you dress for the weather, wear shoes (not flip-flops/scandals), and have insect repellent. Your participation is greatly appreciated, and you will be eligible for $5 in compensation. For the additional random lottery eligibility for one night of lodging in Wild Goose Bed and Breakfast Inn, East Lansing, MI all questionnaires and instruments provided must be returned.

Thank you, please feel free to provide any comments you deem necessary or relevant to improve the study.

Sincerely,

Dwight Washington

Appendix I. Environmental Behavior Lifestyle Instrument

Please mark the following response that best represents your lifestyle. Copied from;

1) I read nature or environmental magazines and books.

(1) Never ____ (2) Sometimes ____ (3) Frequently ____

2) My household recycles glass, paper, plastics, and/or other material.

(1) Never ____ (2) Sometimes ____ (3) Frequently ____

3) I participate in environmental and conservation groups.

(1) Never ____ (2) Sometimes ____ (3) Frequently ____

4) I have participated, within the previous year, in one of the following outdoor activities (Please check all that apply):

Backpacking _____ Hiking/Running trails _____ Ballooning _____

Gardening _____ Open water swimming _____ Camping _____

Fishing/Hunting ____ Nature photography _____ Geocaching _____

Bird watching _____ Mushroom collecting _____ Boating _____ Other (please list) _____

_____

_____

_____

_____

_____

Appendix J. Nature Relatedness Instrument

Please indicate your agreement or disagreement with the statements listed below. Report your response using the 1-5 scales below by circling the response that best represents your position toward nature.

1) My connection to nature and the environment is a part of my spirituality.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2) My relationship to nature is an important part of who I am.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

3) I feel very connected to all living things and the earth.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

4) I am not separate from nature, but a part of nature.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5) I always think about how my actions affect the environment.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

6) I am very aware of environmental issues.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

7) I think a lot about the suffering of animals.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

8) Even in the middle of the city, I notice nature around me.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

9) My feelings about nature do not affect how I live my life.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

10) Humans have the right to use natural resources any way we want.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

11) Conservation is unnecessary because nature is strong enough to recover from any human impact.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

12) Animals, birds, and plants have fewer rights than humans.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

13) Some species are just meant to die out or become extinct.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

14) Nothing I do will change problems in other places on the planet.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

15) The state of non-human species is an indicator of the future for humans.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

16) The thought of being deep in the woods, away from civilization, is frightening.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

17) My ideal vacation spot would be a remote, wilderness area.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

18) I enjoy being outdoors, even in unpleasant weather.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

19) I don‘t often go out in nature.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

20) I enjoy digging in the earth and getting dirt on my hands.

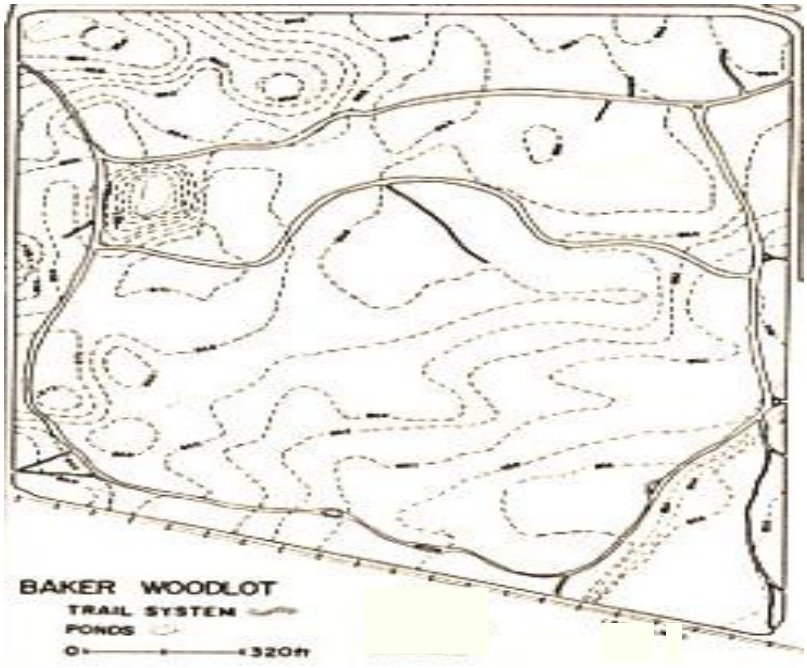
1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

21) I take notice of wildlife wherever I am.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Appendix K. Map of Research Site

Baker Woodlot Trails



Legend: BAKER WOODLOT, TRAIL SYSTEM line, PONDS circle, Scale 1 inch is 0 - 320 feet.

Figure 10: Map of research site.

The outer trail of the Baker Woodlot is approximately 2 miles and should take roughly 45 min – 1 hr to walk. The 50 acre site is managed to the highest level of protection and for lowest level of usage. The woodlot has been co-designated the Rachana Rajendra Neo Tropical Migrant Bird Sanctuary due to the opportunities to view an abundance of diversity throughout the area.

Appendix L. Affective Instrument

Please indicate on each of the 10 items listed below to best represent how you feel. Use the 1-5 scales to report your emotional response toward nature.

1) Mysterious	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Unmysterious
2) Awe-inspiring	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Uninspiring
3) Active	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Passive
4) Beautiful	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Ugly
5) Stimulating	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Relaxing
6) Joyful	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Depressing
7) Orderly	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Chaotic
8) Safe	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Threatening
9) Powerful	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Powerless
10) Pleasing	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Annoying
11) Inviting	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Repelling
12) Peaceful	___ (1) ___ (2) ___ (3) ___ (4) ___ (5)	Hectic

Appendix M. Qualitative Questions

Qualitative Emotional / Affective brief response Questionnaire.

1) How did the experience feel? Probe: What made you feel that way?

2) What wildlife did you wonder about during the walk? Probe: Why do you think you remembered the plants and/or animals that you did?

3) How has this experience affected your relationship with nature? Probe: What did you experience that affected this relationship?

3) Were there any similarities between this experience and your high school sport? Probe: In what ways were they different?

5) How did people in your high school neighborhood(s) use outdoor recreational space? Probe: How do you think daily engagement with nature-based recreation would affect the quality of their life?

6) How do you think your high school sport may/or may not have an effect on the emotional connections you formed during this nature-based experience? Probe: How do you think previous and future generations' nature-based recreation has/will affect emotional engagement with nature?

Appendix N. Quantitative Results

This Case Study had ten subjects and was too small of a group to confidently validate a significant correlation; however, with statistical consultation an ANOVA was performed to test effect of Sport on Pre-test Total NR, and was calculated using SAS 9.2. Sport variables (Hockey, Soccer, Football/Basketball/Baseball, Track) were the fixed factors with (3) levels. Each was treated with each person as a subject. The response variable was the Pre-test Total NR with counts in Poisson distribution. The assumptions for the ANOVAs were checked and a normal distribution was used. The response variable was NR with normal distribution. The normality and equity of various statistics were checked using residuals. SAS 9.2 did not report any significance between group means determined by a one-way ANOVA for sport at the $p<.05$ level.

Considering the study group used was too small to confidently validate a significant multiple linear regression, multiple simple linear regressions were calculated using SAS 9.2 to attempt a model of the relationship between "Affect Meaning" and variables NR for Experience, Self, Perspective Pre & Posttest differences). The relationship between affection and Pre- and Post – test difference was assessed using several individual linear regressions, by using PROCReg procedure in SAS 9.2. Difference in pre-test and post-test items attributed to NR: Experience, Self, Perspective were calculated to determine a change in "NR- Experience, Self, Perspective" from the experiential stage of the study. The assumptions for regression were checked and a normal distribution was used. Significant relationships were found between NR - Experience and Active – Passive having a F value of .0393, with R squared being .4307, and a Beta slope of .0393. And a significant relationship was found for NR – Self for both affective

indicators of Active - Passive having a F value of .0062, with R squared being .6288, and a Beta slope of .0062, and for NR - Self Stimulating -Relaxing having a F value of .0450, with R squared being .4132, and a Beta slope of .0450. If a greater population was surveyed validation of a significant linear regression from affective variables Active – Passive, and stimulating - Relaxing may be the best indicators to significantly predict variance in NR- Experience and Self difference.

APPENDIX O. Copy of IRB Application

EXEMPT CATEGORY

Name of Principal Investigator: Richard Paulsen

Title of Project: Sports and the Environment: A case study of former high school athletes' emotional engagement in nature-based recreation.

IRB #:

1. Select the appropriate exemption category(s) for research.
2. For each exemption category selected, complete the corresponding QUESTIONS.

A.	Category	B. QUESTIONS. *When explaining, provide protocol specific information.*
☐	**45 CFR 46.101(b)(1)** Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.	To qualify for this exemption, BOTH STATEMENTS answer must be YES. ☐N ☐ Y Research conducted in established or commonly accepted educational settings. *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* ☐ N ☐ Y Research involves normal educational practices. *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.*

Table 7 (cont'd).

x ☐	**45 CFR 46.101(b)(2)** Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.[1]	PRE-SCREENING QUESTION: x☐N ☐ Y Does the research involve children? If yes: x☐ N ☐ Y Does the research involve survey procedures, interview procedures, or observation of public behavior where the investigator will participate in the activities being observed? *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* To qualify for this exemption, statement answer must be YES. ☐ N ☐x Y Research involving use of educational tests, survey procedures, interview procedures, or observation of public behavior. *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.*

Table 7 (cont'd).

		If you answer <u>YES to BOTH</u> of the questions below, your research <u>DOES NOT QUALIFY</u> for this exempt category. ☐ N ☐x Y Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects. *Explain.* x☐ N ☐ Y Any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation *Explain.* If YES TO BOTH, STOP. R*esearch does not qualify for this exemption.*
☐	**45 CFR 46.101(b)(3)** Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section,	To qualify for this exemption, statement answer must be YES. ☐ N ☐ Y Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public

Table 7 (cont'd).

	if: (i) the human subjects are elected or appointed public officials or candidates	behavior that is not exempt under 45 CFR 46.101 (b)(2),
	for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.	*If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* To qualify for this exemption, ONE statement answer must be YES. ☐ N ☐ Y the human subjects are elected or appointed public officials or candidates for public office. *If yes, explain.* ☐ N ☐ Y Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter. *If yes, explain.* If NO TO BOTH, STOP. *Research does not qualify for this exemption.*
☐	**45 CFR 46.101(b)(4)** Research involving the collection or study of	PRE-SCREENING QUESTION

Table 7 (cont'd).

	existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.	☐ N ☐ Y Are the data, documents, records, pathological specimens, or diagnostic specimens existing as of today (when this application is being submitted)? *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* QUESTIONS To qualify for this exemption, statement answer must be YES. ☐ N ☐ Y Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens. *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* To qualify for this exemption, ONE statement answer must be YES. ☐ N ☐ Y Sources are publicly available. *If yes, explain.*

Table 7 (cont'd).

		☐ N ☐ Y Information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. *If yes, explain.* If NO TO BOTH, STOP. *Research does not qualify for this exemption.*
x ☐	**45 CFR 46.101(b)(5)** Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine: (i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. [2]	To qualify for this exemption, statement answer must be YES. ☐ N x☐ Y Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* To qualify for this exemption, ONE statement answer must be YES. Projects are designed to study, evaluate, or otherwise examine: ☐ N ☐x Y Public benefit or service programs

Table 7 (cont'd).

		If yes, explain. x☐ N ☐ Y Procedures for obtaining benefits or services under those programs *If yes, explain.* x☐ N ☐ Y Possible changes in or alternatives to those programs or procedures *If yes, explain.* x☐ N ☐ Y Possible changes in methods or levels of payment for benefits or services under those programs *If yes, explain.* If NO TO ALL, STOP. *Research does not qualify for this exemption.*
☐	**45 CFR 46.101(b)(6)** Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe,	☐To qualify for this exemption, statement answer must be YES. ☐ N ☐ Y Taste and food quality evaluation and consumer acceptance studies, *If no, STOP. Research does not qualify for this exemption.*

Table 7 (cont'd).

	or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.	*If yes, explain.* To qualify for this exemption, ONE statement answer must be YES. ☐ N ☐ Y Wholesome foods without additives are consumed *If yes, explain.* ☐ N ☐ Y A food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by FDA or approved by EPA or Food Safety and Inspection Service of USDA. *If yes, explain.* If NO TO BOTH, STOP. *Research does not qualify for this exemption.*
☐	**Demonstration Project Category 7.** Research involving existing sets of identifiable data and pose no more than	PRE-SCREENING QUESTION

Table 7 (cont'd).

	minimal risk to subjects and must not contain any of the following: • Federal funding or federal training grants • Sponsor or other contractual restrictions • Previous restrictions on data use • FDA regulated components • Receipt of an NIH certificate of confidentiality to protect identifiable research data • Research subject interactions and interventions	☐ N ☐ Y Are the data sets existing as of today (when this application is being submitted)? *If no, STOP. Research does not qualify for this exemption.* *If yes, explain.* ☐ N ☐ Y Any disclosure of the human subjects' responses outside the research could reasonability place the subjects at risk of criminal or civil liability or be damaging to the subjects standing, employability, or reputation? *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* QUESTIONS To qualify for this exemption, statement answer must be YES. ☐ N ☐ Y Research involving existing sets of identifiable data.

Table 7 (cont'd).

		If no, STOP. Research does not qualify for this exemption. *If yes, explain.* To qualify for this exemption, statement answer must be NO to ALL. ☐ N ☐ Y Federal funding or federal training grants *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* ☐ N ☐ Y Sponsor or other contractual restrictions. NOTE – review of the contract is necessary. *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* ☐ N ☐ Y Previous restrictions on data use *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* ☐ N ☐ Y FDA regulated components *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.*

Table 7 (cont'd).

		☐ N ☐ Y Receipt of an NIH certificate of confidentiality to protect identifiable research data *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.* ☐ N ☐ Y Research subject interactions and interventions. *If yes, STOP. Research does not qualify for this exemption.* *If no, explain.*

[1] Research Involving Children: Exemptions at 45 CFR 46.101(b)(1) and (b)(3) through (b)(6) are applicable to this subpart [subpart D]. The exemption at §46.101(b)(2) regarding educational tests is also applicable to this subpart. However, the exemption at §46.101(b)(2) for research involving survey or interview procedures or observations of public behavior does not apply to research covered by this subpart, except for research involving observation of public behavior when the investigator(s) do not participate in the activities being observed. 45 CFR 46.401(b)

[2] OHRP Guidance for 45 CFR 46.101(b)(5): 1) The program under study must deliver a public benefit (e.g., financial or medical benefits as provided under the Social Security Act) or service (e.g., social, supportive, or nutrition services as provided under the Older Americans Act). 2) The research or demonstration project must be conducted pursuant to specific federal statutory authority. 3) There must be no statutory requirement that the project be reviewed by an Institutional Review Board (IRB). 4) The project must not involve significant physical invasions or intrusions upon the privacy of participants. 5) The exemption should have authorization or concurrence by the funding agency.

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LITERATURE CITED

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