EXAMINING MODE OF EXPERIENCE: IMPLICATIONS FOR LINEAR TRAIL DESIGN AND CONFLICT MANAGEMENT

A Thesis

by

JAMIE RAE WALKER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2003

Major Subject: Recreation, Park and Tourism Sciences

EXAMINING MODE OF EXPERIENCE: IMPLICATIONS FOR LINEAR TRAIL DESIGN AND CONFLICT MANAGEMENT

A Thesis

by

JAMIE RAE WALKER

Submitted to Texas A&M University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Approved as to style and content by:

C. Scott Shafer (Chair of Committee)	James H. Gramann (Member)
Roger S.Ulrich (Member)	Joseph T. O'Leary (Head of Department)

May 2003

Major Subject: Recreation, Park and Tourism Sciences

ABSTRACT

Examining Mode of Expereince: Implications for Linear Trail Design and Conflict Management. (May 2003)

Jamie Rae Walker, B.S., Texas A&M University

Chair of Advisory Committee: Dr. C. Scott Shafer

Jacob and Schreyer (1980) define mode of experience (i.e. the degree to which participants experience an environment as focused or unfocused) as one of four major factors underlying outdoor recreation conflict. To discover the degree to which mountain bikers and hikers focus in the environment and to identify the key environmental elements and cognitive processes relevant to creating the mode of experience and underlying conflict, Visitor Employed Photography, VEP, and follow-up interviews were combined to explore mountain bikers' and hikers' perceptual experiences.

Twelve mountain bikers (7 males, 5 females) rode about four and one half miles of the Lake Bryan East Loop Trail and 12 hikers (6 males, 6 females) hiked about 1.5 miles. Participants were given a digital camera and tape recorder and were instructed to stop and take a picture of whatever they were looking at right when they heard music play.

Findings indicate that mountain bikers tend to concentrate on *Trail Corridor* elements while forming or creating their *Path*/*Line* to travel, while hikers tend to look around, scan, or take in full views of *Wildlife, Vegetation,* and *Noises*.

Combined analyses suggest that mountain bikers photograph *On-Trail Tread-Specific* and *Path/Line* perceptions, while hikers photograph *Off/Off Distant-Views* of *Vegetation* and *Noises*. Consensus existed among both for photographing *On Distant* at *Trail Corridor* elements down the *Path/Line*; *On Distant* at *Trail Corridor* elements *Panoramic Forward*; and at the *Edge* of *Specific Vegetation* elements.

Interview findings indicate that participants rely on complex cognitive processes that involve focusing on many areas of the trail at one time. The participants' cue formation processes, foreground/background formation, goals, sequencing, and dynamic movement also influence their mode of experience.

Using the findings, this paper presents a graphic representation of mode of experience accounting for the changes participants experience, discusses lingering appraisals' effects on participants' future perceptions during linear trail experiences, discusses conflict mitigation using trail design techniques; provides design suggestions for diminishing hiker and mountain biker conflicts, suggests an adapted ROS, Recreation Opportunity Spectrum, to manage trails for setting based outcomes from a mode of experience perspective, and discusses integrating user participation in management decisions.

Dedicated
to my family, especially:

Cookie Grandma, Grandpa Ray, Momneen, Gran, Mom, Dad, Cindy, Bill, Patty, Nancy, David, Mary, Juli, Joanie, Joe, Janet, Jenny, Jerilynn, Al, Marilu, Hart, Tim, Kelly, Bill, Jack, Robert, Bert, Jesse, PJ, Alfred, Chris, Mike, Tony, Tashi, Molly, Hart, Elizabeth, Zack, Hannah, Billy, Brendan, Brian, Madeleine, Jacqueline, John, Benson, Austin, Dakota, Erica, Susan, Kristin, Molly, Amy, Kathryn, Omar, and Stephen;

to those who have taught me throughout my life;

and especially to those who have acted as my family and my teachers.

ACKNOWLEDGMENTS

I wish to express special thanks to:

My committee members, Dr. Scott Shafer, Dr. Jim Gramann, and Dr. Roger Ulrich, for the time and guidance they contributed throughout my graduate education and the thesis process.

The twenty-four participants who contributed their time (and patience when it rained) to this project, and who openly and passionately shared their recreation experiences and perceptions with me. I also appreciate the access, time, and assistance the Lake Bryan staff and Lake Manager, Ken Johnson, provided throughout my data collection.

Dr. Ulrich, for sharing his time and knowledge in order to ensure that his students understand research methods and know how to apply them within their own areas of interest.

Dr. Gramann, for delivering his constructive criticisms in such a compassionate manner that they are encouraging and inspiring.

Dr. Shafer, for chairing my committee; for providing his students with an education that extends beyond the classroom; for teaching like Ms. Bonkers by teaching everything - even the lessons we would prefer to avoid, but most importantly, for respecting each student's individuality and encouraging creative thinking.

The faculty in the Department of Recreation, Park and Tourism Sciences, especially Dr. Hodges, Dr. Floyd, Dr. Richardson, and Dr. Crompton, for advice that truly helped me through graduate school and this thesis.

Mrs. Keene, Mrs. Morzack, Ms. Bristol, Ms. Pierce, Ms. Weaver, and Dr. Clemente for providing me with a foundation that made this possible.

The RPTS Extension group: Kathryn, Robyn, LeAnne, Diane, Dr. Watt, and Andy and the RPTS staff: Vivian, Tina, Wilma, Marguerite, Doinan, and David for an invaluable amount of help and support.

My fellow graduate students, especially Jin, for making 402 even more fun and educational; Mike, for quizzing me on my theories and letting me vent; Marcos and Gon, for being silly; Jason, for expanding my horizons; and Sarah and Heather for the advice, encouragement, and support.

Janine, for offering me my first job in the field and for teaching me that passion and hard work make things happen.

The volunteers at the 24 hour panic hotline: Juli for having the 20/20 vision that I did not have and for trying to share it with me; Janet and Bert for the technical support; BoBo for "tutoring" me on holidays, joining me on my "field research" adventures and, most importantly, for reminding to take my own advice; and Mrs. White for reading through my final draft.

My roommates Erica, Kristin, and Susan for all the little things that added up, and especially to Bill and Doris for patiently living with me throughout the final writing stages. Stephen, Tristan, Tabby, Steve, Tyler, and Hunter for sharing their home with me when I needed to visit College Station.

Molly, Amy, and Kristine for being the best friends even when my thesis received more time and attention than anything else in my life. Ga Bear for coming to the games, giving me rides, analyzing parks on vacations, and kidnapping me so I could enjoy cow season! LK for ensuring that at least one person, other than me, has read this entire thesis for leisure and enjoyed it. And, for making the thesis process fun again! Chris, Omar, and Stephen for being there through it all but more so for making me laugh!

The Woodfin gang particularly Brian, Andy, and Nasher for contributing to a place and past that has inspired my education and career.

Grandma, for reminding me to take time to enjoy life. Momneene and Gran, for the lifelong lessons they shared with me those mornings before school.

My parents, for understanding how important this was to me and for knowing that a hug is always the best answer. Dad, for taking us swimming and to the lake all of the time. Mom, for signing us up for the recreation center and library programs; for

making us play outside; and for teaching me that I never had to go through anything alone.

My family, for raising me in an world that required me to learn environmental psychology; making the world a classroom; sharing what you learned with me; always reminding me why I love parks and recreation; and most importantly for loving me no matter what. Joanie, Benson, Robert, Jenny, Austin, and Jesse for the afternoon visits and “breaks”!

Kathryn Nachlinger, for her unconditional support and for sharing her family with me.

To the people who naturally smile or graciously go out of their way to help others out with the little things in life. The small gestures truly make a difference and change lives.

TABLE OF CONTENTS

Page

Page

LIST OF FIGURES

FIGURE Page

FIGURE Page

FIGURE Page

FIGURE Page

LIST OF TABLES

TABLE Page

TABLE Page

CHAPTER I

INTRODUCTION

Outdoor recreation research assists managers and planners in addressing land use issues and site design problems. Research examining activity groups' experience differences and preferences is particularly important when conflicts occur among user groups that share lands.

In an effort to advance outdoor recreation conflict literature beyond merely describing conflict situations and to assist in explaining what factors underlie outdoor recreation conflicts, Jacob and Schreyer (1980) developed a theoretical framework based on four factors. Their third factor was termed the mode of experience and explained how outdoor recreation participants' environmental perceptions influence or underlie conflict. Jacob and Schreyer's (1980) discussion regarding environmental perception relies largely on the idea of a focus continuum along which some recreationists stop and examine the environment in great detail while others remain in an unfocused state. The authors' discussion primarily addresses perceptual experiences at the continuum extremes and, therefore, provides a limited understanding of how the detailed examination of the environment concept applies to various user groups. These limitations make it difficult to understand how groups of participants, such as mountain bikers, skiers, and trail runners that do not stop, but value and focus on some natural elements, perceive the environment.

This thesis follows the *Journal of Park and Recreation Administration* format.

Research needs to expand on Jacob and Schreyer's (1980) conflict theory in order to assist managers and planners in addressing specific user group problems such as the escalating conflicts between mountain bikers and hikers on shared use trails throughout the country (Shuett, 1997).

Research relying on Jacob and Schreyer's (1980) conflict theory explains that conflicts exist between mountain bikers and hikers because of both groups' activity style and preference differences (Ramthum, 1995; Hoger and Chavez, 1998; Moore and Barthlow, 1997). These studies often infer that the hikers experience the environment in detail while the mountain bikers speed through the trails in a spatial blur. Thus, park directors typically manage conflicts by separating use, rotating use, or closing trails to one user group. Meanwhile, popular literature articles attempt to gain support for sharing trails. Some of this popular literature, such as trail experience descriptions, also point out that mountain bikers do examine some detail during their experiences (Barlow 1990a and Youman and Youman, 1999).

Managers and planners need research specifically examining mountain bikers' and hikers' modes of experience. They also need a reliable comparison of both groups' experience differences and preferences. Research also needs to broaden the current knowledge base about the outdoor recreationist's perceptual experience. And it needs to develop the general understanding of the mode of experience concept in order to advance and better inform discussions addressing how such factors contribute or relate to conflict situations.

This study applied environmental psychology and specifically Visitor Employed Photography, VEP, theories and methodologies to explore and understand the mode of experience concept. Such research is often used to gather and develop external representations of perceptual experiences and to understand the complex processes contributing to participants' environmental experiences (Cherem and Driver, 1983). By using these methods to further our knowledge about the elements and processes underlying mode of experience, a better understanding of the concept can be developed.

PURPOSE

The purpose of this study was to use research based in environmental perception to explore the third factor that Jacob and Schreyer (1980) suggest as underlying outdoor recreation conflict: the mode of experience. In an effort to contribute to understanding the concept, the study was designed to gather data on mountain bikers' and hikers' cognitive experiences in order to discover how and where they focused in the environment. Furthermore, the study aimed to identify the key environmental elements and cognitive processes relevant to creating the mode of experience and to stimulate discussion regarding how such factors within the mode of experience relate to or underlie conflict in general.

CHAPTER II

LITERATURE REVIEW

CONFLICT THEORY IN OUTDOOR RECREATION

Outdoor recreation settings provide opportunities to experience the natural environments that influence a participant's activity satisfaction (Appleton, 1996). Participants depend on these surroundings in order to achieve intended outcomes or specific goals. How participants perceive their surrounding environment or outdoor recreation setting is an integral component to attaining satisfaction and is susceptible to interference or conflict (Jacob and Schreyer, 1980).

To assist in explaining how factors such as environmental perception underlie outdoor recreation conflicts, Jacob and Schreyer (1980) developed a theoretical framework based on four classes: 1) the participants' activity style, their extracted activity meaning; 2) resource specificity, their association with recreation resources; 3) mode of experience, their perception of the surrounding environment; and 4) lifestyle tolerance, their acceptance level for other users.

To understand the role environmental perception plays in conflict, the authors rely on their third factor, the mode of experience: "the varying expectations of how the natural environment will be perceived" (p. 370). They theorize that the mode of experience creates or contributes to conflict when sensory interactions ranging along a focus continuum create variations in participants' interactions with nature. Thus, conflict often occurs when user groups or participants interact with nature in ways that

require them to observe the setting with differing degrees of attention and in varying amounts of detail.

Jacob and Schreyer suggested that a participant's acceptance level for such encounters was based on the degree to which the individual experiences the environment as focused or unfocused. The participants' potential for conflict in the experience depends on the extent that their activity goals require them to interact with and focus on specific elements in the setting.

At the focused end of Jacob and Schreyer's (1980) continuum, the level with the most potential for conflict, individuals attend to specific setting factors. While in this mode, participants prefer to stop and interact with nature to examine detail. In such situations, they have little tolerance for disturbances that prevent them from assessing and appreciating nature.

At the unfocused end of the continuum, participants pay little or no attention to detail. They value movement over environmental interaction and perceive general spatial representations in the setting as opposed to specific details. In this situation, participants value the natural setting and how it contributes to the experience, however, "specific sensory inputs are unimportant" (Jacob and Schreyer, 1980, p.375). The individual participates in the activity for the rush and intensity of moving through clumps of trees and not to examine minute details about an individual tree. On the extreme end of the unfocused continuum, an individual might choose an activity that is essentially a "roller coaster" (p. 375) primarily to enjoy rapid movement with no concerns or value regarding the surrounding environment.

Jacob and Schreyer (1980) propose that there is a high possibility for conflict when participants in the "focused" mode encounter participants in the "unfocused" mode. The level at which conflict might occur depends directly on how far apart these participants' experiences fall on the focus continuum. For example, hikers need to stop and interact with the environment by holding and examining rocks, identifying wildlife, and developing an intimate knowledge of their natural surroundings. When an experience such as the hikers' falls on the focused end the continuum, an unfocused participant speeding by and interrupting the experience easily disturbs the hikers' mode.

Many groups involved in outdoor recreation conflicts, such as mountain bikers, participate in the activity to enjoy the experience of motion and for the valuable opportunity to interact with nature (Jacob and Schreyer, 1980). These user groups might also be relying on detailed examination of the environment in order to meet their experience goals. For example, mountain biking trail descriptions often discuss modes or ways of experiencing the environment during which trees rush by in a green blur and logs in the tread appear in great detail (Barlow, 1990b;Youman and Youman,1999). Researchers know little about mountain bikers' or other outdoor recreation participants' perceptual experiences. Thus, beyond simply determining or discussing that some groups' modes of experience differ from other groups', current research does not address how their perceptual differences or "detailed examination of the environment" (Jacob and Schreyer, 1980, p.375) influence or create conflict.

MANAGEMENT OF MULTI-USE TRAILS

Over the last two decades, an increase in mountain biking participation has created an increase in the demand for trail space and access (Chavez, Winter, and Bass, 1993; Hollenhorst, Schuett, Olson, and Chavez, 1995). Michael Schuett (1997) found that 77% of the 47 state park directors who manage mountain biking on their lands have had conflicts occur between mountain bikers and other trail users. Fifty-six percent (56%) of the managers reported that such conflicts transpired between hikers and mountain bikers. Studies examining hiker and mountain biker conflicts indicate that mountain bikers' experiences differ from hikers' due to the speed and intensity of the mountain biking activity; however, little research has specifically studied the mountain bikers' experience (Ramthun, 1995; Hoger and Chavez, 1998; Moore and Barthlow, 1997). Therefore, these studies' implications call for a need to learn more about the mountain bikers' preferences, use patterns, and characteristics (Hollenhoerst, Shuett, Olsen, and Chavez, 1995).

Symmonds, Hammitt, and Quinsenberry (2000), in determining mountain bikers' preferences for soil erosion control techniques and their impact on the mountain biker's experience, found that mountain bikers have a general preference for the presence of roots, rocks, and gullies, for a mix of steep and gentle slopes, and for the presence of turns, bumps, jumps, and obstacles. They also learned that wide trails distracted slightly from the experiences, and roots and rocks added to the biking experience significantly more that all other factors of soil erosion.

Cessford (1995), in his profile of mountain biking participants and their preferred recreation setting and experiences preferences, found that overall participants preferred rough, uneven, tight and narrow tracks; however, all riders enjoyed a variety of vegetation, topography, and trail tread conditions. He also found that most riders are not motivated by racing; nor do most riders rank racing as one of their top three preferred riding features.

Mountain biking books, magazines, and trail guides discuss mountain bikers' preferences for tight, rough terrain and their need to concentrate on the immediate environment. These trail experience descriptions explain how some mountain bikers choose routes on which distinct land formations make it possible to identify paths with ease (Barlow, 1990b); how they are forced to ignore or simplify the surrounding environment in order to focus on maintaining control and direction along the path; and how they reach a state of mind and movement that allows the individual, bike, and trail to flow harmoniously as one (Barlow, 1990a).

Symmonds, Hammitt, and Quinsenberry (2000) discuss the lack of research exploring mountain bikers' needs and preferences. In addition, Cessford (1995) discusses the need for research to examine the type and differences of walkers' perceptions of mountain biking to better understand the important elements underlying conflict and to possibly determine which hikers' experiences are more influenced by bikers. These descriptions and previous research studies reveal the importance of understanding and comparing the mountain bikers' and hikers' perceptions or modes of experience.

Cherem (1973) determined that hikers view object types (people, human signs, water, trails, trees, fields, animals, flowers, and shrubs) and sensory contrasts (sound-motion, strong odors, bright colors, high viewpoints, extremes of enclosures, size extremes, extreme groupings/singularity, textural extremes, regular patterns, and incongruous forms). Hull and Stewart (1995) explored the hikers' landscape experience and found that participants looked at the ground (rocks and trail); mountain and valleys; water (lakes and rivers); vegetation (trees and other); ephemeral (snow and wildlife), other people in the landscape; and other (signs, sky, view of oneself).

By learning more about how both groups' activities influence their processing and organization of the settings they experience, findings can better inform researchers, managers, and planners about how mountain bikers' and hikers' modes of experience compare. Furthermore, understanding their similarities and differences might assist in determining what perceptual factors and settings encountered might underlie or deter conflict situations.

ENVIRONMENTAL COGNITION

Learning and understanding more about recreationists' perceptions can provide a better basis for understanding mode of experience and how various forms of "detailed examinations of the environment" (Jacob and Schreyer, 1980, p.375) contribute to conflict.

Understanding complex perceptual experiences relies heavily on understanding cognitive experiences. Cognitive psychology, or more specifically cognitive mapping, is

often used to understand what information and what degree of detail participants take from the environment, and how they organize, deliberate, and cope with the richness of information within the environment (Golledge, 1976). Cognitive mapping can also provide a representation of the environmental experience (Kaplan and Kaplan, 1982).

Research based in environmental perception can assist outdoor recreation conflict researchers in gathering experience descriptions, determining key cognitive processes relative to the mode of experience, and in identifying significant environmental factors valued during the experience. Accordingly, researchers can review what elements participants focus on or value in the setting and what elements blend to form what Jacob and Schreyer have defined as spatial or general landscape formations. In turn, the added depth can serve as a catalyst to discuss how such processes and features contribute to or underlie conflicts with other groups or participants and deepen the theoretical perspective on how mode of experience factors underlie conflict in general.

Many cognitive processes or key variables contribute to and explain the ways that the environment is experienced. Developing an understanding about cue formation, foregrounds and backgrounds, and other processes might provide insight relating to many of the factors that help define and explain focused and unfocused experiences. Some of these include the participant's degree of focus, specific perceptual values, stimulus, viewing time, spatial relationships, interaction, fleeting images, and detailed interactions.

In the *Image of the City*, Kevin Lynch (1960) used sketch maps and interviews to study citizens' knowledge about their environments in order to understand what images

they formed. His seminal book developed a foundation for understanding how individuals organize their surroundings by using and forming elements such as landmarks, paths, edges, regions, and districts. His work instigated further research that advanced the knowledge base, methods, and theories used in environmental cognition and cognitive mapping studies. Some of these include specific areas that relate to Jacob and Schreyer's mode of experience, such as cue formation, the grouping of similar elements, the formation of foregrounds and backgrounds, hierarchies, sequencing, and the influence of existing environmental forms, participant goals, expectations, and experiences on perception (e.g., Lynch, 1960; Kaplan and Kaplan, 1982).

Goals and Perception

Because people process multiple elements at one time, focusing on some and ignoring others, the perceiver's goals or intended actions can influence how and what features are organized (Lynch, 1960;Neisser, 1976). The elements chosen to create the image represent the individual's goals and activities within the setting (Lynch, 1960; Golledge, 1991). These purposes, along with the setting's limitations and demands, shape choices and behaviors. The settings or elements encountered can also influence goals or create new ones (Lynch, 1960). For example, a hiker might start off simply wishing to enjoy nature and then see a unique flower and then continue to look for more flowers.

The Cue Formation Process

The individual's cognitive processes create patterns and select important cues, or valued elements, within the setting in order to influence what, where, and how activity and movement occurs (Kaplan and Kaplan, 1989). To reduce complexity, perceivers choose important and relevant cues from among those available. These cues often represent the valued elements of the experience that receive greater attention and appear in more detail.

Perceiving Foregrounds and Backgrounds

Cues distinctively stand out from the elements or patterns forming the background, or the larger picture (Kaplan, R. 1976). This part of the image assists users in understanding the element's context and thus aids in determining how to move through or around it (Kaplan, and Kaplan, 1982). The extra information, referred to as the background (Kaplan, S. 1976), often forms regions separate from the relevant or foreground elements and terrain. When cues take on the form of a line or path, the additional elements might automatically become background information (Kaplan and Kaplan, 1982).

Cognitive involvement during speed activities, such as mountain biking, creates limitations on views and on the amount of attention elements receive. Increases in speed require that individuals simplify surroundings that typically provide vast amounts of information, by specifying and deciphering key elements in order to progress through the environment. To do this, individuals must use shortened viewing times and limited

thought and mental storage (Kaplan, 1972). When under such demands, individuals might automatically group related or similar elements to form chunks and segments (Allen and Kirasic, 1985). If elements are experienced consistently, the participant clusters the elements into groups in order to understand how to travel through the surroundings (Kaplan, 1972). These features' repetition and continuity can often create regions or areas. For example, on trails, common ground textures tend to form the path and clustered trees and shrubs create the surrounding environment (Kaplan, Kaplan, and Ryan, 1998).

The Role of Sequencing in Perception

Everything is perceived and processed as part of its environment and as part of a stream of elements encountered in a specific order. Thus, perceptions are influenced by what is experienced prior to and following this specific element. Such sequences can be influenced by the time, distance, and order in which they are encountered (Lynch, 1960).

Hull and Stewart (1995) explain that hikers can perceive elements in different sequences. The varying sequences encountered can influence other perceptions such as the amount of novelty or change experienced in a setting. Thus, to better understand how and why participants choose cues, foregrounds, and backgrounds or why they appraise elements the way they do, it is important to understand what part these elements play in what sequences.

A Holistic Understanding of Perception

When discussed or viewed on their own, cues simply imply relevance to patterns and features within the environment. Cues must be considered as part of the setting and valued within a sequence in order to comprehend their holistic significance and the perceiver's complete image and experience. (Kaplan and Kaplan, 1982). For example, saying that rocks contribute to the mountain biker's experience does not fully explain why the rock is valued or significant to a mountain biker traveling along a trail. Because the background, or of value unfocused portions, gives meaning to the cues and because similar or related cues often join to form backgrounds, different recreation goals or objectives allow the same setting to be perceived in varying forms.

For a mountain biker, a rock may provide a unique, focused element while the trail surroundings form spatial or general landscape formations to fit into and maneuver around. For a hiker, the same rock may go unnoticed or be generalized as part of the trail tread while the surrounding vegetation provides a myriad of significant cues such as unique trees, shrubs, or wildlife habitats. Consequently, understanding the experience comprehensively can assist in addressing Jacob and Schreyer's (1980) question regarding why identical settings are sources of conflict for some groups or participants and not others.

IMPLICATIONS FOR UNDERSTANDING MODE OF EXPERIENCE AND CONFLICT

Understanding the mode of experience by examining cues, backgrounds and foregrounds, goals, and sequencing in relation to each other can enhance existing depictions of the outdoor recreation participants' interaction with and "focus" on the surrounding environment. This approach can provide a better basis for why some elements are not focused on, yet are still valued, and others are examined or viewed in detail. Furthermore, understanding the experience holistically can point out how these perceptual differences might underlie or create conflict with other groups or participants. In turn, developing a better understanding of the mode of experience concept can provide managers and planners with a foundation for the design and policy needs of specific-use and multi-use recreation areas.

PURPOSE

The purpose of this study was to use research based in environmental perception to explore the third factor that Jacob and Schreyer (1980) suggest as underlying outdoor recreation conflict: the mode of experience. In an effort to contribute to understanding the concept, the study was designed to gather data on mountain bikers' and hikers' cognitive experiences in order to discover how and where they focused in the environment. Furthermore, the study aimed to identify the key environmental elements and cognitive processes relevant to creating the mode of experience and to stimulate

discussion regarding how such factors within the mode of experience relate to or underlie conflict in general.

The following questions were used to guide this study:

RQ1: Where do mountain bikers and hikers focus during their trail experiences?

RQ2: What, if any, cues, backgrounds, or foregrounds do mountain bikers and hikers form within their mode of experience?

RQ3: What environmental factors or cognitive processes, such as sequencing and goals, are a part of and valuable in mountain bikers' and hikers' modes of experience?

RQ4: Do mountain bikers perceive elements in detail while experiencing the trail environment?

RQ5: How do findings underlie or relate to outdoor recreation conflict?

CHAPTER III

METHODOLOGY

SETTING

Data collection took place from March 15, 2002, until May 11, 2002. All participants hiked or rode a portion of the East Loop Trail at Lake Bryan in Bryan, Texas (see Figure 1). The Lake Bryan Trails are used by mountain bikers, hikers, and trail runners and were easily accessible to all participants and the researcher.

The Lake Bryan loop trails are rated as intermediate to difficult mountain biking trails and are primarily composed of single track, forested environments. The trail segments chosen provide diverse settings for both hikers and mountain bikers. The trail runs next to the lake levee and at times climbs, crosses over, and descends down from the levee. The trail winds in and out of tight, curvy, wooded, areas, open, flat spaces, loosely forested areas; and -on top of the levee- continues on a gravel service road. The terrain consists of rocky areas, sandy tracks, flat, packed portions, and creek crossings.

Figure 1. Lake Bryan East Loop Trail map.

DATA COLLECTION STRATEGIES

Using Visitor Employed Photography (VEP), trail descriptions, and in-depth interviews, this study was designed to obtain mountain bikers' and hikers' trail photos and descriptions that depict the participants' modes of experience (e.g., degree of focus or attention to detail and value of trail features). This includes examining photos taken during their trail experiences; their descriptions of trail experiences; discussing what key elements and cognitive processes are relevant to creating their modes of experience; and discussing how elements and processes contribute to outdoor recreation conflict.

Visitor Employed Photography, VEP, research provides an understanding about what participants view or value in their surrounding environments. Cherem (1973) examined participants' responses to a nature trail by giving them cameras and asking them to photograph anything of interest during their hike (12 frames). The hikers were also asked to fill out a tally sheet after each picture describing their photograph. Finally, they were asked to rate their top three photographs.

Using content analysis, Cherem (1973) divided the pictures into two categories consensus photographs (e.g., scenes with identical attributes captured by multiple hikers) and thematic photographs (e.g., pictures of common subject matters such as flowers or animals at different scenes or places). A consensus photo's strength represents the percentage of different hikers taking the consensus photo.

Cherem and Driver (1983) reviewed the Michigan Trail Study done in 1973, the Colorado Study done in 1975, and the Huron River Study done in 1976. They explained that in the 1973 study, Cherem used VEP in a controlled linear setting and thus the

participants viewed the same land areas in the same general order. In the Colorado study, participants were asked to take pictures of anything of interest to them and not of anything they wanted to as Cherem (1973) did. The Huron River Study sampled canoeists on the river trip. Half of the respondents were asked to take pictures of positive or appealing elements and the other half to photograph negative or unappealing elements. These methods pointed out the implications the researcher's directions have on the results obtained.

Hull and Stewart (1995) combined a modified version of VEP and experience sampling methods. They interrupted hikers about every ten minutes during their hike and asked them to take pictures of what they looked at and to respond to a short survey regarding their concurrent feelings.

The authors adapted the photography methods that usually ask participants to take pictures of what they find interesting, positive, or negative, to account for the dynamic experience (e.g., moving through the environment, sequencing, and social activities). Accordingly, participants were provided a camera, tape recorder, and questionnaire. Next, they were instructed to take a picture of what they were looking at when they first heard the voice on the tape recorder and then immediately fill out the one-page questionnaire of 20 fixed items. A tape recorder was used instead of the beeper typically used in experience sampling. As a result, the hikers took nine pictures and filled out nine questionnaires during ninety minutes of hiking (Hull and Stewart, 1995).

For the purpose of this study, follow up interviews were used to complement VEP in order to understand and compile what information and the degree of detail participants

take from the environment, and how they organize, deliberate, and cope with the richness of information within the environment (Gollege, 1976).

Appleyard, Lynch, and Myer (1963) explained that the camera, compared to the human eye, takes too much information in focus. It does not account for the smaller amount of focus the human eye has and the extreme amount of peripheral vision the human uses when perceiving the environment. Furthermore, a still picture does not shift its center of attention from one object to another as the human eye does (Appleyard, Lynch, and Myer, 1963).

Follow-up interviews and questionnaires were also used to capture the dynamic experience. Hull and Stewart (1995) explored the landscape encountered and experienced while hiking. The authors created an operational definition of experienced landscape, adapted and combined methods to sample the experienced landscape, and explored the uses and potential for data regarding how far hikers look as they hike and what concurrent subjective experiences occur while encountering the elements they view.

The follow up interviews in this study also assisted in clarifying meaning and developing the researcher's understanding of participant's pictures. This step allowed the researcher to further investigate participants' perceptions in order to avoid making unsupported assumptions about picture data (Golledge, 1976). In reviewing studies in cognition and perception, Gollege (1976) discussed that it is false to believe that participants do not use an area if they do not mention it. Thus, participants in this study were also asked about areas they were not looking at.

PROCEDURES

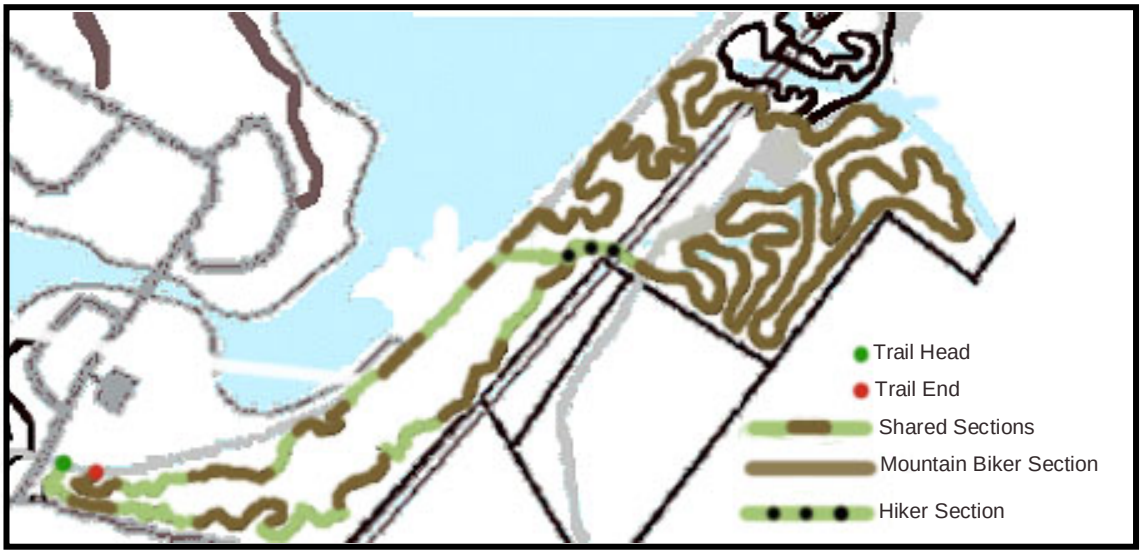
After confirming that participants understood the physical and time commitments required to complete the data collection procedures, times were scheduled with individuals to meet at the lake. Meetings were rescheduled when weather conditions prevented trail use. Follow-up interviews were scheduled through e-mail after a majority of the on-site activities were completed.

Hikers and mountain bikers met the researcher at the trailhead parking lot. Each participant was given a digital camera, a tape recorder (or a watch), and a back up point-and-shoot camera. The items were carried in a bike pack (provided) or a hiker's pack (provided). Some hikers chose to carry the camera using the neck strap and some mountain bikers carried the camera in jersey pockets.

All participants were instructed to start the tape at the trailhead and begin their hike or ride. They were also informed that they would hear music about every four and a half minutes. At this time, participants were instructed to stop and take a picture of whatever they were looking at right when they heard the music start. Mountain bikers were asked to back up if they needed to in order to capture whatever they were looking at when they heard the music begin. When the tape recorder was not available or not working, a watch was used that beeped every four and half minutes. The tape (or watch) played continuously and did not have to be stopped or restarted by the participants. Participants who hiked over 45 minutes had to flip the tape one time. This step was timed to take place while the participant was stopped to take a picture.

Prior to leaving, all participants were asked to confirm the procedures, were shown their route on the trail map, and were asked to take a practice shot with the camera. Finally, a "tag" shot was taken indicating the participant's identification code.

Figure 2. The routes that the mountain bikers and hikers took on the East Loop Trail.



As shown in Figure 2, all participants started at the same trailhead. The hikers hiked the first part of the East Loop Trail, backtracked a small portion, hiked up the levee, and then completed the final portion of the trail [about 1.5 miles]. The mountain bikers rode the first half of the East Loop Trail [about four and one half miles].

The distances for their activities were chosen as an attempt to acquire at least eight photographs from each participant. A set trail distance, rather than activity time, was used so that the experience would account for the participants' modes of experience throughout the entire activity- beginning to end. Set distances and specific routes were

also chosen so that the mountain bikers and hikers would experience some of the same trail segments.

When participants returned from their trail activities, they completed a short questionnaire of general information such as age, ability, and education. At this time, they also commented about any problems they had, such as taking a picture twice because they were not sure if they had captured the image; taking a picture of a bird and it flew away; or taking extra pictures that were not part of the study. Finally, participants answered a few open ended questions to indicate what elements they did not take pictures of but wanted to, what sounds influenced their experience, and they were asked to write a description of how they experience the environment.

Open ended questions:

- Are there any features or elements that you did not take pictures of that would also depict what you focus on during your walk or ride? Are these features or elements positive, negative, or neither?
- Were there any sounds that cued where you looked or that influenced your experience? Were they positive or negative influences?
- Briefly, as if closing your eyes and visualizing your experience, explain how you experience the trail elements. Be sure to include any features, sounds, or sensations that contribute to the mode in which you experience the environment.
- Is there anything about the trail experience that you wanted to include, but had difficulty trying to express?

After the survey was completed the researcher recorded the frame numbers for their pictures.

Hikers took an average of 11.25 pictures each for 135 total hiking pictures. Mountain bikers took an average of 8.3 pictures each for a total of 100 mountain biking pictures.

Seven pictures (2 mountain biker and 5 hiker) could not be used due to recall bias. Fourteen pictures (5 mountain biker and 9 hiker) could not be used because nine were of "extra" elements (e.g. flowers, a snake, and the sunset that participants took when the timer had not gone off) and five denoted problems such as marking when flipping the tape, taking a picture with the lens cap on, and starting over after taking one picture because of technical difficulties with the tape player. In addition to the pictures not used, one mountain biker only took two pictures because the tape player kept stopping and then she became confused about what portion of the trail she should be taking.

FOLLOW- UP INTERVIEW PROCEDURES

All pictures were imported as backgrounds into individual power point slides for follow-up interview purposes. The pictures and immediate follow-up interview data results (see Appendix A) were reviewed to formulate additional interview questions and to determine if participants needed to clarify or expand upon any responses.

Each participant met with the researcher at a later date to discuss his or her pictures. At this time, participants viewed all of the pictures in order to review his or her

experience and to confirm that they were the right pictures. Next, participants viewed each picture and discussed what he or she was looking at in each frame. When possible, the researcher or participants used drawing tools in power point to physically indicate where the participant was focusing and on what (see Figure 3).

Figure 3. Example of how participants used drawing tools in Microsoft Power Point to indicate where they focused during their trail experiences.

Further discussion involved understanding the role of the surrounding environment, and the factors related to mode of experience. The questions following the frame-by-frame focus discussion typically clarified the participants' responses and allowed them an opportunity to expand on specific topics.

- What were you taking the picture of/what were you focusing on during the picture? Is it positive/negative/or neither?
- How does the picture depict the trail experience compared to what you actually experienced? (Is the cone of vision the same? Would the degree of focus on all elements be the same as in the picture? Are important sounds or sensations missing?)
- If pictures are taken of specific elements, discuss if the experience would change if the surrounding elements were not there or if they were different. (Reference frame number)
- Were there any elements that you focused on or that caused you to focus on something that you could not capture in a picture (such as a sequence, lighting, sound, wind, etc)? Do any such elements influence your focus along the trail in areas that you did not take pictures?
- What happens to the area that you are not focusing on? Is this area positive or negative?
- What influences you to focus on elements the way you do or do not?
- Do you maintain the same degree of focus or mode of experience throughout the entire experience?
- If your degree of focus changes, what influences it to change?
- Is this change or lack of change good or bad?
- Does your mode of experience or focus differ when you recreate alone compared to when you recreate with others?

SUBJECTS

Trail users volunteered to participate in the study by responding to list-serve messages or referrals posted to the Brazos Valley Mountain Biking Association, the Texas A&M University Cycling Club, and to students in the Department of Recreation, Park, and Tourism Sciences at Texas A&M University. The list-serve messages explained the on-site activities and follow-up interview requirements. The message also offered every participant who completed the on-site activities a five-dollar gift certificate to the local grocery store and a chance (1 in 24) to win a fifty-dollar gift certificate after completing the follow-up interview. The messages sent to the graduate student list-serve asked them to refer potential participants. Graduate students with previous course work in environmental assessment were asked to refrain from participating in this study.

Ten mountain bikers were selected in response order. One participant responded to a follow-up e-mail sent to the Texas A&M University Cycling Club Vice President as an attempt to locate two typical college-aged female mountain bikers. The final mountain biker was approached at the trailhead parking lot and agreed to participate for a total of twelve.

Ten hikers were selected in response order. A professor in the department referred the last two hikers (typical college-aged males).

Table 1. Participant demographics.

Demographics	Mountain Biker [a]	Hiker [a]	Total
Gender			
# Male	7	6	13
# Female	5	6	11
Average Age (years)	34	33	34
Education			
% Some College	33.3	33.3	33.3
% College Graduate	66.7	66.7	66.7
Ability			
% Beginner	8.3	25.0	n/a
% Intermediate	58.3	66.7	n/a
% Advanced	33.3	8.3	n/a

[a] n = 12 for each group.

Table 1 shows that twelve mountain bikers (7 males, 5 females) and 12 hikers (6 males, 6 females) participated in the study. The mountain bikers' average age was 34 years old (range= 20 years old to 54.5 years old) and the hiker's average age was 33 years old (range= 22 years old to 51 years old). Thirty-three percent (33.3%) of both the mountain biker and hiker groups had some college, and 66.7 % of both groups were college graduates. About eight percent (8.3%) of the mountain bikers rated themselves as beginners, 58.3 % as intermediate, and 33.3% as advanced mountain bikers. Twenty-

five percent (25%) of the hikers rated themselves as beginners, 66.7 % as intermediate, and 8.3 % as advanced hikers.

Hikers often asked how to classify their ability level because they were unsure of how to determine what constituted a beginner, intermediate, or advanced hiker. In addition, the mountain bikers' ability ratings were very inconsistent. For example, two different riders with what appeared to be large differences in ability both rated themselves as intermediate. Thus, it might be important to know what type of riders they are rating themselves against.

DATA ANALYSIS PROCEDURES

To analyze the photographic data, files were created using Microsoft Power Point to display the participants' picture reactions (e.g., the original pictures and any drawing features indicating what they were focusing on) and their interview discussions related to the specific frame.

The data were reviewed and categorized into major themes. The specific pictures taken and the participants' descriptions about what they focused on were analyzed for patterns or content revealing the level of detail or type of examination within the environment. The researcher used the first element mentioned or what participants said they were primarily looking at to categorize the photographic data.

The researcher looked at each indication on the picture and each participant's discussion related to each frame to determine where participants focused within the

environment. After viewing all the participant reactions, the researcher created codes and then tested them again to confirm their usability.

In analyzing the areas specified on the participants' picture reactions and the discussions specifically relating to each frame, three major themes emerged as necessary components to describe the dynamic dimensions intermingled in focus/mode of experience: *Where*, where participants look; *What*, what they look at, and *How*, how they focus. Some similarities exist within the *Where*, *What*, and *How* participants focus coding; however, the dynamics of the participants' trail experiences make it essential to note such perceptions in multiple categories (Further discussions of these findings are in the Finding's section later in the paper).

The categories created were used to code each picture and determine percents and thematic strengths, TS, for *Where*, *What*, and *How* mountain bikers and hikers photographs indicate they focus during their trail experiences. First, percents were determined to describe *Where*, *What*, and *How* mountain bikers, hikers, and both groups' photographs indicate they focus (e.g., mountain bikers took 8.6% of their pictures *Off* the trail, 11.8 % on the *Edge*, and 21.5 % *On*). Next, percents were used to compare the number of photographs each group took within the subcategories of the *Where*, *What*, and *How* classifications (e.g., mountain bikers took 29.6 % of the pictures *Off* and hikers took 70.4%). Finally, thematic strengths were calculated to determine what percent of each group and total participants took photographs within each subcategory (e.g., 75% of the 12 mountain biking participants photographed at least one picture of *Trail Tread* elements.)

Thematic strengths were used as an adaptation of Cherem's (1973) consensus photo strengths (CS) that represent the percentage of different hikers taking photographs of scenes with identical attributes captured by multiple hikers. In this study, Thematic Strengths (TS) were compiled for these individual categories instead of CS because these data better represented what Cherem (1973) defined as thematic photographs: pictures of common subject matters such as flowers or animals at different scenes or places. Cherem (1973) reported consensus strengths when at least 10% of the participants took a consensus photograph.

After using the coded data to analyze each individual category, photographic data were also compiled to dynamically describe, compare, and determine consensus percents for all three categories of *Where, What,* and *How* simultaneously (e.g., the hikers' photographs indicated that they focused *On – Specific- Trail Corridor* elements in 7.5% of their total photographs). The final percents indicating consensus were referred to as consensus photo strengths, CS, since they are more indicative of having identical attributes then simply sharing one common theme.

In addition to the photographic analysis, all of the data were analyzed for patterns relating to or revealing information addressing the additional research questions, including understanding what elements or areas of the trail were perceived in detail and what elements were ignored or blended. The data were also examined for information related to cues, backgrounds, foregrounds, and any other factors contributing or related to the mode of experience or level of detailed examination in the environment.

The interview data were examined to determine what factors or cognitive processes were relevant in forming mode of experience. They were also used to capture details regarding the mode of experience and cognitive processes that individuals might not have been able to convey using VEP photography alone.

Lastly, data were also examined in relation to Jacob and Schreyer's (1980) explanation of mode of experience and factors underlying conflict in order to relate findings to conflict in general.

CHAPTER IV

FINDINGS

Due to the complexity, relationships, and volume of the data in this study, the coded categories depicting *Where*, *What*, and *How* participants' photographs indicate they focus during the trail experience were presented at the beginning of the findings sections and were followed by the discussion of these findings. Next, all research questions relating to the perceptual processes of the mountain bikers' experiences were explained in order to provide an undisturbed depiction of their overall experience. This was followed by a similar analysis of the hikers' experiences. Finally, the findings for each group and their interrelations were discussed at the end of this section.

CODED RESULTS FOR WHERE PARTICIPANTS FOCUS

RQ[1]: Where do Participants Focus During their Trail Experiences?

In order to determine *Where* participants focused during the trail experience, it was also necessary to determine *What* participants focused on during their trail experiences. Furthermore, as participants explained *Where* and *What* they focused on during their experiences, they also discussed *How* they were viewing or perceiving elements. Because the study aims to discuss the findings in relation to conflicts attributed to perceptual differences along a focus continuum, it seemed necessary to indicate *What* and *How* participants focused on elements during their experiences in order to better understand *Where* they focus.

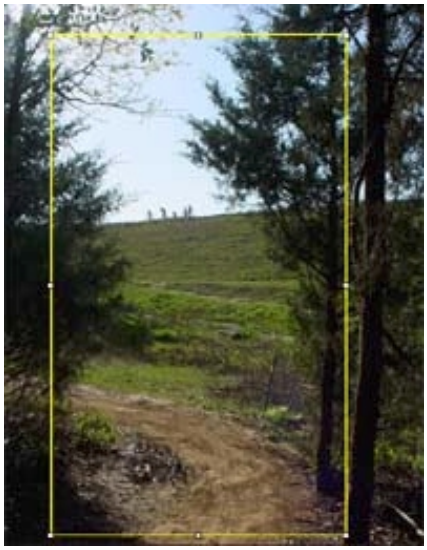
Where Participants' Photographs Indicate they Focused

Categories describing *Where* participants focused

Nine categories were developed to describe where participants' photographs indicated they focus during their trail experience: *Where*. The categories implying distance (e.g., *Off Distant*, *Off*, *On Close*, *On*, and *On Distant*) were based on both the approximate distance they appeared from the participant and the extent created by the differences in topography, ground texture, and density within the narrow trail corridor and surroundings of this site. When participants used zoom features in such a way that made it difficult to determine if the elements were *Off Distant* or *Off*, the picture was coded as *Off*. The nine categories developed include:

Off Distant: Elements about 15-20 feet or more from the participant (see Figure 4).

Figure 4. Example of a participant's photograph coded as focusing *Off Distant*.



Off: Elements that do not touch the side of the trail but are approximately no more than 15-20 feet from the participant (see Figure 5).

Figure 5. Example of a participant's photograph coded as focusing *Off*.

Edge: Elements directly next to the trail tread or trail corridor (see Figure 6).

Figure 6. Example of a participant's photograph coded as focusing on the *Edge*.

On Close: Elements on the trail tread within 0-3 feet of the participant (see Figure 7).

Figure 7. Example of a participant's photograph coded as focusing *On Close*.

On: Elements on the trail tread about 3-10 feet from the participant (see Figure 8).

Figure 8. Example of a participant's photograph coded as focusing *On*.

On Distant: Elements approximately more than 10-20 feet or more from the participant on the trail (see Figure 9).

Figure 9. Example of a participant's photograph coded as focusing *On Distant*.

Up: Elements that caused participants to look up toward the sky or trees (see Figure 10).

Figure 10. Example of a participant's photograph coded as focusing *Up*.

Around: Photographs and interview responses indicating that the participant was looking around in no distinct direction (see Figure 11).

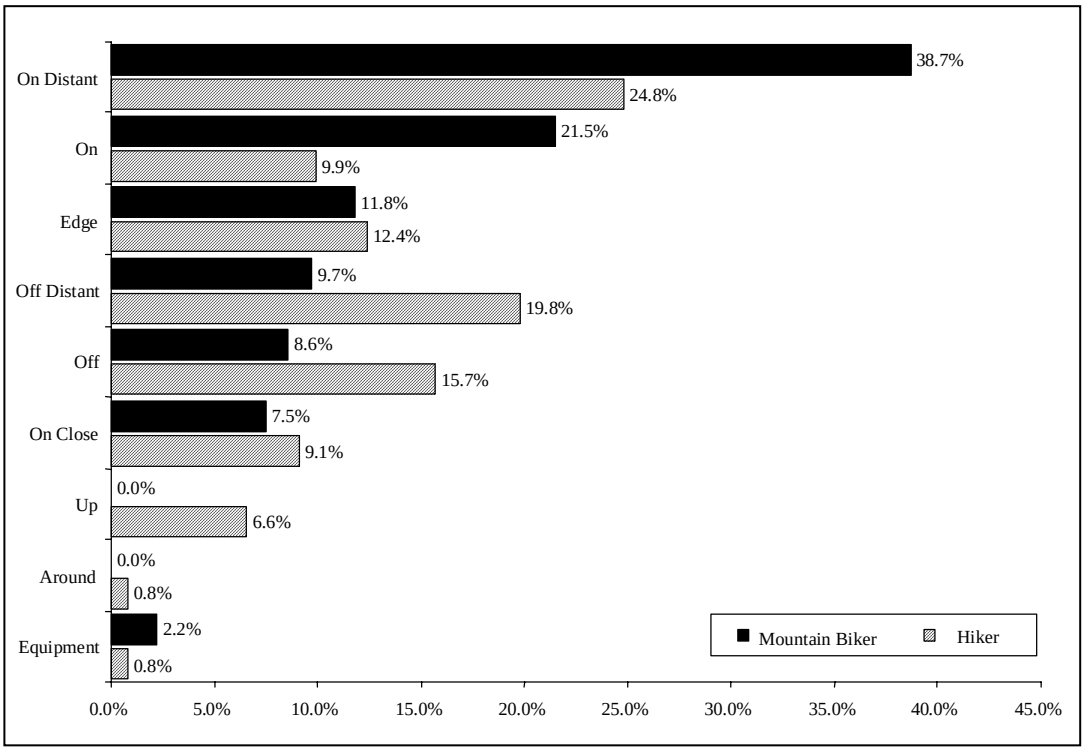
Figure 11. Example of a participant's photograph coded as focusing *Around*.

Equipment: Photographs when participants were looking at equipment (see Figure 12).

Figure 12. Example of a participant's photograph coded as focusing on *Equipment*.

Percentages describing *Where* mountain bikers and hikers focused

Figure 13. Percentages describing *Where* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.



As shown in Figure 13 and Table 2, the mountain bikers took 38.7% of their pictures *On-Distant*; 21.5% were taken *On* the path; and 7.5% were taken *On-Close*. Thus, 67.7% of the total pictures taken by mountain bikers were of features within the trail tread or trail corridor area. In addition, 2.2% of their pictures focused on *Equipment* and 11.8% were coded on the *Edge* of the path. Furthermore, six of the eleven pictures taken on the *Edge* of the trail were of trees, ruts, logs, and trail terrain/path elements. Thus, only 18.3% of the mountain bikers' pictures were coded as

Off Distant (9.7%) or *Off* (8.6%). Furthermore, the mountain bikers did not focus *Up* or *Around* in any of their photographs.

The hikers took 19.8% of their pictures *Off Distant* from the trail path/terrain, 15.7% *Off*, 6.6% *Up*, and 0.8% *Around*. Thus, 42.9% of their total pictures were taken of elements in the surrounding environment. The hikers also took 24.8% of their pictures *On Distant*-down the path. In addition, 12.4% were taken on the *Edge* and hikers also took 9.1% of their pictures *On Close*.

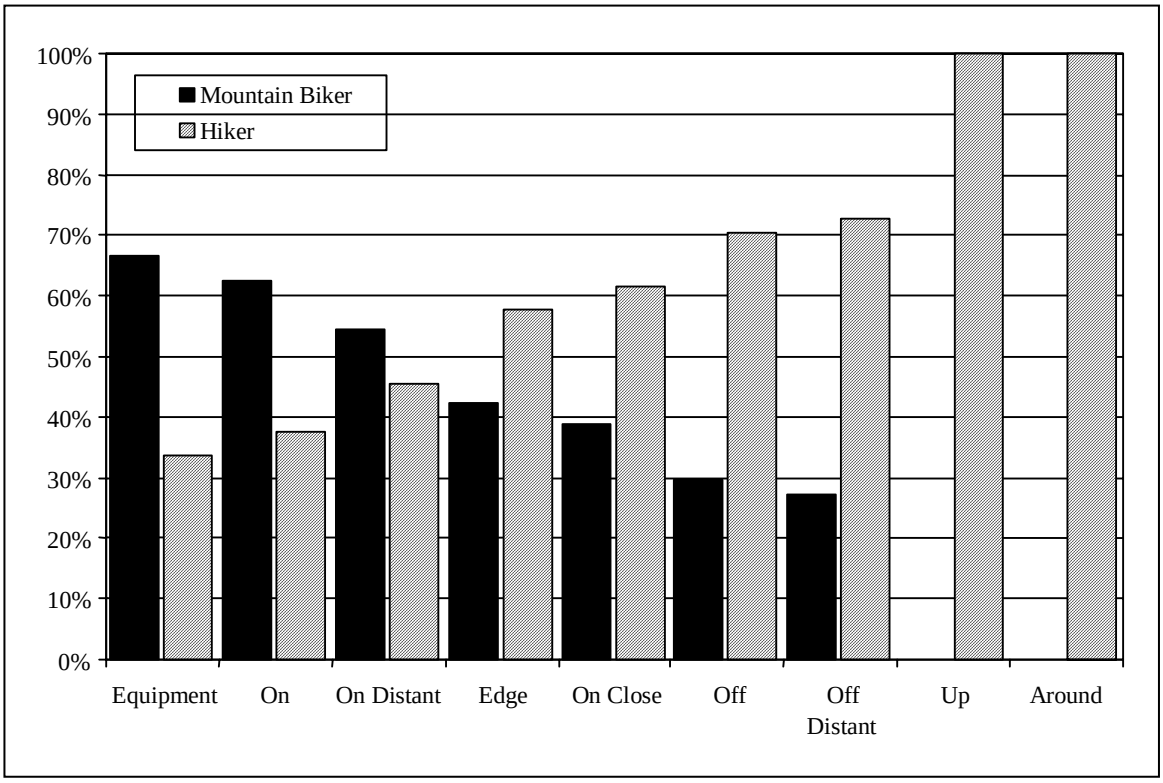
Table 2. Percentages describing *Where* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.

	Mountain Biker [a]		Hiker [a]		Total	
Where	#[b]	%[c]	#[b]	%[c]	#[b]	%[c]
On Distant	36	38.7	30	24.8	66	30.8
On	20	21.5	12	9.9	32	15.0
Edge	11	11.8	15	12.4	26	12.1
Off Distant	9	9.7	24	19.8	33	15.4
Off	8	8.6	19	15.7	27	12.6
On Close	7	7.5	11	9.1	18	8.4
Equipment	2	2.2	1	0.8	3	1.4
Up	0	0	8	6.6	8	3.7
Around	0	0	1	0.8	1	0.5
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken.

Comparisons of *Where* mountain bikers and hikers focused

Figure 14. A percentage breakdown of the total number of photographs taken in each *Where* category by user type.



As shown in Figure 14 and Table 3, the mountain bikers took 62.5% of the 32 pictures taken *On* the trail. The hikers took 72.7% of the 33 total pictures classified as *Off Distant* compared to the 27.3% taken by the mountain bikers. Hikers also took 70.4% of the 27 pictures classified as *Off* the trail compared to the 29.6% taken by mountain bikers.

The mountain bikers took 54.5% and the hikers took 45.5% of the pictures classified as *On-Distant*.

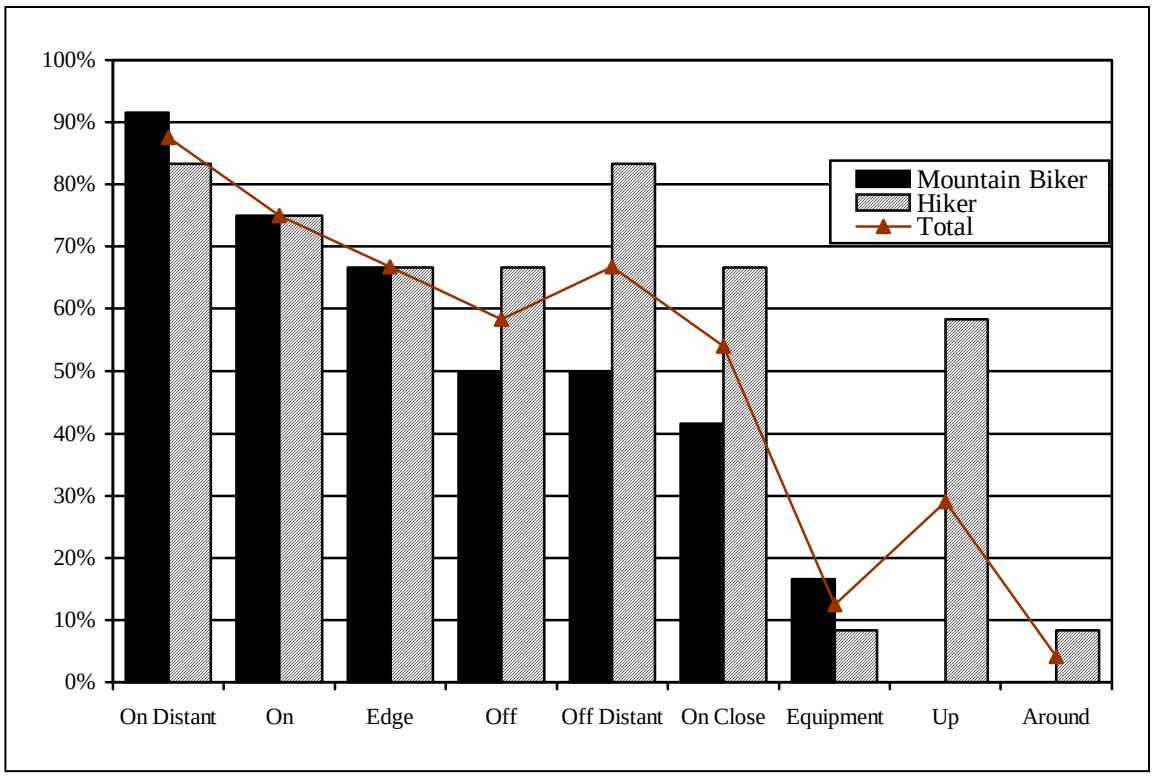
Table 3. A percentage breakdown of the total number of photographs taken in each *Where* category by user type.

	Mountain Biker [a]		Hiker [a]		Total	
Where	#[b]	%[c]	#[b]	%[c]	#b	%[c]
Equipment	2	66.7	1	33.3	3	100.0
On	20	62.5	12	37.5	32	100.0
On Distant	36	54.5	30	45.5	66	100.0
Edge	11	42.3	15	57.7	26	100.0
On Close	7	38.9	11	61.1	18	100.0
Off	8	29.6	19	70.4	27	100.0
Off Distant	9	27.3	24	72.7	33	100.0
Up	0	0	8	100.0	8	100.0
Around	0	0	1	100.0	1	100.0
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken in each specific *Where* category.

Thematic Strengths (TS) describing *Where* participants focused

Figure 15. A histogram representing Thematic Strengths (TS) for *Where* participants' photographs indicate they focused during their trail experiences.



As shown in Figure 15 and Table 4, the twelve mountain bikers' photographs from this study indicate that they have a 91.7% TS, thematic strength, for focusing *On Distant*; 75.0 % TS for focusing *On*; 66.7%TS for focusing on the *Edge*; and a 50.0 % TS for focusing both *Off* and *Off Distant*.

The hikers' photographs indicated a 83.3% TS for focusing both *Off Distant* and *On Distant*; 75.0% TS for focusing *On*, 66.7% TS for each *Off*, *Edge*, and *On Close*; and a 58.3% TS for focusing *Up*.

Overall thematic strengths (TS) for all the participants' photographs indicate a 87.5% TS for focusing *On Distant*; 75.0% TS for focusing *On*; 66.7% TS for focusing both *Off Distant* and *Edge*; 58.3% TS for focusing *Off*; and a 54.2% TS for focusing *On Close*.

Table 4. Thematic Strengths (TS) for *Where* participants' photographs indicate they focused during their trail experiences.

	Mountain Biker [a]			Hiker [a]			Total		
Where	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]
On Distant	36	11	91.7	30	10	83.3	66	21	87.5
On	20	9	75.0	12	9	75.0	32	18	75.0
Edge	11	8	66.7	15	8	66.7	26	16	66.7
Off Distant	9	6	50.0	24	10	83.3	33	16	66.7
Off	8	6	50.0	19	8	66.7	27	14	58.3
On Close	7	5	41.7	11	8	66.7	18	13	54.2
Up	0	0	-	8	7	58.3	8	7	29.1
Around	0	0	-	1	1	8.3	1	1	4.1
Equipment	2	2	16.7	1	1	8.3	3	3	12.5

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] # = Number of participants that took a picture coded within the category. [d] (TS) Thematic strength is the percentage of participants who took a photograph within the category.

What Participants' Photographs Indicated they Focused On

Categories describing *What* participants focused on

Thirty-nine different elements were focused on in the participants' 214 photographs. These elements were coded and then clustered into broad categories. A breakdown of these clustered groups is provided in Appendix A. Nine broad categories were developed to describe *What* participants' photographs indicated they focused on during their trail experiences: *What*. The *Wildlife* and *Noise* categories represent elements that were either seen or that the participant intended to see. The latter included elements that did not appear in pictures because they had moved, such as a mountain biker or bird; elements that the participant did not see but was specifically looking for such as flowers or snakes; or elements that participants heard and but did not see such as birds (looking in the direction of a sound). The nine categories include:

Trail Tread: Elements that fall within the trail tread that were encountered as part of the trail surface and affected how participants maneuvered along the trail. These elements include: rocks, ruts, puddles/water, mud, roots, tracks (bike), erosion, dips, logs, and the ground. Participants often explained that they were looking at the ground. This was typically in reference to terrain that required them to watch their footing (see Figure 16).

Figure 16. Example of photograph coded *Trail Tread*.

Vegetation: Elements including trees, berries, flowers, shrubs/bushes, seedlings/growth, and branches (see Figure 17).

Figure 17. Example of photograph coded *Vegetation*.

Wildlife: Wildlife that participants actually saw or that they looked for when passing areas where they thought wildlife might or should be present. If participants looked for wildlife because they heard a noise, the element was coded as a *Noise* (see Figure 18).

Figure 18. Example of photograph coded as *Wildlife.*

Trail Corridor: Elements considered separate from the trail's terrain but considered part of the trail because they were aspects of the linear or visual trail dimensions/experience including turns, bridges, signs, looking at where they were going, and looking ahead, down the trail path (see Figure 19).

Figure 19. Example of photograph coded as *Trail Corridor*.

Views: Photographs in which participants indicated they were looking at a "view" such as the sunset. These also include looking through openings (for nothing specific) or "through" the woods (see Figure 20).

Figure 20. Example of photograph coded as *Views.*

Human Impacts: Elements that stood out from the natural trail environment such as trash, fences, telephone poles and wires, houses, buildings, factories, and people or human contact (see Figure 21).

Figure 21. Example of photograph coded as *Human Impacts*.

Noises: Features that caused participants to focus on an element or in a specific direction due to a noise. Participants explained that they looking in the direction of noises from the road, the wind, wildlife, planes, birds, and people (see Figure 22).

Figure 22. Example of photograph coded as *Noises*.

Nothing: Sometimes participants explained that they were simply not looking at anything (see Figure 23).

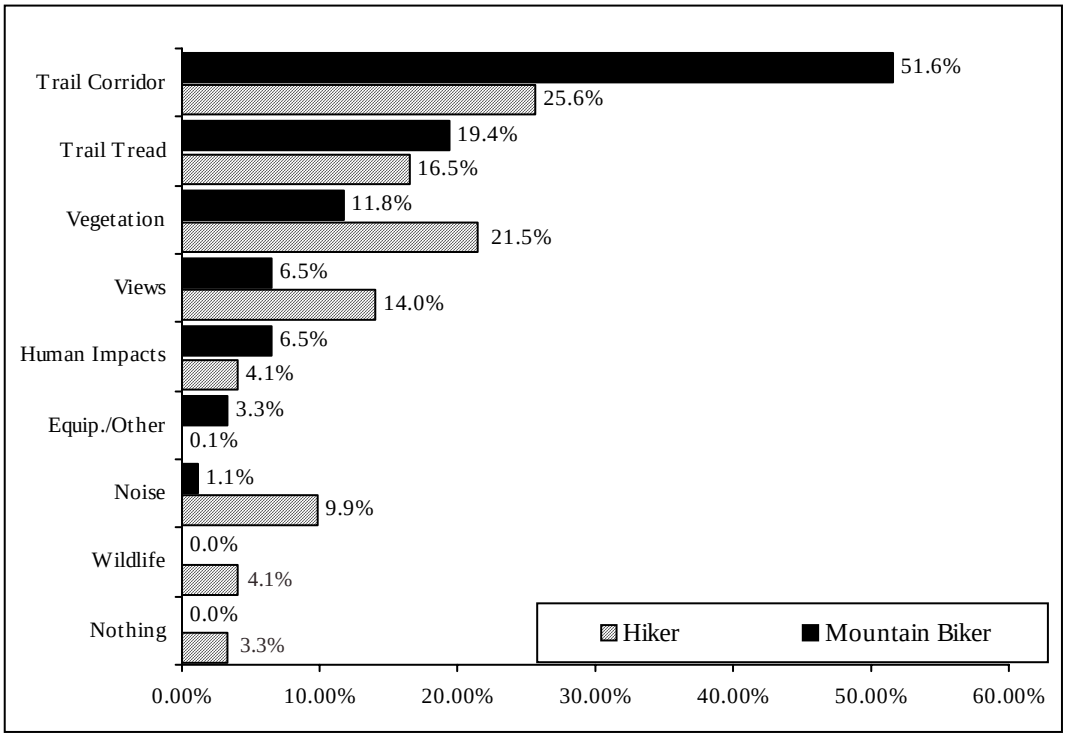
Figure 23. Example of photograph coded *Nothing*.

Equipment/Other: Elements such as gears, timers, clothing, and shoes. Other elements were features that could not be classified into an existing category (see Figure 24).

Figure 24. Example of photograph coded as *Equipment*/*Other*.

Percentages describing *What* mountain bikers and hikers focused on

Figure 25. Percentages describing *What* mountain bikers' and hikers' photographs indicate they focused on during their trail experiences.



As shown in Figure 25 and Table 5, the mountain biker participants took 51.6% of their pictures of the *Trail Corridor* and 19.4% of their pictures of the *Trail Tread*. Mountain Bikers also took 11.8% of their pictures of *Vegetation* and an additional 6.5% of each *Views* and *Human Impacts*. The mountain bikers did not take pictures of *Wildlife* or *Nothing*.

The Hiker participants took 25.6% of their pictures of the *Trail Corridor* and 21.5% of *Vegetation*. The hikers also took 16.5% the *Trail Tread*; 14.0% of *Views*, and

4.1% of their pictures of *Human Impacts*. In addition, 9.9% of their pictures were of *Noises* and 3.3% of the hiker pictures were when they simply looked at *Nothing*.

Table 5. Percentages describing *What* mountain bikers' and hikers' photographs indicate they focused on during their trail experiences.

	Mountain Biker [a]		Hiker [a]		Total	
What	# [b]	% [c]	# [b]	% [c]	# [b]	% [c]
Trail Corridor	48	51.6	31	25.6	79	36.9
Trail Tread	18	19.4	20	16.5	38	17.8
Vegetation	11	11.8	26	21.5	37	17.3
Views	6	6.5	17	14.0	23	10.7
Human Impacts	6	6.5	5	4.1	11	5.1
Equipment/Other	3	3.3	1	0.8	3	1.9
Noise	1	1.1	12	9.9	13	6.1
Wildlife	0	0.0	5	4.1	5	2.3
Nothing	0	0.0	4	3.3	4	1.9
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken.

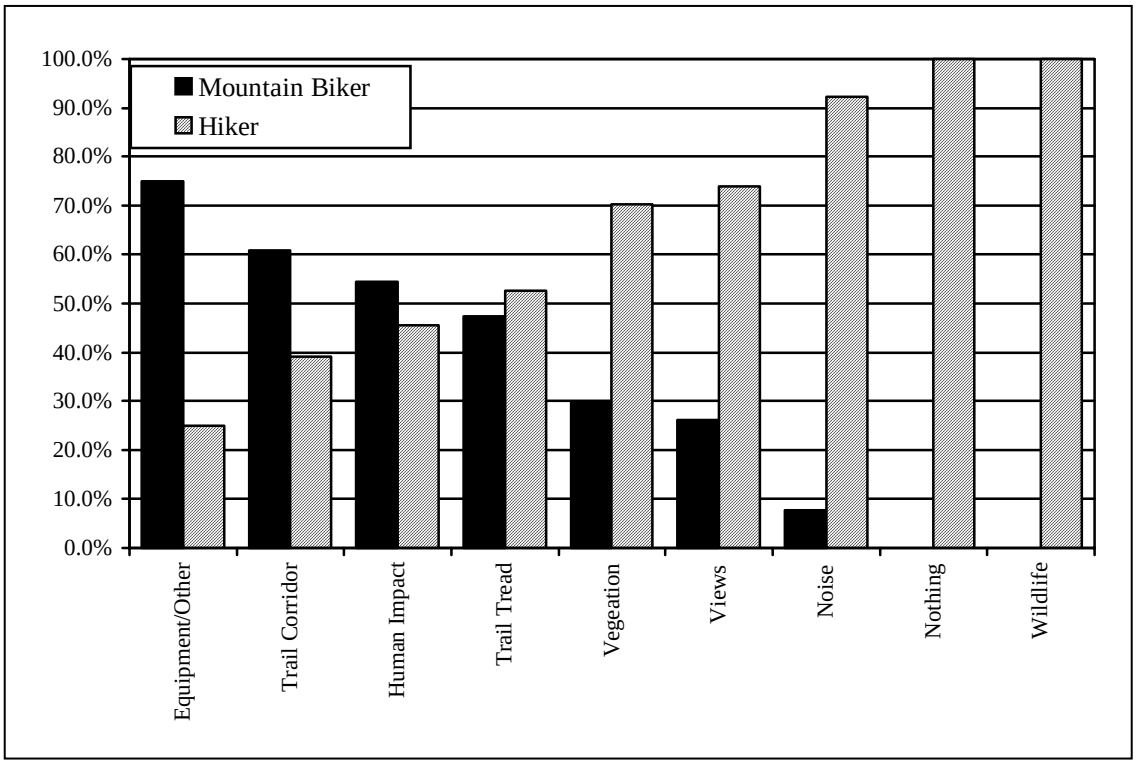
Specifically (see Figure 25), the mountain biker participants' 51.6% of pictures taken of the *Trail Corridor* included 47.9% of pictures of w*here they were going*, 25.0% *ahead*, 18.8% of *turns/corners*, 4.2% of *bridges*, and 4.2% of *signs*. Their *Trail Tread* pictures (19.4%) included: 38.9% of the pictures of *roots*, 16.7% of *logs*, 11.1% of the *ground*, 11.1% *ruts*; and 5.6% of each *rocks*, *water*, *erosion*, and *dips*. The mountain biker's 11.8% of pictures of *Vegetation* included *trees* (81.8%) and *flowers* (18.2%) and,

their 6.5% of pictures of *Human Impacts* included t*rash* (66.7%) and an a *fence* (33.3%). Pictures coded as *Views* (6.5%) were of c*learings* (83.3%) and a*round* (16.7%) and 100% percent of the *Noises* (1.1%) were p*eople* Specific breakdowns describing *What* mountain bikers' photographs indicated they specifically focused on during their trail experiences are shown in Appendix A.

The hikers' 25.6% pictures of the *Trail Corridor* included pictures of looking *ahead* (48.4%), *where they were going* (19.4%), *signs* (19.4%), *turns/corners* (9.7%), and *bridges* (3.2%). The 21.6% of their pictures taken of *Vegetation* included *trees* (26.9%), *flowers* (26.9%), *berries* (23.1%), *seedlings* (11.5%), *bushes* (7.7%), and *branches* (3.8%). The hikers' 16.5% of pictures taken of the *Trail Tread* included elements such as the *ground* (45.0%), *water* (20.0%), *erosion* (15.0%) and *ruts*, *roots*, *mud*, and *tracks* (5.0% each). *Clearings/through* (41.2%), looking *around* (41.2%), and views of the *lake* (17.6%) accounted for the 14.0% of *Views.* Their 9.9% of pictures of *Noises* consisted of pictures taken of noises made by *people* (41.7%), *birds* (16.7%), *road noises* (16.7%), and the *wind*, *unknown*, and *planes* (8.3% each). The 4.1% of *Human Impacts* pictures taken included pictures of *wires*/*poles* (60.0%), *factory*/*house* (20.0%), and *trash* (20.0%). Wildlife pictures were taken 60% of the time of *birds* and 40% of the time of *animals.* Specific breakdowns describing *What* hikers' photographs indicated they specifically focused on during their trail experiences are shown in Appendix A.

Comparisons of *What* mountain bikers and hikers focused on

Figure 26. A percentage breakdown of the total number of photographs taken in each *What* category by user type.



As shown in Figure 26 and Table 6, the mountain bikers took 60.8% of their pictures of the *Trail Corridor*. Meanwhile, the hikers took 100% of their pictures of both *Nothing* and *Wildlife*. The hikers also took 92.3% of the photographs of *Noises*; 73.9% of the pictures taken of *Views*; and 70.3% of the pictures taken of *Vegetation*. In addition, the mountain bikers and hikers took 54.4% (mb) and 45.5% (h) of the photographs of *Human Impacts* and 47.4% (mb) and 52.6% (h) of the photographs of *Trail Tread* elements.

Table 6. A percentage breakdown of the total number of photographs taken in each *What* category by user type.

	Mountain Biker [a]		Hiker [a]		Total	
What	# [b]	% [c]	# [b]	% [c]	# [b]	% [c]
Equipment/Other	3	75.0	1	25.0	3	100.0
Trail Corridor	48	60.8	31	39.2	79	100.0
Human Impacts	6	54.5	5	45.5	11	100.0
Trail Tread	18	47.4	20	52.6	38	100.0
Vegetation	11	29.7	26	70.3	37	100.0
Views	6	26.1	17	73.9	23	100.0
Noise	1	7.7	12	92.3	13	100.0
Nothing	0	0.0	4	100.0	4	100.0
Wildlife	0	0.0	5	100.0	5	100.0
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken in each specific *What* category.

Thematic Strengths (TS) describing What participants focused on

Figure 27. Thematic Strengths (TS) for *What* participants' photographs indicate they focused on during their trail experiences.

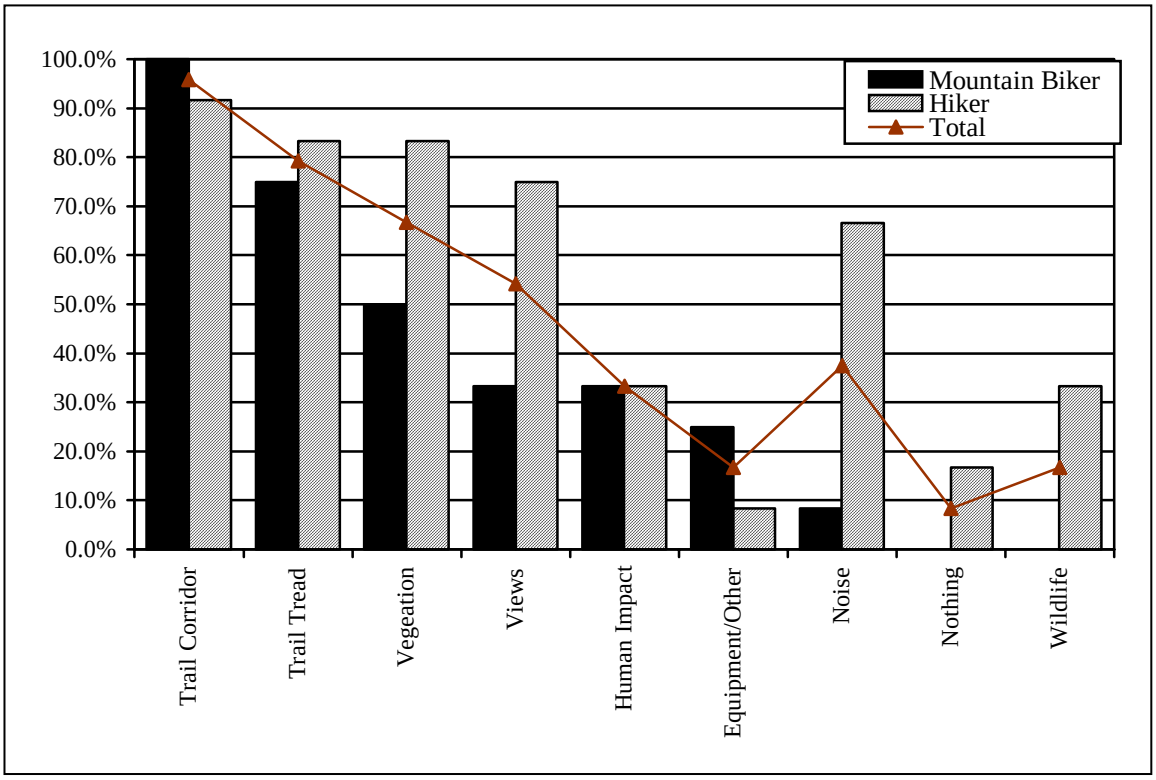


Figure 27 and Table 7 depict that the 12 mountain bikers' photographs indicated a 100% TS for focusing on features within the *Trail Corridor*; a 75% TS for elements in the *Trail Tread*; and a 50% TS for *Vegetation*.

The 12 hikers have a 91.6% TS for focusing on *Trail Corridor* elements; an 83.3% TS for both *Trail Tread* and *Vegetation*; a 75.0% TS for *Views*; and a 66.0% TS for *Noises*.

The 24 total participants share a 95.8% TS for focusing on *Trail Corridor* elements; 79.2% TS for *Trail Tread* elements; 66.7% TS for *Vegetation*; and a 54.2% TS for *Views.*

Table 7. Thematic Strengths (TS) for *What* participants' photographs indicate they focused on during their trail experiences.

	Mountain Biker [a]			Hiker [a]			Total		
What	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]
Trail Corridor	48	12	100.0	31	11	91.7	79	23	95.8
Trail Tread	18	9	75.0	20	10	83.3	38	19	79.2
Vegetation	11	6	50.0	26	10	83.3	37	16	66.7
Views	6	4	33.3	17	9	75.0	23	13	54.2
Human Impacts	6	4	33.3	5	4	33.3	11	8	33.3
Equipment/Other	3	3	25.0	1	1	8.3	4	4	16.7
Noise	1	1	8.3	12	8	66.7	13	9	38.0
Nothing	0	0	-	4	4	33.3	4	4	16.7
Wildlife	0	0	-	5	4	33.3	5	4	16.7

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] # = Number of participants that took a picture coded within the category. [d](TS) Thematic strength is the percentage of participants who took a photograph within the category.

How Participants' Photographs Indicate they Focused

Categories describing *How* participants focused

As the participants described *Where* and *What*, they focused on in their environment; they also indicated *How* they focused on such elements (e.g. specifically, scanning, panoramically, or part as their path/line formation.) Since the *How* descriptions provided insight to understanding perception and provided a more complete understanding of the mode of experience in which elements were focused on, eight broad categories were developed to describe *How* participants' photographs indicated they focus during their trail experience.

The researcher used the participant's first perceptual indication to code each picture. Thus, if a mountain biker said that she was focusing specifically on a rock and later indicated that this was part of forming the path/line she intended to travel, then the element was coded as *Specific*. However, if a hiker said that he was focusing on a rock as part of the *Path*/*Line* that he intended to travel and then discussed viewing the rock in specific detail, the element was coded as being focused on as part of his *Path/Line* formation.

Specific: Looking at or for specific objects. Figure 28 shows Hiker 01 focusing specifically on "red berries and cedar behind it- nice composition."

Figure 28. Example of photograph coded *Specific*.

Scanning: Scanning in the environment. Figure 29 shows how Hiker 05 “Scan[ed] [to see] if vehicles were coming.”

Figure 29. Example of photograph coded as *Scanning*.

Panoramic Whole: Looking around at everything-taking everything in at one time.

In Figure 30, Hiker 04 makes a “general observation … just looking out at everything.”

Figure 30. Example of photograph coded as *Panoramic Whole.*

Panoramic Off: A panoramic view sideways looking almost 90 degrees off of the trail.

Figure 31 shows Mountain Biker 09 “really looking off to side”. He defined “really” as “looking off to right 90 degrees to trail through the woods toward gravel road”.

Figure 31. Example of photograph coded as *Panoramic Off.*

Panoramic Forward: A panoramic view down the trail. This includes elements that were seen in the participant's forward view and not sideways off the trail (see Figure 32.)

Figure 32. Example of photograph coded as *Panoramic Forward.*

Opening/Through: Looking at an opening or through the vegetation. In Figure 33, Hiker 06 “looked into clearing…starting to feel like I was in a box or maze. So once you see a clearing, you just wanted somewhere different to look at.”

Figure 33. Example of photograph coded as *Opening/Through.*

Down: Looking down at the ground but not at something specific. This includes looking down to determine footing to hike over rough parts of the terrain. In Figure 34 Hiker 11 “Looked at path and unknown terrain…where[his] next step would have been.”

Figure 34. Example of photograph coded as *Down*.

Path/Line: Looking at the linear path or a line. At times path/line can mean perceiving many trail elements at one time including features on the side of the trail or in the extended surrounding environment. In Figure 35 Mountain Biker 009 was “seeing what path I was going to take…looking for easiest route and safest route…looking from center of trail outwards…using peripheral vision. I see that I would go this way to stay on dry area.”

Figure 35. Example of photograph coded as *Path/Line.*

Percentages describing *How* mountain bikers' and hikers' focused

Figure 36. Percentages describing *How* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.

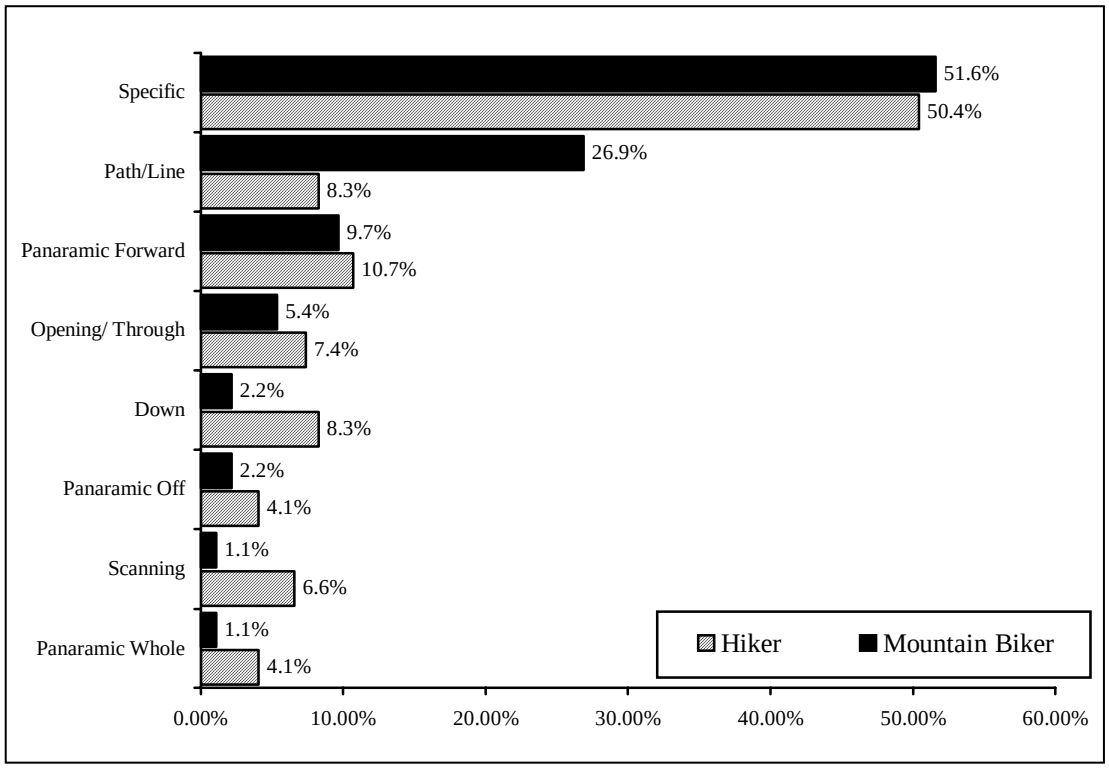


Figure 36 and Table 8 show that the mountain bikers took 51.6% of their pictures of *Specific* elements, 26.9% looking down the *Path/Line*; 9.7% viewing *Panoramic Forward*; and 5.4% looking through *Openings*. The mountain bikers only took 2.2% of their pictures looking *Down* and an additional 2.2% looking *Panoramic Off*. Furthermore, they rarely took pictures of elements *Scanning* or *Panoramic Whole* (1.1% each).

The hikers took 50.4% of their pictures of *Specific* objects, 18.9% pictures of Panoramic views (*Forward*: 10.7%, *Whole*: 4.1%, and *Off*: 4.1), 8.3 % focusing down the *Path/Line*, 8.3% *Down*; 7.4% looking through *Openings*; and 6.6% *Scanning*.

Table 8. Percentages describing *How* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.

	Mountain Biker [a]		Hiker [a]		Total	
How	#[b]	%[c]	#[b]	%[c]	#[b]	%[c]
Specific	48	51.6	61	50.4	109	50.9
Path/Line	25	26.9	10	8.3	35	16.4
Panoramic Forward	9	9.7	13	10.7	22	10.3
Opening/Through	5	5.4	9	7.4	14	6.5
Down (at ground)	2	2.2	10	8.3	12	5.6
Panoramic Off	2	2.2	5	4.1	7	3.3
Scanning	1	1.1	8	6.6	9	4.2
Panoramic-whole	1	1.1	5	4.1	6	2.8
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [C] % = The percent of photographs taken.

Comparisons of *Where* mountain bikers and hikers focused

Figure 37. A percentage breakdown of the total number of photographs taken in each *How* category by user type.

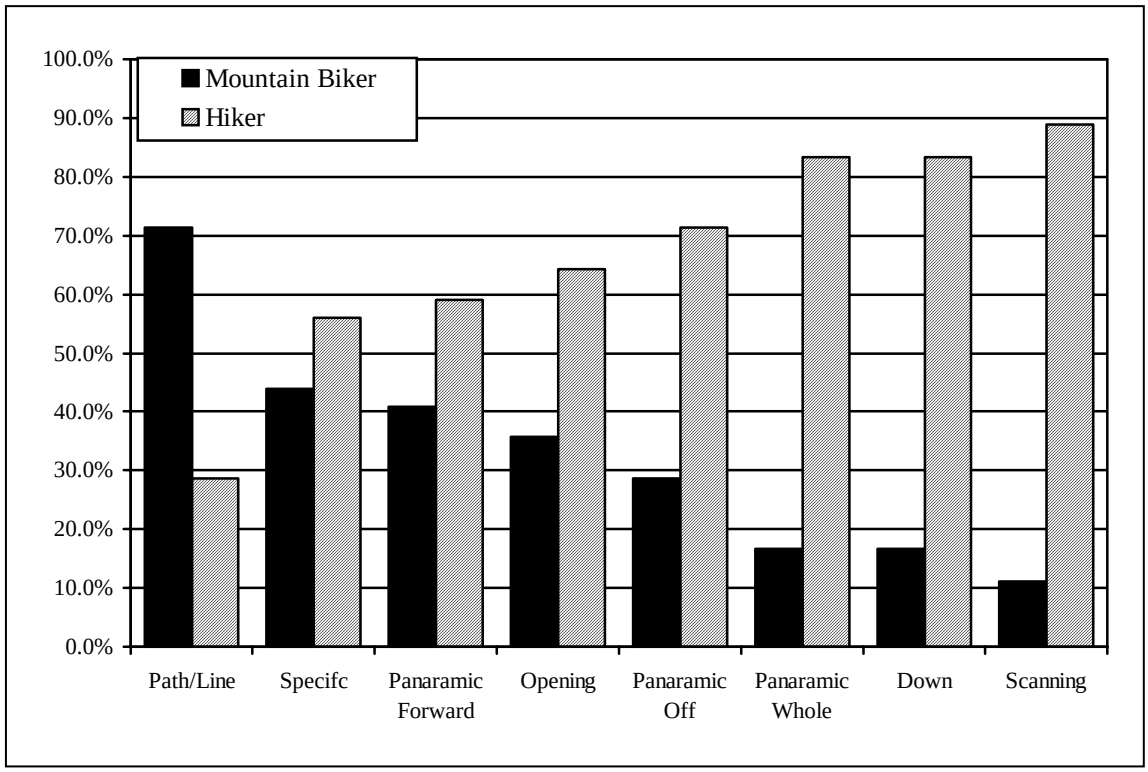


Figure 37 and Table 9 show that the mountain bikers took 71.4% of the pictures taken looking at the *Path/Line*. Meanwhile, the hikers took 88.9% of their pictures *Scanning*; 83.3% of their pictures both *Panoramic Whole* and *Down*; 71.4% of their pictures taken *Panoramic Off*; and 64.3% of their picture taken looking at *Openings/Through*. Both the mountain bikers (44.0%) and hikers (56.0%) viewed *Specific* objects and views that were *Panoramic Forward* (mountain bikers 40.9%, hikers 59.1%).

Table 9. A percentage breakdown of the total number of photographs taken in each *How* category by user type.

How	Mountain Biker [a]		Hiker [a]		Total	
	#[b]	%[c]	#[b]	%[c]	#[b]	%[c]
Path/Line	25	71.4	10	28.6	35	100.0
Specific	48	44.0	61	56.0	109	100.0
Panoramic Forward	9	40.9	13	59.1	22	100.0
Opening/Through	5	35.7	9	64.3	14	100.0
Panoramic Off	2	28.6	5	71.4	7	100.0
Down (at ground)	2	16.7	10	83.3	12	100.0
Panoramic-Whole	1	16.7	5	83.3	6	100.0
Scanning	1	11.1	8	88.9	9	100.0
Total	93	43.5	121	56.5	214	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken in each specific *How* category.

Thematic Strengths (TS) describing *How* participants focused

Figure 38. Thematic Strengths (TS) for *How* participants' photographs indicate they focused during their trail experiences.

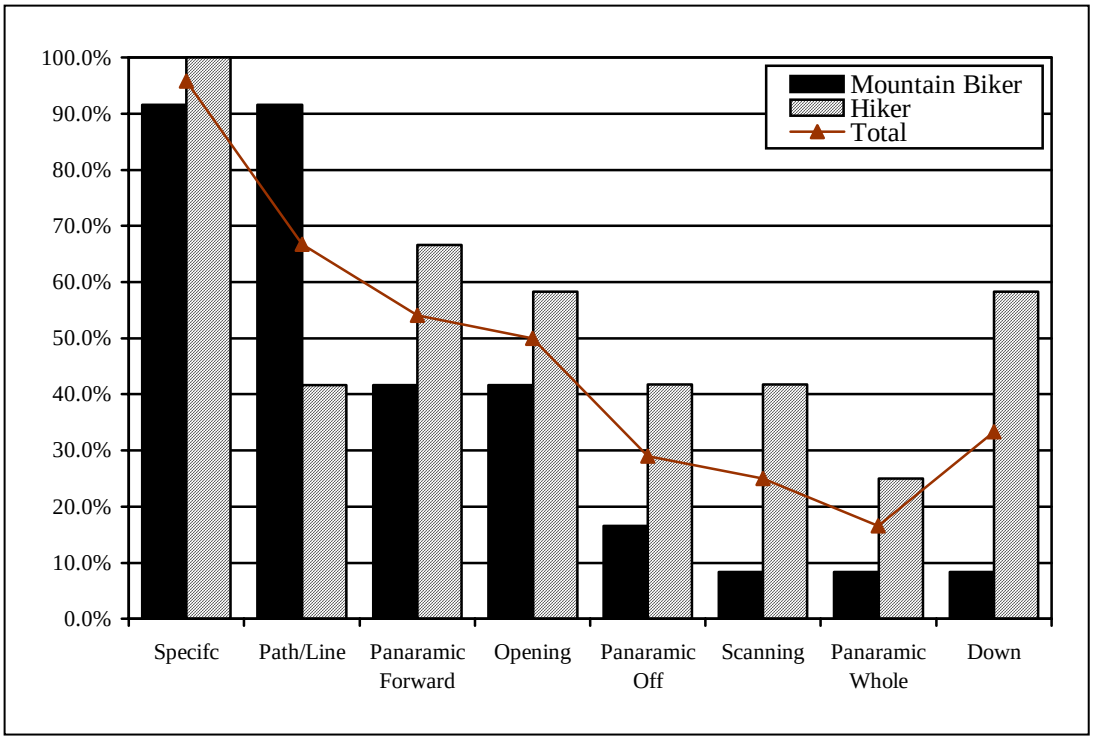


Figure 38 and Table 10 show that the 12 mountain bikers' photographs indicated a 91.7% TS for focusing both Specific and *Path/Line* and a 41.7% TS for focusing both *Panoramic Forward* and *Opening/Through*.

The 12 hiking participants have a 100% TS for focusing on *Specific* elements; 66.7% TS for *Panoramic Forward*; 58.3% TS for both *Opening/Through* and *Down*; and a 41.7% TS for each *Path/Line, Scanning*; and *Panoramic Off*.

Together, all the participants share a 95.8% TS for focusing on *Specific* elements; 66.7% TS for *Path/Line*; 54.2% TS for *Panoramic Forward*; and a 50% TS for *Opening/Through*.

Table 10. Thematic Strengths (TS) for *How* participants' photographs indicate they focused during their trail experiences.

	Mountain Biker [a]			Hiker [a]			Total		
How	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]	# [b]	# [c]	TS [d]
Specific	48	11	91.7	61	12	100.0	109	23	95.8
Path/Line	25	11	91.7	10	5	41.7	35	16	66.7
Panoramic Forward	9	5	41.7	13	8	66.7	22	13	54.2
Opening/Through	5	5	41.7	9	7	58.3	14	12	50.0
Panoramic Off	2	2	16.7	5	5	41.7	7	7	29.1
Down (at ground)	2	1	8.3	10	7	58.3	12	8	33.3
Scanning	1	1	8.3	8	5	41.7	9	6	25.0
Panoramic-whole	1	1	8.3	5	3	25.0	6	4	16.7

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] # = Number of participants that took a picture coded within the category. [d](TS) Thematic strength is the percentage of participants who took a photograph within the category.

A Dynamic Understanding of *Where, What,* and *How* Mountain Bikers and Hikers Focused

Analyzing all three parameters of *Where*, *What*, and *How* in a combined approach provides depth to understanding recreationists' focus during dynamic trail experiences.

It is important to note that this section is not attempting to imply that *Where* participants focus determines *What* they focus on, *How* they focus, or vice versa. This section merely aims to better understand the complexity of focus within trail environments in order to discuss the participants' perceptual similarities and differences that exist within their dynamic trail experiences. Figures 39 through 41 show examples of three *Where*, *What*, *How* photographs.

Figure 39. Example of photograph coded as *On Distant-Trail Corridor-Path/Line.*

Figure 40. Example of photograph coded *Off-Vegetation-Specific.*

Figure 41. Example of a photograph coded *On Distant-Trail-Corridor.*

Percentages describing *Where-What-How* mountain bikers and hikers focused

As shown in Figure 42 and Table 11, the mountain bikers took 21.5% of their photographs *On Distant-Trail Corridor-Path/Line*; 9.7% *On Distant-Trail Corridor-Panoramic Forward,* and 7.5% of each *On-Trail Corridor-Specific*; *On-Trail Tread-Specific*; and *Edge-Vegetation-Specific*. The hikers took 12.4% of their photographs *Off-Vegetation- Specific* and 9.1% *On Distant-Trail Corridor- Panoramic Forward*.

Figure 42. *Where-What-How* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.

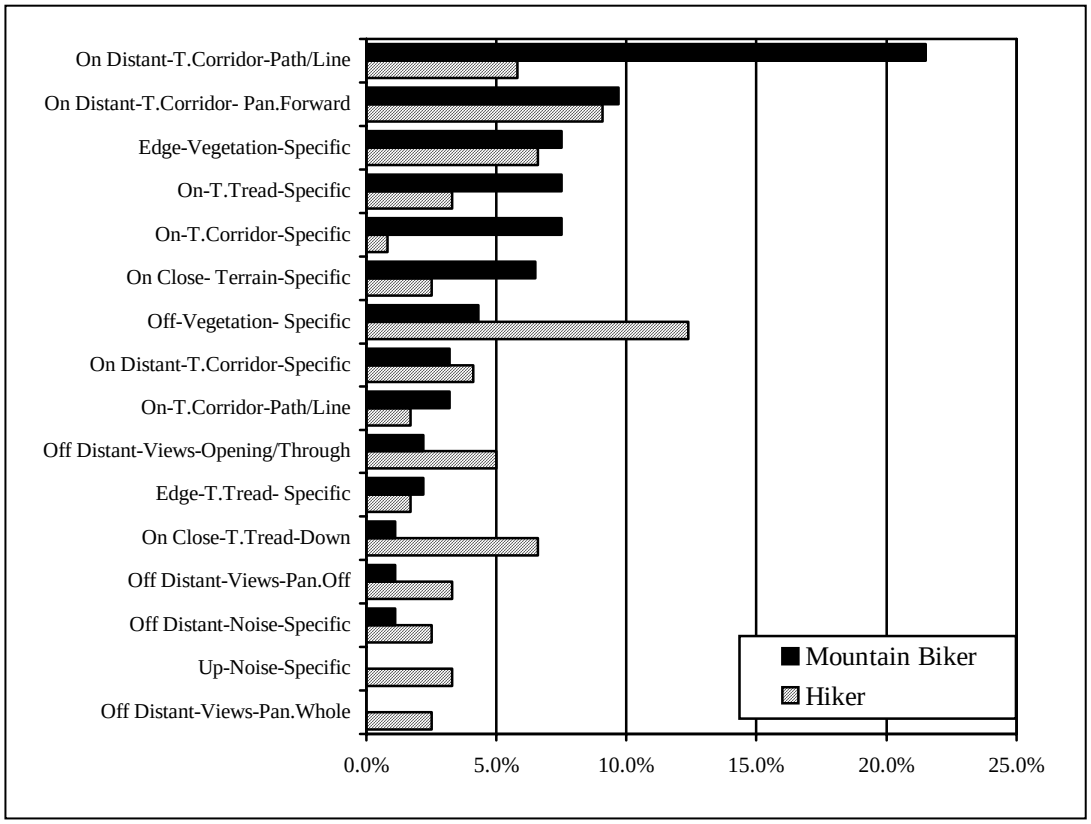


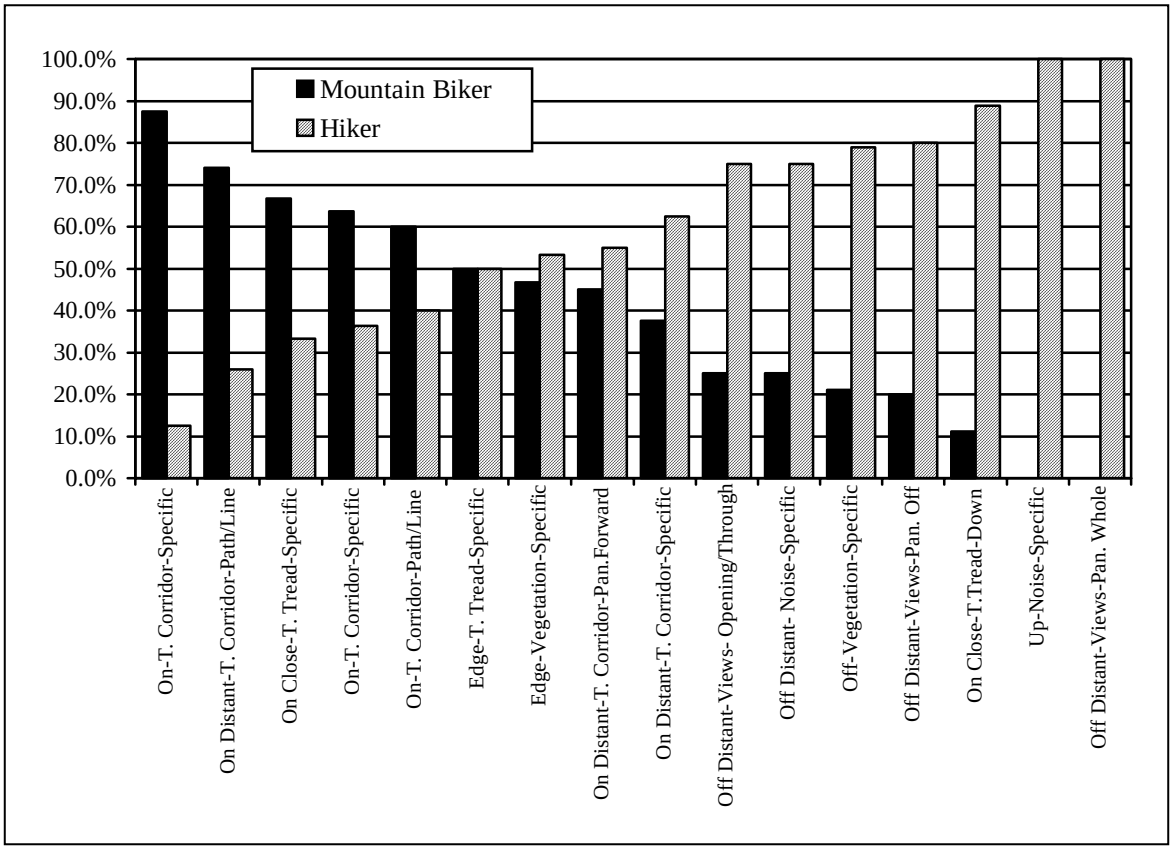
Table 11. Percentages describing *Where-What-How* mountain bikers' and hikers' photographs indicate they focused during their trail experiences.

	Mountain Biker[a]		Hiker[a]		Total	
What Where How	#[b]	%[c]	#[b]	%[c]	#[b]	%[c]
On Distant-T. Corridor-Path/Line	20	21.5	7	5.8	27	12.6
On Distant-T.Corridor-Pan.Forward	9	9.7	11	9.1	20	9.3
Edge-Vegetation -Specific	7	7.5	8	6.6	15	7.0
On-T. Tread-Specific	7	7.5	4	3.3	11	5.1
On- T. Corridor -Specific	7	7.5	1	0.8	8	3.7
On Close-T. Tread-Specific	6	6.5	3	2.5	9	4.2
Off-Vegetation-Specific	4	4.3	15	12.4	19	8.9
On Distant-T. Corridor-Specific	3	3.2	5	4.1	8	3.7
On-T. Corridor-Path/Line	3	3.2	2	1.7	5	2.3
Off Distant-Views-Opening	2	2.2	6	5.0	8	3.7
Edge-T. Tread-Specific	2	2.2	2	1.7	4	1.9
On Close-T. Tread-Down	1	1.1	8	6.6	9	4.2
Off Distant-Views-Pan. Off	1	1.1	4	3.3	5	2.3
Off Distant-Noise-Specific	1	1.1	3	2.5	4	1.9
Up-Noise-Specific	0	0.0	4	3.3	4	1.9
Off Distant-View- Pan. Whole	0	0.0	3	2.5	3	1.4

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken.

Percentages describing *Where-What-How* mountain bikers and hikers focused

Figure 43. A percentage breakdown of the total number of photographs taken in each *Where-What-How* category by user type.



As shown in Figure 43 and Table 12, the mountain bikers took 87.5% of their pictures *On-Trail Corridor-Specific*; 74.1% of their pictures *On Distant-Trail Corridor-Path*/*Line*; 66.7% of their pictures *On Close-Trail Tread-Specific*; and 63.3% *On-Trail Tread-Specific*.

The hikers took 100% of their pictures both *Up-Noise-Specific* and *Off Distant-Views-Panoramic Whole*. They also took 88.9% of their photographs *On Close- Trail*

Tread-Down; 80.0% of *Off Distant-Views-Panoramic Off*; 78.9% of *Off-Vegetation-Specific*; and 75% of both *Off Distant-Noise-Specific* and *Off Distant-Views-Opening*.

The mountain bikers and hikers took similar percents of photographs classified as *On Distant-Trail Corridor- Panoramic Forward* (MB: 45.0%; H: 55.0%); *On Distant-Trail Corridor-Specific* (MB: 37.5%; H: 62.5%); *On- Trail Corridor-Path/Line* (MB:60.0%; H: 40.0%); *Edge-Vegetation-Specific* (MB: 46.7%; H: 53.3%); and *Edge-Trail Tread-Specific* (MB: 50.0%; H: 50.0%).

Table 12. A percentage breakdown of the total number of photographs taken in each *Where-What-How* category by user type.

	Mountain Biker[a]		Hiker[a]		Total	
What Where How	#[b]	%[c]	#[b]	%[c]	#[b]	%[c]
On-T.Corridor-Specific	7	87.5	1	12.5	8	100.0
On-Distant- T.Corridor-Path/Line	20	74.1	7	25.9	27	100.0
On-Close- T.Tread -Specific	6	66.7	3	33.3	9	100.0
On- T.Tread -Specific	7	63.6	4	36.4	11	100.0
On-T.Corridor -Path/Line	3	60.0	2	40.0	5	100.0
Edge-Terrain-Specific	2	50.0	2	50.0	4	100.0
Edge-Vegetation -Specific	7	46.7	8	53.3	15	100.0
On Distant-T.Corridor-Pan. Forward	9	45.0	11	55.0	20	100.0
On Distant- T.Corridor-Specific	3	37.5	5	62.5	8	100.0
Off Distant-Noise-Specific	1	25.0	3	75.0	4	100.0
Off Distant-View-Opening	2	25.0	6	75.0	8	100.0
Off-Vegetation-Specific	4	21.1	15	78.9	19	100.0
Off Distant-Views-Pan. Off	1	20.0	4	80.0	5	100.0
On Close-T.Tread-Down	1	11.1	8	88.9	9	100.0
Up-Noise-Specific	0	0.0	4	100.0	4	100.0
Off Distant-View- Pan.Whole	0	0.0	3	100.0	3	100.0

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] % = The percent of photographs taken in each specific *Where What How* category.

Consensus Strengths (CS) describing W*here-What-How* participants focused

Figure 44. A histogram representing Consensus Strengths (CS) for *Where-What-How* participants' photographs indicate they focused during their trail experiences.

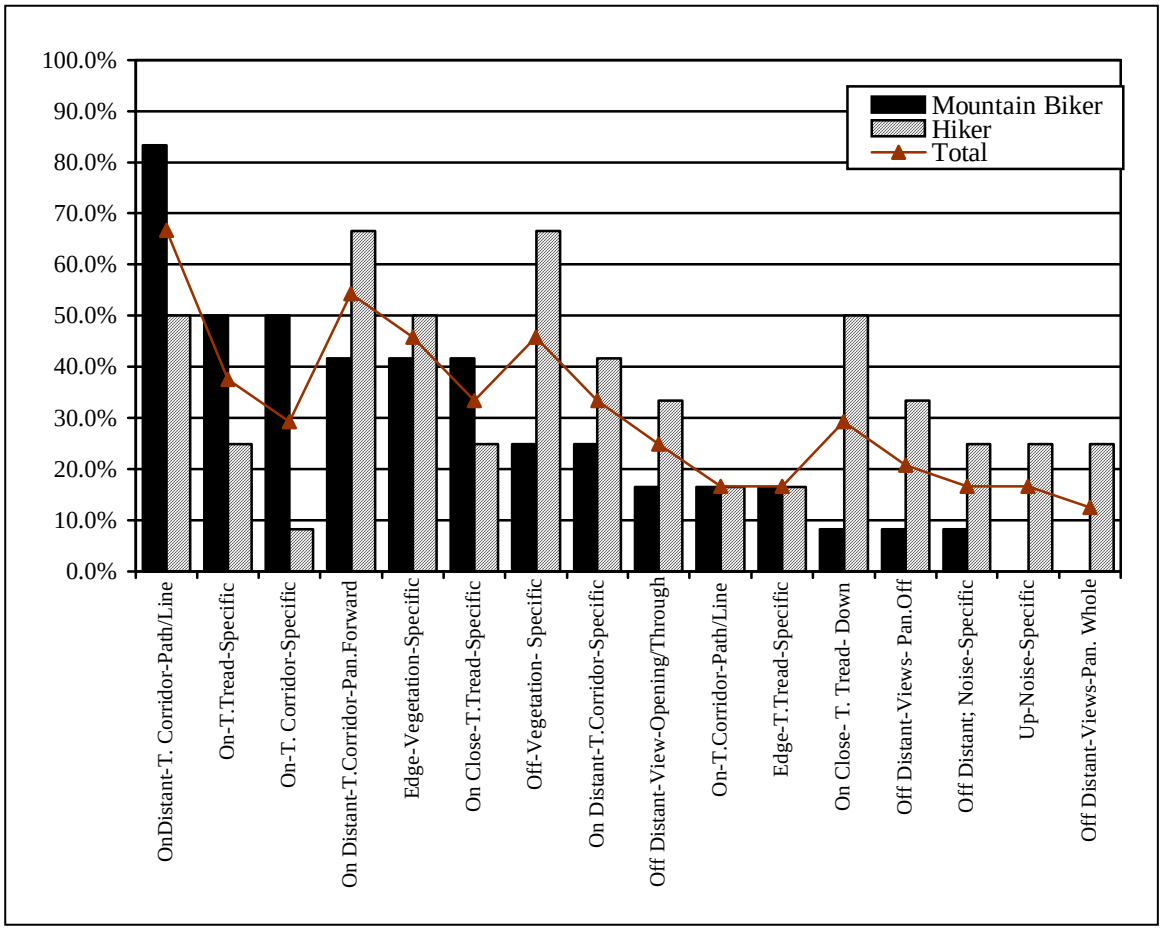


Figure 44 and Table 13 show Consensus Strengths (CS), the percentage of participants who took a photograph within each category, representing perceptions of photographs focusing on common multiple attributes and not merely one theme. The twelve mountain bikers had an 83.3% CS for *On Distant-Trail Corridor-Path/Line*; a 50% CS for each *On Distant-Trail Corridor-Specific* and *On-Trail Tread-Specific*; a 45.8% CS for *Off-Vegetation-Specific*; and a 41.7% CS for each *On Distant-Trail*

Corridor-Panoramic Forward; *On Close-Trail Tread-Specific*; and *Edge-Vegetation-Specific*.

The twelve hikers had a 66.7% CS for both *On-Distant-Trail Corridor-Panoramic Forward* and *Off-Vegetation-Specific* and a 50% CS for each *On-Trail Corridor-Path/Line*; *On Close-Trail Tread-Down*; and *Edge-Vegetation-Specific*.

All participants shared a 66.7% CS for *On Distant –Trail Corridor-Path/Line*; 54.2 % CS for *On Distant-Trail Corridor-Panoramic Forward*; and 45.8% CS for *Edge-Vegetation-Specific*.

Table 13. Consensus Strengths (CS) for *Where-What-How* participants' photographs indicate they focused during their trail experiences.

	Mountain Biker[a]			Hiker[a]			Total		
What Where How	#[b]	#[c]	CS[d]	#[b]	#[c]	CS[d]	#[b]	#[c]	CS[d]
On Distant-T. Corridor- Path/Line	20	10	83.3	7	6	50.0	27	16	66.7
On-T. Tread-Specific	7	6	50.0	4	3	25.0	11	9	37.5
On- T. Corridor-Specific	7	6	50.0	1	1	8.3	8	7	29.1
On Distant-T.Corridor-Pan. Forward	9	5	41.7	. 11	8	66.7	20	13	54.2
Edge-Vegetation -Specific	7	5	41.7	8	6	50.0	15	11	45.8
On Close- T. Tread -Specific	6	5	41.7	3	3	25.0	9	8	33.3
Off-Vegetation-Specific	4	3	25.0	15	8	66.7	19	11	45.8
On-Distant- T.Corridor- Specific	3	3	25.0	5	5	41.7	8	8	33.3
Off Distant- View-Opening	2	2	16.7	6	4	33.3	8	6	25.0
Edge- T.Tread -Specific	2	2	16.7	2	2	16.7	4	4	16.7
On- T.Corridor-Path/Line	3	2	16.7	2	2	16.7	5	4	16.7
On Close- T.Tread -Down	1	1	8.3	8	6	50.0	9	7	29.1
Off Distant-Views-Pan. Off	1	1	8.3	4	4	33.3	5	5	20.8
Off Distant-Noise-Specific	1	1	8.3	3	3	25.0	4	4	16.7
Up Noise Specific	0	0	-	4	3	25.0	4	4	16.7
Off Distant-View-Pan. Whole	0	0	-	3	3	25.0	3	3	12.5

[a] n = 12 for each group. [b] # = The number of photographs coded in each category. [c] # = Number of participants that took a picture coded within the category. [d] (CS) Consensus strength is the percentage of participants who took a photograph within the category.

DISCUSSION: WHERE PARTICIPANTS FOCUS

RQ[1]: Where Do Mountain Bikers and Hikers Focus During their Trail Experiences?

Where mountain bikers focus

The mountain bikers' photograph results indicate that they primarily focus on features within the *Trail Tread* or *Path*/*Line*. In accordance with Symmonds and Hammitt (2000) who found that roots (x = 5.24) and rocks (x = 5.29) added to the biking experience (scale 1-7) and that the presence of turns, bumps, and jumps, added to the experience, the mountain bikers in this study focused on terrain elements such as *roots*, *logs*, *ground*, *ruts*, *rocks*, *water*, *erosion*, and *dips.*

In addition to photographing these specific elements, the mountain bikers also viewed their *Path*/*Line*. Carr and Schissler (1969), when determining where participants driving down the highway looked, also found that participants looked at the road ahead. Although the mountain bikers' *Path*/*Line* formation involved viewing *Trail Tread* elements, their 100% CS for photographing *Trail Corridor* elements indicated that the mountain bikers in this study viewed multiple elements and areas of the trail in order to determine how and where they transversed through their environment.

Furthermore, since half of the mountain bikers photographed at least one picture in their surrounding environment and since analyzing all three combined factors (*Where*, *What*, *How*) revealed that some consensus exists for photographing combinations *On* the trail and panoramically, their results infer that although the *Trail* T*read* and C*orridor*

elements are primarily points of interest or focus, various parts of the trail can contribute to the mountain bikers' focus/mode of experience.

Interview findings indicate that mountain bikers determine the path or line they are going to travel by simultaneously perceiving some elements in detail while also looking down the trail at where they are going. The latter includes using a complex peripheral view process that involves processing the trail tread elements and the surrounding environment. A further discussion of this process is addressed in the interview findings section.

Where hikers focus

Hikers' photographic results revealed that they primarily focus on elements in their surrounding environment. Even when the hikers took pictures looking down the path or trail, they tended to be of panoramic views. Furthermore, the high percentage of pictures taken looking panoramic forward may have been skewed if the tight vegetative corridors along some segments prevented the hikers from extensively viewing areas off the sides of the trail. For example, Cherem (1973) found that hikers typically focus on sensory contrasts created by elements such as extreme openings and enclosures. In addition, the hikers in this study also took pictures when encountering openings and views through the vegetation.

The findings in this study regarding what hikers specifically look at were consistent with Cherem's (1973) and Hull and Stewart's (1995) studies that both

reported that hikers photographed people, human signs, flowers, shrubs, trees, wildlife, views, and the ground.

In addition, the hikers in this study also reported viewing *Nothing* in 3.3% of their photographs. Wagner, Baird, and Barbaresi (1981), in studying participants walking a specific route through town, also found that five percent (5%) of the time their participants looked at nothing at all. Interview data from this study reports that hikers explain that they "are looking at nothing" for several reasons. Thus, the data implies that these perceptual states may have important implications for understanding mode of experience and conflict, trail design, and setting-based management.

Wagner, Baird, and Barbaresi (1981) determined that their participants focused on objects near themselves and looked straight ahead at where they were going. Meanwhile, Hull and Stewart (1995) also reported that hikers looked at the ground. The findings in this study indicating that hikers look at the ground while they hike, or what many hikers referred to as footing or watching where they were going, provide insight to a perceptual portion of the hiking experience that has rarely been discussed. These findings infer that hikers spend time focusing on where they are going in addition to viewing or studying their surroundings (A further discussion is in the interview findings and discussion). Although this phenomenon might be implied in Wagner, Baird, and Barbaresi's (1981) category "where they were going" and in Hull and Stewart's (1995) category "looking at the ground", the perceptual experience, trail design, setting-based management, and trail sharing implications for this perceptual experience need to be further examined and discussed.

Finally, as Cherem (1973) indicated that sensory contrasts created by perceiving extreme openings and closing, abrupt sounds, and motions influenced focus, the combined analysis of all three factors in this study indicate that although hikers primarily focus on *Panoramic* views and *Specific* vegetations, their perceptual experiences are also influenced by the dynamic elements and activities they encounter within their environments.

Comparisons of *Where* mountain bikers and hikers focused

In general, the mountain bikers photographed more pictures on the trail while the hikers photographed more pictures *On Close, Off, Up,* and *Around*. Specifically, the mountain bikers tended to concentrate their photographs on the *Trail Corridor* elements while forming or creating their *Path*/*Line*. Meanwhile, the hikers tended to look around, scan, or take in full views of *Wildlife, Vegetation*, and *Noises*. Both groups photographed similar amounts of *Trail Tread* elements. Although the hikers' views were often labeled as looking *Down*, their discussions revealed that they primarily looked down to watch their footing and therefore such views could be considered similar to the mountain bikers' perceptual views that assist them in maneuvering along the trail (e.g., focusing on *Specific* elements or choosing the best *Path*/*Line*).

The combined analysis of *Where What How* also points out that mountain bikers photographed more *On-Trail Tread-Specific* and *Path/Line* perceptions while the hikers photographed more *Off/Off Distant-Views* of *Vegetation* and *Noises*. They both also viewed *On Distant, Edge, Trail Terrain, Trail Corridor, Specific,* and *Panoramic*

Forward. Furthermore, consensus exists among mountain bikers and hikers for photographing *On Distant* at *Trail Corridor* elements down the *Path/Line*; *On Distant* at *Trail Corridor* elements *Panoramic Forward*; and at the *Edge* of *Specific Vegetation* elements.

Both the hikers' and mountain bikers' photographs indicated strong consensus percents for looking at *Vegetation* on the *Edge* of the terrain/path; however, the hikers tended to focus on vegetative elements such as *flowers*, *trees*, and *shrubs* while mountain bikers looked at elements such as *roots*, *trees* or *branches*. Although this points out the perceptual differences both groups have for looking at the *Specific Vegetation* elements on the *Edge* of the terrain/path, the other two findings suggest that an overall consensus or common degree of focus/mode of experience might exist between both trail user groups. Thus, it might be possible for both groups to share some portions of trails or share specific types of trail setting areas and experience little or no degree of perceptual conflict in complexly dynamic situations.

RESULTS: UNDERSTANDING THE DYNAMIC EXPERIENCE

Understanding the degree of focus or attention to detail and the overall mode of experience during a recreation experience requires that participants fully understand how multiple factors contribute to the experience.

The previous findings in this study provided a quick glimpse of *Where*, *What*, and *How* mountain bikers and hikers focused on elements during their riding and hiking experiences. In order to provide a more holistic understanding of the mode of

experience, the following sections present findings related to the participants' cognitive assessments of their experiences.

The interview data attempt to provide a more comprehensive understanding of the mountain bikers' and hikers' modes of experience. In an effort to address the research questions outlined, the findings have been divided into segments providing each user group's general experience, its cue formation process, its foreground background formation process, sequencing and goals, and additional findings. The depictions of their experiences are followed by the discussion addressing their focus/mode of experience.

The Mountain Biker's Experience: A General Overview

Follow-up interview discussions and survey responses revealed that all the mountain bikers share a common primary mode of experience. Within this mode, they concentrate on determining what line of travel they plan to take to traverse through the trail environment. Most of the time, this requires them to look several feet ahead (many cited 10-20 feet) in order to prepare for the elements they will encounter.

One rider discussed his path-line formation as seeing a narrow trail. "It is an imaginary trail almost like a translucent tape or ribbon with everything in detail. Everything else [in the environment] is there but two levels down in consciousness (MB 01)." During this path/line formation process, mountain bikers are looking to see what they need to do and getting a head start on what is coming up. Although mountain bikers explained that choosing their path/line does require using peripheral vision, they

simultaneously focus on the trail tread and nearby areas to determine what elements they need to avoid.

In addition, mountain bikers discussed how picking the best line is based on the technical aspects of the trail and on looking for the easiest and safest route. They create lines by deciding how to get around a rock and over roots. When encountering curves, they draw a line encompassing the point at which they need to turn. When not maneuvering around obstacles, they try and choose a line down the center of the path. Mountain Biker 10 explained her path/line formation:

> "Looking up ahead of me, I do this thing in my head. I look ahead and then at what is between ahead of me and my bike. I try to focus on the trail 10-20 feet in front of my bike and pick a good line to ride trying not to focus on things I want to stay away from"

Another mountain biker explained, "if you don't maintain some focus on the trail, you will eventually fall off." He defined "maintaining some focus on the trail" as "to keep or maintain a certain degree of analysis of what is going on, which line I am going to take" (MB 06).

Although a majority of the trail sections that the mountain bikers rode required them to constantly analyze the trail tread elements in order to form lines of travel, many flat or easy trail sections allowed them to perceive the surrounding environment as more than a peripheral view. Mountain Biker 06 explained how his shifts in focus are dependant on the degree of difficulty and the number of the elements he must process. He explained that, choosing the path

"doesn't always have to primarily involve the trail. Like math, I can do multiplication and still talk about things, but I can't do advanced problems." Therefore, when in sections with less to process, he can look around or focus on more than his path/line formation. Yet, when experiencing more complex sections, he cannot do other tasks such as checking timers or taking in extensive views of his surroundings.

The Mountain Biker's Cue Formation Process

Mountain biker discussions revealed that their focus is primarily tied up with the technical aspects of the trail including logs, hills, creek beds, rocks and tight corners. Such formations are chosen because "on a log or obstacle that you can't go around, you really have to look and determine how to attempt it …" (MB 06).

Difficult terrain features force the mountain bikers to focus more intensely. "Danger" (MB 01), or dangerous elements, such as rocks, trees, ledges and basically anything that might cause bodily harm demand more attention. Thus, mountain bikers watch for and pick out ruts, water, loose dirt, sand, or other elements that might cause them to fall. In addition, mountain bikers pick out trail edge features such as large trees or limbs sticking out that might get in their way or appear as if they might get close. This seems to be a concern especially in areas with sharp turns. Mountain bikers also look at drop offs and turns. The safety concerns and focus required when maneuvering through turns and over drop-offs make these more topographical elements become processed as cues.

Furthermore, mountain bikers process non trail tread elements as cues if they stand out or are different. The mountain bikers explained how brightly colored elements such as flowers and an orange fence uniquely stood out from the rest of the environment. Mountain Biker 04 described encountering "a mesh orange fence in the middle of the woods" as a "non-natural, odd, out of place thing." In addition, he pointed out that trees at interesting angles or with unique features also stood out (see Figure 45).

Figure 45. Mountain Biker 04's photograph of trees at interesting angles.

Likewise, human impacts, ugly signs, flagging, tape, and the orange fences stuck out because they detracted from the natural experience. Mountain Biker 12 described how he looked at "ugly signs [and] flagging tape…all the stuff that detract[ed] from the natural, beautiful scenery." On the other hand, natural elements, especially those with extreme differences in movement, lighting, or sound also created cues in the

environment. For instance mountain biker 10 explained that he "usually look[s] 20 to 30 feet in front of [himself] unless something catches [his] eye such as birds, flowers, animals." Additionally, Mountain Biker 03 discussed how she focuses on "sunshine, wind, clouds, and the shadows they create."

The Mountain Biker's Foreground/Background Formation Process

Without discussing them within the context that they are chosen, cues mean little or nothing on their own. For instance, mountain bikers' trail experience descriptions indicated that the foregrounds/backgrounds they perceived and the degree to which these surroundings were focused on were dependent on the amount of focus they needed to process elements such as difficult features and the extent that such elements contrasted or blended with the rest of the environment.

Likewise, complex sections such as tight forested areas, heavily curved areas, and segments with rough or difficult terrain presented mountain bikers with too many elements to process individually. In order to concentrate on the small details in ruts, turns, and protruding branches, these elements become primary cues against the remaining trail terrain, turn conditions, or trees. In such situations, mountain bikers shift their focus to a smaller cone of vision and adapt to lower level hierarchies in order to process less information. As a result, they emphasize their concentration on the small details of important elements and blend the rest of the information into large chunks. These categories are apparent in trail descriptions that describe tight forested, or rocky sections. Mountain Biker 12 explained that when she described how "when riding [I am]

aware of everything around me. [I] look at it for a second or two ” Mountain Biker 05 also discussed this phenomenon, “the rest [of the environment that she is not immediately focusing on] is still there. It’s just unfocused like in photography…[when]… changing aperture on the subject.” She further explained that even though the surroundings might seem unfocused, she knows on some level what is there because she can talk about it after the ride.

For the most part, individuals tend to blend extra-elements not of primary focus. Nevertheless, the surrounding environment always contributes to the experience even when it is perceived on many different cognitive levels. For example, seeing many trees processed as tree…tree…tree can be perceived as one element labeled a “forested area”. Mountain Biker 02 explained how these areas still contribute to the experience. “I don’t think anyone can be a decent mountain biker without perceiving the entire environment. I might not see 40 trees but I know they are there. The situation becomes an automatic response.”

When something does not fit into the spatial blend because of contrast in size, shape, color, sound, or motion, it stands out against the background elements and is processed as a cue. For example, a large, flat, grass patch might be spatially blended and thus allow a taller, oddly-shaped weed to gain attention (see Figure 46).

Figure 46. Mountain Biker 05's photograph of a unique object that stood out.

Likewise, sections with flat, easy terrain shift the mountain bikers' perceptual hierarchies from spatially blending non trail tread features to examining more details in the surrounding areas. Mountain Biker 07 says that when she rides through Wildflower Alley, "it's not real technical so [she] look[s] up to see what's in bloom…[as long as she] can afford to look around." Others also explained how similar sections allowed them to look around more. "As it smoothes out, I'm more likely to look around. [Otherwise,] I only have so much energy to focus. (MB 12)"

Open areas, even with somewhat difficult terrain, can also allow mountain bikers to expand their views. Meanwhile, curves tend to influence their attention to include edge factors. At times, some curves allow mountain bikers to look directly at or through the trees. Heavily wooded areas, even when flat, can allow a forward-panoramic view, but still prohibit large distant panoramic views off to the sides. Mountain Biker 02

discussed how the changing surroundings influence her to focus. For instance, she has "to be in more control of [her] bike in wooded areas…[but] open areas allow [her] mind to expand and see more surroundings. [When in an] open area and headed into woods or closed area [her] mind snaps right back into the trail."

Sequencing in the Mountain Bikers' Experience

The sequence in which environments or specific factors are experienced influences how an element is perceived or appraised. For example, a mountain biker might appreciate an open space more after spending a vast amount of time in a dense forested segment. Mountain bikers in this study particularly discussed trail segments in relation to the sequences in which they encountered the segments.

When asked to describe what they looked at and how they experienced the element, mountain bikers tended to reference what they just encountered, what they were currently encountering, and what they would encounter next. Some examples include:

"…just coming over hill-curved and straightened back"(MB 01).

"… uphill climb after downhill through creek bed- direct line of trail and watching for roots" (MB 02).

"… I have to focus a little on what's behind log- can focus on obstacle and all of the sudden sharp turn behind it and you wipe out" (MB 05).

In addition to processing the elements in the scheme of the trail, mountain bikers also discussed how elements or sections that they already encountered influenced their perceptions and appraisals of the elements they experienced next or later. Mountain

Biker 08 explained that he can "look around more on the levee because it's open and because it's such a change. You are used to being in tight trees and you just came out." Time spent in complex sections can make mountain bikers appreciate wide open or smooth sections that might otherwise be boring or lacking challenge. After finishing a more technical, tightly forested section (see Figure 44), Mountain Biker 02 discussed how she "can take a break." Furthermore, she indicated how the sections and elements seem to play off of each other. " [I] just finished the wall switchback- out of breath!… [It was] nice to get to the top- easy cruising" (see Figure 47 and 48).

Figure 47. Mountain Biker 04's photograph of a tightly forested section.

Figure 48. Mountain Biker 04's photograph of an area to take a "break".

Sequencing can also encompass how one perceives elements within the context of when they are encountered during the ride (e.g., if they are encountered in the beginning, middle, or end). Mountain Biker 11 discussed some elements within their context of the entire ride.

> "When I hit this [an area close to the end], after having ridden more trail, it's nice because it's flat, straight, and real smooth. I can catch my breath and sort of day dream… when I see that [looking at one of his photographs that shows the road], I get the feeling of 'I've made it'."

Mountain Biker's Goals

Several mountain bikers with varying skill levels discussed or mentioned the goal to not fall or get hurt while riding. When asked at the end of his interview if he had any additional comments that depicted his mountain biking experience, Mountain Biker 08 explained, "I just try not to fall." In general, this "safety" goal seemed to influence the mountain bikers' need to focus predominately on the trail tread and edge features that might cause falls. Mountain Biker 02 discussed focusing on a "danger zone": "a huge rock pile that you should focus on or a down hill that you need to concentrate on for safety." Moreover, mountain bikers' path/line formation seemed to involve finding the safest route (see safety in the additional factors influencing focus section for a further discussion of this concept).

Racing or recreational goals can also influence perception. Mountain Biker 08 explained that his ride depends on what he is doing, "training or piddling around." If he is training he wants to keep focus, but if he is "piddling Sunday afternoon [he] is not really focused." For example he explained, "if I'm just riding I'll pay attention to a more panoramic view. If I have a more specific reason [for being out there], I focus on training." Mountain Biker 10 discussed that when she is not racing or training she can definitely enjoy the trail more. Under such circumstances, she can go slow and look around because she does not have what she referred to as "the competitive edge."

In addition to mountain bikers' preconceived goals, the environmental elements they encounter can also influence goals. Mountain Biker 07 said that she looked for wildflowers in "Wildflower Alley" because the sign inferred that they should be there.

Furthermore, many riders discussed how the presence of flowers, wildlife, sunsets, and unique natural features can influence them to slow down or even stop to enjoy such factors. Mountain Biker 09 explained that when encountering "moving water [in creek beds] if it is nice I may even stop and look."

Riders who participate in maintaining the trail discussed how their maintenance goals and responsibilities could influence their perception during rides. Mountain Biker 02 noted that "once in awhile, I see things above me. I think it is because I do trail maintenance, so I look for things that may need to potentially be taken care of later." In addition, Mountain Biker 09 explained how he has stopped during a ride to move trees and how he sometimes "makes notes" about trail maintenance needs during his rides. Mountain Biker 07 mentioned that she sometimes notes the location of limbs that stick out too far so that she can go back and cut them later.

Riding with others can change a mountain biker's goals when the other rider or riders influence the mountain biker's expectations. The mountain biker's level of experience or personality within groups and companions can influence his expectations for the ride (see additional factors for further discussion on riding with others).

Additional Factors Influencing the Mountain Bikers' Modes of Experience

Throughout the interviews, mountain biking participants discussed other factors related to their focus/mode of experience. The major themes compiled include participating with others, emotional reactions, "safety"/obstacles, motion, movement, weather, seasons, experience, sounds, and a preference for the natural setting.

Each mountain biker in this study discussed how riding with other people changes one's focus. For instance, some mountain bikers try to look around the rider in front of them to determine the path/line they wish to travel. Others follow the path/line of the person in front of them.

During some group rides, the leader yells out potential obstacles. Mountain Biker 02 explained how this allows her to look around more because she is warned before "important" elements arise. In contrast, Mountain Biker 06 discussed how taking on the leader role for the group rides causes him to scan for elements that might affect any rider's experience and not just his own. For example, he mentioned that he notices or looks for elements such as tree branches that might not influence his own ride but could be an important element for someone taller.

Additionally, some mountain bikers discussed how riding with others can push them to ride faster and harder. They explained that this can be both good and bad, depending on their goals for that day and how the riders' experience levels differ. Both Mountain Bikers 02 and 03 explained that group rides can provide some mountain bikers with the opportunity to stop and work on an element while getting guidance and instruction. Meanwhile, others get the opportunity to share their knowledge.

Overall, the riders also discussed that a social aspect can exist when riding with others. At times they talk, laugh, and point things out to each other. Mountain Biker 03 feels that "riding with someone else also allows you to share the experience with someone and talk to each other about it."

Perceptually, Mountain Biker 03 discussed how “riding with others forces [her] to remain aware of how far or close [she] is to the other rider or riders.” Mountain Biker 04 explained how when riding with others “if you’re behind someone you’re looking at them the whole time, following, them, adjusting your pace to theirs.”

Mountain bikers also discussed perceptions that created emotional reactions that caused “lingering thoughts” and perceptions that evoked feelings or appraisals based on previous experiences or personal values. For example, two mountain bikers discussed their feelings about several piles of branches stacked by lake maintenance employees after they cleared a part of the levee. The clearing was unwanted by the bikers and caused a conflict between the trail users and maintenance crew. The aftermath caused several riders to angrily recall the situation as they passed the piles. Mountain Biker 01 explained that when he sees the piles he immediately thinks “those idiots” in his head and recalls the entire experience every time he passes the brush. To other riders and hikers, the pile meant nothing.

In addition to negative appraisals, the mountain bikers also discussed how riding can invoke positive emotional reactions. One female rider explained “just how wonderful it is to be able to ride, get exercise, and have fun with my friends at fifty-four plus”(MB 02). A second rider discussed that she is often in a “state of mind” that embodies “a sense of freedom [and] a feeling of accomplishment.” She explained how tackling obstacles or getting up hills creates “feeling of empowerment”.

Previous experiences, recalling such experiences, and the amount of experience mountain bikers have in general also influences what and how they focus on elements.

Mountain Biker 02 explained that the number of days between her rides influences how aware she needs to be and the amount of time away adapts the amount of trail condition changes she expects, since factors such as time and weather impact how well she feels she knows the trail. Mountain Biker 05, who recently returned from an absence, discussed that her "hiatus from riding slows [her] down now" because she is "just getting back into the mode of riding again… having to remember that [her] bike goes where [she] looks and not the other way around."

Many mountain bikers discussed that their familiarity level with the trail adapts their focus. Mountain Biker 02 explained that she is "complacent at Lake Bryan [and she] likes to go other places to keep [her] reactions or skills high." In addition, she discussed how her experiences at Lake Bryan help her on other trails.

> Riding at Lake Bryan there are quite a few features and obstacles that really train a rider to be able to ride anywhere else around. When I see something scary on a new trail, I think of something it is similar to at Lake Bryan. [I] can do it there- so [I] can do it here... [I] immediately flash to a visual of part of Lake Bryan that requires same skill.

She further explained that she immediately flashes to an image of the Lake Bryan trail element in her head and then visualizes what path/line she uses there. Next, she relies on that path/line formation to assist her with deliberating the situation she is actually facing.

Safety, in regards to the obstacles encountered, has a large impact on the mountain bikers' focus/modes of experience. Riders discussed how they "fondly"

remember elements on which they have injured or nearly injured themselves. They explained how encountering these elements can sometimes invoke a lingering or jittery fear that causes them to concentrate more in order to avoid accidents. Mountain Biker 06 discussed how "some obstacles can be daunting… when you cross the Rock Garden bridge there is a drop off. I always increase my focus so I don't fall off."

Likewise, mountain bikers of all experience levels mentioned the number and type of obstacles they encounter as a factor influencing their focus/mode of experience. Mountain Biker 04 discussed how "it is a trick to manage the ground and the bike and not get hurt." Mountain bikers often worry about elements such as sand, rocks, and additional elements that influence the ground texture and their tire traction. Mountain Biker 02 explained how obstacles and safety can influence her mode of experience. "It can be tense and even scary. If surroundings are too tense, you get wiped out and start to make mistakes."

Motion also adapts focus/mode of experience. Angles or descents influence how, where, and what riders focus (see Figure 49). Mountain Biker 02 explained that "going down something or back up it makes a big difference. [It] shortens the distance of what I look at." Things are also different when turning, leaning, going up or down, and riding fast or slow. Mountain Biker 03 discussed that "the experience is suppose to be about motion…Sometimes [I am] just going down hill…not really doing anything but motion still happens."

Figure 49. Mountain Biker 08's photograph of a downhill view.

Mountain bikers also discussed how sounds influenced their focus/mode of experience. Mountain Biker 12 explained that the constant noise of the pump station annoyed him during his ride. He described it as a "very obnoxious, man-made, throbbing, pumping noise." He also discussed how hearing cars on the nearby road contrasted with what he sees on the trail. The noises cause him to split his focus between thinking about what he is doing while visualizing what the car is doing.

Even though recreationists may not always visually focus on what causes noises, sounds such as passing cars and barking dogs pull or shift mountain bikers' focus from the trail experience. For example, mountain bikers discussed how some sounds were unusual or unexpected; therefore, they stood out or influenced focus. Mountain Biker 02 explained how "noises make a big impact. They are distractions momentarily." Bike

noises, such as pings, pops, and squeaks, can adapt mountain bikers' focus. Noises can also cause mountain bikers to stop and check their equipment.

Animal noises, rustles in the leaves, wind, and people talking can influence where the mountain biker looks during the trail experiences. In one instance, Mountain Biker 09 explained that in one of his photographs he thought he had heard people talking so he was "look[ing] off to the side 'really' looking off to the right 90 degrees from the trail through the woods..." Mountain Biker 08 added that "little animals [noises] right there may steal focus away from the trail. If you hit a tree, it is bad [the perception of the noise]."

Even though animal noises can be a negative distraction at times, natural noises including those from animals, the wind, and water contribute to what mountain bikers explained as the positive trail experience aspect of simply being surrounded by and enjoying nature. As Mountain Biker 10 discussed, even the sheer quietness enhances the experience. "If it is really quiet I love it. It feels like I am in a dream. It puts me in a really good mood. Out there alone, you can pretend you are anywhere."

Temperature, weather, and seasons can also influence focus/mode of experience. Extreme humidity, rain, heat, or coldness can make the ride unpleasant, detract from the mode of experience, and in turn take away from what participants focus on. Such conditions require recreationists to deal with extra clothing or equipment. In these conditions, recreationists tend not linger. In addition, riding after rainstorms forces the participants to navigate through water and mud. They must also watch for falling or already fallen storm debris.

Seasonal impacts can change how monotonous the surrounding environment appears, (e.g., barren, dry, green or colorful). Weather, temperature, lighting, and animal, butterfly, and bird migration are also adapted by the seasons. Several mountain bikers discussed how seasonal changes impact their ride, focus, and especially their expectations. Several riders explained that they tend to slow down or even stop and look for wildflowers during the spring.

Riders also discussed how ugly signs, old flagging tape, and trash disturbed them, detracted from their experience, and detracted from their preference for experiencing the natural environment. Mountain Biker 12 explained that when he sees "tree…tree…tree and all of the sudden trash. It just doesn't fit in." The orange construction fencing had the same affect (see Figure 50). Mountain Biker 09 added that creek bed erosion and newly created short cuts bother him. He participates in trail work to promote environmental stewardship and does not like seeing others destroy the trail.

Figure 50. Photograph of orange fence.

Conversely, many positive natural features contributed to the mountain bikers' modes of experience. Mountain Biker 07 explained that she " likes the easy ride through the trees… [and]… enjoys being in the woods … [she was] tired of exhaust, fumes, traffic [and] likes to concentrate on riding…away from noise, away from concrete." Many natural elements contribute to the mountain bikers' mode of experience, such as the sunshine and light coming through the trees, the shadows created, and the feelings and sounds of the wind. Although it can be difficult to ride into the wind in some areas, a few riders said that they enjoy a slight breeze especially after being in dense woods. They also discussed how movement in the environment influences focus/mode of

experience. For example, the movement of water in creeks attracts positive attention. Similarly branches shifting in the wind, birds, and animals also influence focus and create a more positive mode of experience.

Additionally, mountain bikers described an active environment that catches the eye and "grabs tires"(MB 02). Mountain Biker 02 conveyed "how experience has taught [her] how [her] bike will feel or handle trail conditions or obstacles." Mountain Biker 05 explained her trail experience is "mostly by feel. I feel my bike underneath me, the trees and brush around me, the wind."

The Hiker's Experience: A General Overview

Hikers tend to have a point-to-point experience. In between points of interest, they tend to recall or reflect on previous sections, anticipate or look forward to future sections, or experience a state that some described as doing and viewing nothing. Furthermore, in her explanation of how she experiences the trail elements, Hiker 01 wrote, " I tend to focus on one specific thing, look at it up close (stop walking), and then shift a new focus object." Hiker 10 discussed how hiking typically involves seeing a certain place or special natural feature. She explained that the "action starts when [I] get there. When there is an end goal, I just hike to get there. The down time, passing to get to what you see is transportation, getting there. High time is when [I] am actually at the site…and coming back is high time because of reflection."

Several hikers discussed similar perceptions that depicted "high point", "transportation", and "reflection" stages. High points tended to be elements that stuck

out or were of significant natural beauty compared to the other parts of the trail. When hikers reached "high points" or elements of interest, they either looked at them, stopped to enjoy them briefly, or stopped to study them. For example, hikers typically looked at berries in passing; stopped shortly to look at features such as a sapling growing under other vegetation; or studied the petals of a specific wildflower. Hiker 02 explained how focus can differ; for instance she explained that in one photograph she "could not tell what the birds were … [so she was] looking at birds as opposed to studying [them] like flowers" she had studied earlier during her hike. Consequently, hiker discussions indicated that looking, as opposed to studying, was influenced by distance, approachability, and interest. Some elements, such as the birds viewed by Hiker 02, were too far away to study. Other elements such as interesting features off the trail or moving animals could not be approached to be studied. Lastly, some elements that formed cues, such as berries, contrasted with their surroundings, but were not interesting enough for some hikers to study.

Transportation hiking, times during which hikers are trying to get somewhere, has little or no focus. "Transportation" segments were typically boring or mundane parts of the trail during which hikers explained they were looking at nothing or simply looking at where they were going. For instance, two hikers discussed how they often hike simply to move through the environment for exercise and others mentioned hiking to get to a "stopping point." During these times in "transportation mode" they only picked out a few cues in the environment. For the most part, during transportation times only extremely scenic or interesting elements catch attention or are viewed. Hiker 04

explained “on a normal hiking trail, I hike. If I come to a waterfall, I’m going to stay there for a while because I’m fascinated with waterfalls… [At a] high point in the mountains, I’ll stop and take a break and soak in the view.”

Thus, discussion revealed that even the hikers who go out to look for or stop and enjoy nature experience some “transportation” or “down time” segments in between identifying the cues that interest them. Thus, the hikers experience relies heavily on the sequencing and dynamics of the trail experience.

The Hiker’s Cue Formation Process

Hikers tended to focus on elements that contrasted with the background, related to their goals or interests, or were unique natural elements.

Hikers explained how flowers and brightly colored berries stood out against the dry bush and mundane colors (see Figure 51). Hiker 03 discussed that at one point she looked at a trail element because “the splash of color caught [her] eye.”

Figure 51. Photograph taken of bright colored berries.

Hikers also explained how movement, such as trees in the wind, and noises influenced their cue formation process. Hiker 06 indicated “if something were to move in my peripheral vision, I would catch it…” Hiker 08 expanded on this by indicating how specific features created cues during his hike. “ I was attracted by the bird song. Also the high branches moving because of the wind… the wind was ‘shhh’-moving branches and making a nice sound of branches and wind, so I was looking at them.” In addition, other hikers discussed how the movement and noises from people, animals,

mountain bikers, and cars on the nearby road influenced where they looked during their experience.

Other human elements, such as a house, a factory, wires, trash, and telephone poles formed cues because of their contrast within the natural environment. Hiker 03 explained how the "telephone pole stood out especially in the open space."

In addition to single elements or features forming cues, hikers combined or condensed many elements into a view and classified the entire scene as a cue or processed the whole scene as one element. When Hiker 06 reached the top of the levee, he referred to the scene as "one" cue requiring his focus (see Figure 52). He explained that it was "just beautiful when I got to the top. I wasn't searching for something. This one came and found me!"

Figure 52. Hiker 06's photograph of a scene he focused on.

The Hiker's Foreground/Background Formation Process

Hikers indicated that surrounding environment helps them appreciate or choose cues because the foreground and background blends to make the significant object stand out against boring or similar aspects of the environment; or because the foreground and background enhance the cue by creating an entire atmosphere. The foreground and background also influence the hikers' cure formation process because both adapt how much and what space hikers can encompasses in their focus.

Hiker 01 explained how she "really looked at flowers because they really stick out. Everything else was boring…boring… boring." Hiker 03 indicated that such elements or features stick out because "browns and greens blur." Hiker 06 explained that,

> it gets boring that is why things just catch your eye. Your focus gets short and you do not pay attention because things look the same. Small differences that are the mundane start to blend and you do not pick up on them (see Figure 53).

Figure 53. Photograph example of a mundane area.

Other hikers, such as 07 indicated that “dry plants make berries stick out and plants start to look the same so I do not see them.” Thus, as explained by Hiker 10, it seems that the most unique or different feature sticks out. “If something else trumped the berries, I would not look at them.” For example, if an animal ran across the trail or a large section of flowers were next down the trail, she would not have noticed the berries. This impact on perception might be especially apparent if the study were conducted again in the fall. The hikers and mountain bikers would have chosen other cues or foregrounds/backgrounds where flowers or berries were present in the spring.

Just as entire areas can blend, they can also work together to create one, holistic cue. Hiker 01 discussed that she took one picture of some berries and their background because they simply formed a nice composition amongst their surroundings. Hiker 02 explained a similar instance when at one point during her hike she was "looking way ahead… saw it was a good picture with paths and curves and mystery- thought it was an ideal picture. "

When hikers do focus on a specific cue, the role of the foreground/background seems to disappear or blend. Hiker 03 explained that the rest of the environment "fades out when I find something I like." At times, she even carries binoculars in order to really focus on specific elements. . Hiker 02 also commented that "when [she] look[s] at a flower, the rest of the environment is gone."

Vistas, openings and forested areas also influenced the hiker's cue formation and mode of experience. Hiker 03 explained that "the width of the trail and angles, whether straight or bending, impacts where you look." For example, in one picture where he was looking into a clearing, Hiker 06 explained that he "started to feel like [he] was in a box or maze so once [he saw] the clearing [he] just want[ed] somewhere different to look" (see Figure 54). Hiker 11 also discussed looking for openings.

> Occasionally, when the path enclosed I would focus on the path and everything canopied around me. I would always catch when there was a view. I caught any cuts in trees or bushes. I would try and catch views to see how far I could scan or extend the view. [I was] looking for a change

> in scenery, something to stand out… looked down at the trail when foliage closed in. I looked at distinctive features when they appeared.

Figure 54. Hiker 06's photograph looking through an opening.

Another hiker discussed that tight vegetation does not provide as much to view. She explained that there is less to look at in the forest, but when it opens up she can look everywhere. When reviewing a picture she took while on the levee, she pointed out that she could "see everything because [she] was out of the woods"(H 04). Later she explained that she has a

> Totally different perception when in trees then when in open…Everything becomes a wide view. [She] tend[s] to look 360

degrees. In closed space, [she] tends to look in front or maybe side-to-side (H 04).

Sequencing in the Hiker's Experience

Sequencing appears to play a role in how hikers notice or appraise trail elements (see Figure 55). Hiker 03 explained the impact of sequencing when she was looking up to the dyke because it was big and open. She had just come up through the forested area and into where it opens. She explained how "you were so used to being surrounded by trees and suddenly there was a vista you could look at."

Figure 55. Photographs indicating various degrees of vegetative density and openness experienced by hikers during their trail experiences.

Figure 55. Cont.

Figure 55. Cont.

Hikers also discussed appraisals in the context of previous surroundings. Hiker 11 appreciated one view because he came out of the "dark" and the sunlight penetrated through. When discussing one photograph, Hiker 02 explained its context to the previous section of her hike.

> I wish the pictures could have been of the whole setting … I stood there for a really long time because it was a nice place to stand. All of a sudden there was a wide-open space. Had it not been such a nice place, I would not have stayed.

Hiker 11 explained,

> Where you just came from contributes to the awe. What came before might have glorified the experience. Height of focus might have changed if contrast did not exist. Surroundings give emphasis.

Furthermore, hikers noted sequencing in reference to where elements or features fell within their overall experience. Many hikers discussed reflecting on their way back or looking for the end because they knew it was near. Others explained how their focus differed in the beginning of the hike when getting a feel for the trail conditions. Hiker 06 also noted that "if you walk the opposite way, because things come in a different order, you notice other or new things."

Hiker's Goals

Hikers discussed various goals, and they explained how they can have different goals each time they go hiking. One hiker explained that her environmental perception depends on the reason she is there. "It depends on what you look for… I think you go hiking for reasons at different times. That definitely affects what you look at" (H 02).

Some hikers preferred to look for specific plants or wildlife, some simply wanted to enjoy being in nature, and others wanted to hike a specific distance to get exercise.

In one case, giving a hiker the digital camera influenced her to look for "good pictures" (H 02). She commented that if she had been given birdseed she would have looked for birds. Another hiker explained that her experience depended on her

motivation for going out there. "If birding, [she] would sit in one place. If [she] took [her] camera, [she] could take 50 pictures in 50 feet, playing with angles" (H 01).

Hiker 05 explained that he is "always looking for game because [he's] hunted all [his] life." Another hiker explained that she does not have time or patience to look for detail unless that is why she is out there. "When I'm hiking, I don't have room for detail. I don't have time to look for small, ordinary things except unique (H 03)." She later discussed that for her "to get somewhere [she] tend[s] to ignore everything else."

In addition to their preconceived goals, hikers also explained how environmental features influenced or created new goals during their hikes. After one hiker saw a cluster of berries at the beginning of her hike, she continued to look for more throughout her experience. Two additional hikers continually looked for birds after seeing or hearing them at previous points along the trail. Meanwhile, a designated area influenced Hiker 11's perception. "I was in Wildflower Alley, and so I was looking for wildflowers"(H 11). (See Figure 56).

Figure 56. Photograph of “Wildflower Alley” sign.

Hikers also discussed shifting their focus or goals when encountering technical parts of the trail that required them to concentrate on their footing. Hiker 12 explained how at certain points he was “watching where to put [his] foot so that [he] did not fall.”

Additional Factors Influencing the Hiker’s Mode of Experience

One additional factor influencing hikers’ focus/mode of experience is navigating areas with difficult terrain. All hikers mentioned trail segments that required them to watch where to put their feet. They also discussed negotiating around low water, puddles, and mud. Inclines and hills also caused hikers to watch were they were going or to adapt their focus. Hiker 06 explained the difference between easy going and

strenuous sections. When it is "really easy [you're] not thinking about the actual hike and [you] can think about what's going on around you, but I've done a hill/slope that was so steep, I was so tired, I stopped focusing on everything." He explained that the same thing can happen when he encounters difficult obstacles. Another hiker commented that she seemed to take a lot of pictures of the ground. She was surprised at how much time she concentrated on her footing (see Figure 57).

Figure 57. Hiker 10's photograph focusing on the ground.

In addition to the ground and terrain requiring attention and adapting focus, some areas had nothing for hikers to focus on at all. Several hikers discussed a "transportation" effect during which they were simply getting somewhere or moving

between elements of interest. Many hikers commented that at times they were simply looking at nothing. At one point Hiker 07 “just stopped and took picture because the music went off. [There was] nothing special.” Hiker 05 explained that in one frame he took a picture of the trail itself because there was “…nothing catching my eye. Nothing really appealing or better to look at.” Hiker 01 also took a picture during which she later explained she was “just staring ahead.”

Safety was also an important factor that the hikers discussed. A few hikers explained how they felt open and exposed on the levee compared to in the woods. Hiker 01 pointed out that when she was on the levee she “felt more exposed [and] less inclined to be on [her] hands and knees looking at flowers.” She further explained that seeing only one person was a positive aspect of her hike but being seen was a negative aspect of her experience.

Mountain biking encounters also influenced the hiker’s mode of experience (see Figure 58). The hikers did not seem to mind seeing mountain bikers on other trail segments or seem to mind the fact that they were on the trail. Hiker 12 noted in his immediate follow up interview that a couple of bikers that were talking cued where he looked but that their influence on his experience was “more toward the positive end” while he noted that the noise from vehicle traffic was “definitely a negative.”

Hikers seemed more disturbed when mountain bikers came from nowhere and caused a “surprise” or “jump out” reaction. Hiker 08 explained how “they come and it is an awakening. From then on you are contemplating and you have to be aware and change your state. You have to be worried.” Hiker 10 discussed how he“ saw a

mountain biker at the last minute and I was paranoid, so I looked over my shoulder after that." One hiker saw tracks and began to wonder if he needed to get out of the way. Another saw a bike depression in the trail tread and began to listen for bikers. The hikers discussed how these feelings or anxieties adapted their current focus and continuing mode of experience.

> I met several bikers and I was kind of aware of their noise. In the first encounter, they came from my back and I kind of was surprised by the noise. From then on, part of my attention was devoted to not be hit by a biker (H08).

Figure 58. Hiker 10's indication of where a mountain biker had just passed.

Hikers were also sensitive to noises. Many noises from the road, boats, humans talking, animals moving, and dogs barking, created a "jump out" or anxiety disruption that was similar to the reactions the hikers had to the mountain biker encounters. One hiker discussed how he listened in fear for snakes moving while the pump station noise, cars on the road, and music playing one evening disturbed other hikers. Hiker 05 discussed that the road noises "were distracting when in the woods," and that he was "looking to see if vehicles were coming." Hiker 04 explained that "at the end there was a band. I would have preferred not to hear it. It was out of the ordinary because you're hearing instrumental noises amplified. You're not concentrating on enjoying the outdoors."

Natural noises or sounds from the wind, animals, or pure silence added a positive impact to the hikers' modes of experience. Hiker 03 explained how "the sight and sound of wildlife made me happy!" In addition, hikers such as 08 discussed how the sounds created by the wind "give a very pleasant mood to the total trail/experience within the environment." Hiker 04 explained "the sound in the woods {silence) is rewarding… I love the thick brush, birds, and animal noises." Hiker 05 captured the impact of natural silence in his explanation, "there is nothing better than being by yourself in the quiet."

Hikers also tended to change focus or modes of experience based on to nearby land uses (see Figure 59). Hiker 01 explained that when she saw a fence and heard road noises close by she assumed she was near the park boundaries. As she moved further away, she felt that she was deeper into the park. Hiker 12 encountered a fence along the trail so he "tried to see what was different or why it was roped off." One participant saw

a house and started to think about where the people were and if she would run into them. Hiker 11 explained that seeing "this house and telephone poles, something that should not be there, increased [his] curiosity and made [him] want to look more…to know if [he] was seeing the full picture." The hikers were also cognitive of both the visual and audient distance to the road.

Figure 59. Photograph example of nearby land uses and human impacts.

Hikers also noticed human impacts such as telephone poles, wires, and the factory across that lake. They noticed trash and debris too. Such elements tended to detract from the positive natural features. Hiker 03 explained that the sight of the factory across the lake made her contemplate the water quality and negative

environmental activity in the area. She said the "sight of the factory influenced [my] perception [and] made me think of what the water was like. Not in a positive way but a questioning way."

Thoughts such as Hiker 03's distracted the hiker from enjoying the quietness, the sounds (e.g., from winds, birds, frogs), the visual sights, and the emotions present while experiencing more pleasant natural areas. For instance, hikers discussed how the peacefulness and quietude present in nature influenced their focus/mode of experience. Hiker 02 wrote on her follow-up questionnaire that "it was just calming and a pleasant break in my day from man-made stuff and pavement- !!trees!!" She explained that she experienced the trail elements as a : "tunnel of vegetation all around me- pleasant looking for things scurrying on the ground or flying overhead…" Hiker 01 explained that "there were no time limits out there…affected focus and what I could have time to look at." Hiker 12 summed up the impact of being in nature when he discussed that he "just enjoys that silence and feeling of solitude in nature. The mostly unchanged creation around me is peaceful and relaxing."

Seasons also impacted the hikers' focus/mode of experience. Hikers discussed how extreme temperatures cause them to move faster and make them simply want to finish. Rains and winds also push the hikers to move faster and at times require them to carry or use extra equipment. Hiker 04 asserted that bad weather can make the experience less enjoyable whether a hiker is prepared or not. Hiker 06 explained that "it wasn't hot out, but temperature could affect your focus. Also, if it is cold you lose me. I want out, to get done." Hiker 03 also discussed the weather's influence on her

experience, "…really lucky with weather. It was a beautiful day. Sunny [weather is] definitely a positive experience. Sun makes everything look brighter and nicer… Sun can highlight a leaf or something and make it stand out."

On the contrary, hikers found some parts of the trail "dark". Some heavier vegetated segments or times nearing sunset created conditions with lower amounts of light and affected how far the hikers looked in front and around. Low lighting often caused hikers to focus more on where they were walking or stepping. Hiker 05 explained "towards the end it was getting darker. It was a different look, lower light. [It was] still enjoyable. [You] look at things differently because you can't see into the woods as deeply. Your space gets smaller."

Hiker 02 mentioned that seasons also influence focus. They can impact the colors in vegetation and what animals, birds, and butterflies might also be out on the trails or migrating through. Hiker 04 explained that since she hiked during the spring she looked for wildflowers, but had she hiked during the fall, she would have looked for changing colors in the leaves.

Hikers also indicated that hiking with others, impacted their focus or mode of experience. Hiking with others adapts focus in two predominate ways: it creates a verbal and social component, and it influences hikers to point elements out to each other.

Hiker 10 explained that "when alone 100 percent of my attention is on my surroundings. When with other people, they divide my attention." Hiker 11 discussed that when alone he "invent[s] new things to peak [his] interest. With friends everything fades away… [because] if we had been talking, I would not have noticed much." For

Hiker 03, “conversations draw [her] to the other person”. In addition, Hiker 08 feels that when he is alone he interacts with the environment more. Hiker 06 explained:

> Certainly, if you’re walking with somebody else more likely than not I’ll be talking, looking at them when they talk, thinking about what I’m saying. I focus more on conversation, maybe not significantly, but it certainly hampers or changes my experience in the woods, [thinks for awhile] but it depends on the reason you’re out there. You could be more attentive if you are talking about what’s out there. You might focus on something you wouldn’t focus on if by yourself. You may become open to what the other person sees. If you take a child, like my two-year-old nephew, you would stop and explain or focus on simple things like, ‘that’s a leaf’. (H06)

Thus, hikers discussed how companions can point elements out and shift focus. Hiker 02 explained, “if they say ‘hey look at this’, I’m going to stop and look…[and I’m] forced to look at birds if with someone who looks at birds.”

Consequently, bringing a dog along for the hike can also influence the hiker’s experience. Hikers 01 and 02 discussed that they often have to chase their dogs and keep track of where they are at on the trail. Hiker 02 also explained that she usually runs or hikes quickly at the beginning of any hike in order to tire her dog out. She commented that during this time, she does not really look at anything. Furthermore, her dog tends to scare away wildlife so she does not get the opportunity to view them.

DISCUSSION: UNDERSTANDING THE DYNAMIC EXPERIENCE

RQ^2: What, if any, Cues, Backgrounds, or Foregrounds do Mountain Bikers and Hikers Form within their Mode of Experience?

Cue formation

Mountain bikers in this study primarily perceived trail elements (e.g., logs, hills, creek beds, rocks, and tight corners) as their cues. They also focused on edge features such as trees (especially in turns) and limbs sticking out. Both the mountain bikers and hikers discussed how bright colored elements such as flowers, movement, lighting and noises created cues.

Hammit and Cherem (1980) discovered that participants focus more often on elements with bright colors or obscure noises. Participants also focus more on elements or environments that create novelty and concentrated groups such as wildflowers. Hammitt (1978) found that features were typically reported as most recalled and preferred landmarks.

Both the mountain bikers and hikers in this study indicated how human elements such as trash and fences created or formed cues. In addition, the hikers also noticed houses, wires, and telephone poles.

Cherem and Driver (1983) examined how human signs can have an extended value based on the users' perception and are often viewed with personal and social perceptions. Hammit and Cherem (1980) also noted human impacts as elements commonly present in consensus and thematic photos.

The mountain bikers in this study also discussed how turns and drop offs formed cues. Appleyard, Lynch and Myer (1963) explained how angles can impact how and what elements are perceived. Cherem (1973) also found that hikers tend to focus on areas with sensory contrasts (e.g., settings with abrupt changes including sound-motion, strong odors, bright colors, high viewpoints, extremes of enclosures, size extremes, extreme grouping or singularity, textural extremes, regular patterns, and incongruous forms).

Lastly, hikers also labeled entire views, such as the sunset over lake, as one element or one cue. This finding is similar to Cherem's (1973) discussion explaining that participants' consensus photos tended to be in areas where a multiple number of object types and sensory contrasts were present.

Foreground/background

Mountain bikers in this study seemed to conserve mental energy in order to concentrate on important elements in the trail tread or on the trail edge by blending other elements to form spatial areas such as forested areas.

Appleyard, Lynch, and Myer (1963) explained that when participants increase their speed, they have to look further down the way in order plan in time for what they will encounter next.. Therefore, mountain bikers might limit their cone of vision in order to create the angle or view needed to look further down the trail (Appleyard, Lynch, and Myer, 1963). Such perceptual adaptations often force participants to cluster cues and force their overall hierarchy used to examine extra elements to shift from detailed to

general. During such processes, focus is primarily concentrated on points requiring decisions (e.g., encountering roots, rocks, and trees) that require the mountain bikers to decide how to maneuver over or through them.

In this study, hikers discussed how mundane or repeated elements blended to form spatial vastness or backgrounds. Furthermore, the hikers also explained that the surrounding environment decreases in importance or receives little or even no attention when they are studying or focusing on a particular object. In some cases, hikers use binoculars and, consequently, change their cone of vision as well as adapt what they focus on and perceive during their experience.

Furthermore, both mountain bikers and hikers shift their perceptions from spatial blends to cues when elements stick out in contrast to the background. In addition, hikers tend to allow several elements to work together to complement each other such as colors of berries against brush or curves in paths against the horizon. Mountain bikers also discussed how the tightness of their surroundings (e.g., spatial proximity of the vegetation to the trail), thickness of the brush, or water features contributed holistically to their mode of experience.

Cherem and Driver (1983) discussed how energy gradients represented as converged contrasts between regions such as forest against grass or loud against quiet influence focus. The authors also explained how information processing influences what is seen. For instance, various forms obtain more attention than others in places where several things are happening (e.g., novelty, diversity, change in variance). Cherem (1973) found that hikers tended to photograph areas or nodes with a diverse number and

variety of sensory contrasts. Hikers frequently reported these perceptually exciting nodes, PENs, as their more positive or negative perceptions during their experiences.

In addition, the mountain bikers and hikers explained how where they look and the degree to which they perceive the surrounding environment are influenced by the changes they experience sequentially (e.g., moving from tight forested area to open; from rough terrain to smooth; or from curved trail segments to straight segments).

Appleyard, Lynch, and Myer (1963) explained that coming into a space (e.g., open space, openings, widths, and voids) introduces a strong visual impact and allows individuals to determine where they fit in the new or contrasting setting.

RQ^3: What Environmental Factors or Cognitive Processes are a Part of and Valuable in Mountain Bikers' and Hikers' Modes of Experience?

Sequencing

Both the mountain bikers and the hikers indicated that the sequence in which they encountered elements or settings, such as the freshness of an opening after being enclosed and the beauty of sun peaking through after being in dense, darker areas, influenced each other. Appleyard, Lynch, and Myer (1963) explained that although users can pick out objects or label areas, these are experienced in relation to each other and possibly at the same time. Thus, users cannot easily make distinctions or explain the individual elements because some environmental factors work together cohesively.

Both participant groups also indicated how the encountered elements or settings were influenced by where they fell in the sequence of the entire experience (beginning-

middle-end). Appleyard, Lynch, and Myer (1963) discussed goal approach as a measure of success: as part of reaching the end determined by what you see or know about in the distance, encounter, and get past.

Both participant groups also discussed how the elements they focused on and their entire experience could be adapted depending on the direction that they travel. Furthermore, as the mountain bikers discussed what they focused on in one photograph, they tended to reference what they had just encountered or what they would encounter next.

Hull, Stewart, and Yi (1992) found that hikers traveling in opposite directions reported different satisfaction levels at different points along the trail. Appleyard, Lynch, and Myer (1963) discussed that the highway can be traveled in two directions. They explained that each direction provides a surrounding experience as a sequence of light rays that influences the users' perceptions of colors, textures, and movements. Therefore, participants' activities along a linear route essentially involve experiencing a constantly changing sequence of motion and space.

The hikers and mountain bikers in this study discussed how the changing surroundings and specific elements played off each other. The hikers tended to get bored when homogenous, narrow, tight environments became mundane. Meanwhile, mountain bikers seemed to be able to create diversity or experience novelty by shifting their focus between the changing trail tread elements in rough areas to the surrounding environment in areas with smoother treads. Accordingly, the mountain bikers' experiences might

seem more diverse because they moved through the environment faster and, therefore, did not experience any one setting at length.

Cherem and Driver (1983) discussed how several authors (Platt, 1961; Kaplan and Wendt, 1972) have referred to or explained information processing in relation to a human's need to perceive both complex and simple scenes. For instance, individuals prefer to experience enough contrast or novelty to keep the scene interesting, and yet enough simplicity or patterning to allow themselves to readily process the scene without experiencing sensory overload. Furthermore, humans particularly enjoy the changing amounts of information when such adaptations in their surroundings produce novelty, surprise, or uncertainty (Cherem and Driver, 1983).

When examining rhythm and continuity, Appleyard, Lynch and Myer (1963) discussed how drivers paid attention to close objects or looked straight ahead in places where the tempo was rapid, while they looked left and right and far off in the distance when it was slow. Furthermore, they felt rushed, tense, and forced to pay attention when the tempo was fast; and they felt leisurely when it was slow. Likewise, intense concentration added excitement to the drivers' experience; however, they felt strained when forced to concentrate over long periods of time. Therefore, if the expansive landscape lacks variety, constant scanning becomes taxing as well. Yet, if the tempo is slow in an area without variety and requires little or no concentration, the drivers are bored (Appleyard, Lynch and Myer, 1963).

Cessford (1995) found that mountain bikers prefer to experience some degree of change or variety in the settings and sequences they encounter. Appleyard, Lynch and

Myer (1963) explained that an individual's likelihood to connect with the environment is related to how he perceives the size of the elements they encounter. Thus, they explain how an individual's appraisals of the land formation sizes and distances encountered shift toward a negative connotation when he is on foot compared to when he is driving.

Goals

Mountain biker goals included safety, racing or not racing, trail maintenance, riding with others, and environmental influences creating or changing goals. Their footing, recreating with other people, and the environmental features they encountered influenced the hikers' experiences. In comparison to the mountain bikers who primarily form a path/line, the hikers can have very diverse goals from each other, such as wanting to travel a far distance quickly to set up camp or wanting to watch for wildlife in a small area.

Kevin Lynch (1960) explained that an individual's goals influence the environmental image that he or she forms; and therefore, these images differ among individuals with various goals. In turn, the environment can create goals or new areas of interest.

Cessford (1995) found that advanced riders indicated the importance of experiencing speed and excitement, while beginners did not respond negatively toward the importance of such factors. In turn, he found that most mountain bikers, including those who have entered a race, indicated that racing is not an important motivating factor. Furthermore, even though he selected his sample from racing entry lists, only

19% of the respondents listed racing and race training as one of their top three preferred riding features (Cessford, 1995).

Although some extremes may exist in individuals' degrees of focus, the findings in this study indicated that mountain bikers' primary perceptual process or mode of experience seemed to have less variance than the hikers. For instance, overall the mountain bikers in this study discussed racing, practicing racing, or enjoying being in nature on beginner, intermediate, and advanced levels. Although their intensity or concentration levels may be influenced by their beginner, intermediate, or advanced skill abilities, all the riders interviewed discussed their need to a form a path/line to determine where they would travel. Some additional factors such as riding with others, looking at wildflowers, enjoying a sunset, or watching for trail maintenance needs also influenced their perception; however, mountain bikers generally formed their path/line and looked around in open or flat areas.

In turn, the hikers in this study discussed very diverse goals and perceptions or modes of experience. Some hikers explained that they prefer to hike for exercise or simply to get to a specific point along the trail. These modes primarily motivated their experiences, while viewing or studying nature became a secondary or a lower priority. Hikers also discussed experiences when they hiked to socialize or to spend time with others. Although these hikers still enjoy the opportunity to experience nature and although they still focus on some cues along the trail, their conversations and socialization dominate their focus/mode of experience.

Another hiker discussed how she could take 50 photographs in a few feet and really stop and examine every little detail for a length of time. Therefore, the perceptions discussed indicate that some hikers have extremely different modes of experience.

Hull and Stewart (1995) found that the hikers in their study did not view extremely different objects or areas during their hikes; therefore, they concluded that a general hiker might exist. In turn, they suggested that land managers may be able to develop and manage trails that provide large masses of hikers with settings that produce positive outcomes.

Although several authors indicate that many groups have consensus on what they view (Hammitt and Cherem, 1980; Lynch, 1960; Kaplan, Kaplan, and Ryan, 1989), these may only account for general shared preferences of a more visual nature. Lynch (1960) also stated that "different groups may have different images of the same outer reality" (p. 131). Furthermore, Cessford (1995) recognized variances in hikers' perceptions; therefore, he suggested that future research examine how different walkers perceive mountain biker encounters in different settings.

Perhaps some groups with extreme modes of experience need to be classified into more homogenous subgroups for planning purposes. As the findings in this study related to goals indicate, perceptual consensus may be more complex when planning trails for more than visual consensus and in planning for the modes of experience of different user groups. From this perspective, it appears that vast perceptual extremes may exist in some trail areas between some hikers and some mountain bikers with

extremely different preferences or goals. Such encounters in some settings may affect or influence too much of some recreationists' overall experience and not others.

Additional factors

In addition to the previously discussed factors, participants also discussed additional elements that influenced their focus/mode of experience. Both the hikers and mountain bikers explained how recreating with others can adapt their mode of experience to involve focusing on socialization or on sharing their experience (e.g., pointing out elements and perceptions to each other). Thus, recreating with other people can influence participants' goals and awareness or the skill level or intensity with which they recreate.

In addition, both mountain bikers and hikers encountered elements or settings that invoked emotional responses and caused lingering thoughts. Some examples include the pile of debris that forced two mountain bikers to recall a conflict situation with the Lake Bryan staff, and the hikers' encounters with mountain bikers that created lingering anxieties for some..

Hull and Stewart (1995) did not examine lingering or overall impressions of extreme elements; however, their study did reveal that the type and distance of objects viewed and encountered accounted for a small percentage of the variance in participants' experiences. Thus, they implied the quality of the experience involves more than the type and amount of landscape viewed. They also explained that such findings may indicate that some elements may produce a stronger impact on some hikers than others.

Consequently, hikers might be affected by these reactions to such an extent that their responses influence their perceptions of the elements and settings they encounter during their experience.

In addition, both the mountain bikers and hikers discussed how noises influenced their mode of experience by automatically shifting their focus to the sound. As a result, sounds can contribute to or detract from their experiences. Furthermore, sounds can introduce a visual component or mental appraisal in the participant's mind.

Hammitt and Cherem (1980) discussed that noises gain more focus because of their contrast in the environment. Noises can introduce novelty to keep or create interest or add to the natural patterns in order to provide simplicity. Noises, as the ones Hiker 08 who feared snakes listened for, can also create emotional reactions and lingering thoughts. For the mountain bikers trying to process a large amount of information in more difficult trail segments, noises can cause cognitive overload or pull attention away from important elements and, therefore, present safety risks. Non-natural or loud noises such as the pump station, road noises, and loud music can also detract from the natural setting.

Hikers were also very sensitive to surrounding land uses such as fence lines, houses, and right-of-ways. At times, some of these uses pulled the participants' focus from their hike and made them contemplate what was going on in the other areas, what they might encounter as a result, and what influence the surrounding influences might have on the naturalness and safety of their immediate environment.

Schroeder and Anderson (1984) conveyed the importance of maintaining naturalness and discussed how areas with trash, maintenance problems, and manmade features detract from safety preferences. Furthermore, elements that exhibit a different use or different ownership can inhibit individuals from openly walking around in areas (Kaplan, Kaplan, and Ryan, 1998).

The hikers also discussed feeling safe or comfortable in different natural settings. Trail areas with balanced complexity and density made hikers feel safe while hiking or studying plants; yet, the hikers felt exposed in other, more open areas of the trail. Nasar and Jones (1997) explained that design elements reduce individuals' perceived security, especially females, when such features prohibit escape or the ability to know if other observers might be present.

Mountain bikers also discussed safety issues that involved mastering and handling a multiple number of obstacles or elements at one time. Appleyard, Lynch, and Myer (1963) discussed that speed often shifts focus to points requiring decisions. Thus, the mountain bikers encounter safety issues in areas that may cause sensory overload or in areas that do not provide them the visual ability to plan their path/line formation in time to successfully apply it. The hikers also discussed times when the path or trail tread required an extensive amount of their focus in order to maneuver safely along the trail.

Mountain bikers also discussed how motion, angles, experiencing the environment, and being surrounded by nature also influences their mode of experience. Lynch (1960) discussed how peoples' appraisals are influenced by the kinesthetic elements along the path, especially if the individuals are moving quickly. Furthermore,

coming into a space allows a person to determine where to fit (Appleyard, Lynch, and Myer, 1963). Although recreationists could probably experience some degree of satisfaction on plain surfaces, their surroundings (e.g., nature) can improve the participants' setting-based outcome (Appleton, 1996).

The hikers also discussed "transportation" segments within which they were simply getting somewhere. They also discussed times when they looked at nothing. These might be times for reflection, appraisal, contemplation, or boredom. However, they might represent the outcomes experienced by individuals who are more concerned with getting to a specific location in a certain amount of time rather than with connecting with nature.

In their study, Hull and Stewart (1995) found that hikers focus on typical or average elements such as trails, rocks, bushes and other hikers more than significantly ugly or majestic views or elements. Thus, they imply that hikers may, at times, also have narrow views or view their surroundings on low cognitive levels. Consequently, hikers might not always be connecting with, studying, or viewing the naturalness of their surroundings.

RQ^4: Do Mountain Bikers Perceive Elements in Detail While Experiencing the Trail Environment?

Mountain bikers primarily focus on creating a line or choosing a path within the trail tread. In order to determine the best or safest line to travel, mountain bikers perceive many factors or elements in a high degree of detail.

As Mountain Biker 07 explained, "[my] focus is tied up with technical aspects of trail" such as logs, rocks, hills, creek beds, and tight corners. Thus, mountain bikers must focus on and extract details from their surroundings in order to determine where and how to travel through the trail environment. These detailed perceptions, quite opposite from seeing general spatial formations, included times when mountain bikers studied surrounding ruts, rocks, roots, and mud in order to locate the best spot for their bike tire to fit through the trail tread (MB 07).

Mountain bikers in this study discussed that the terrain "requires focus and attention" (MB12). Mountain Biker 01 explained such factors as "concentrating on roots, especially angled ones, because they can be tricky" (see Figure 60).

Figure 60. Mountain Biker 01's photograph of when he was concentrating on roots.

Other mountain bikers discussed focusing on harder packed sand in order to find an edge where soft and harder sand meet. Furthermore, hikers explained that turns, ruts, roots, overhanging trees, rocks, and switchbacks require their concentration in order to traverse quickly and safely through the trail setting.

When mountain bikers concentrate on these small fine points, their perception falls on the detailed end of Jacob and Schreyer's focus continuum. For instance, when encountering similar elements, Mountain Biker 08 described his experience as being "totally focused". And, he explained that "when going up a ledge [he] focus[es] on where it is most run down or where the least degree of pitch is to go up."

Mountain bikers also experienced focused modes of experience throughout entire trail segments such as "Last Call" where there are a number of turns in the trail. For instance, the amount of detail or clustered elements that one must process quickly, such as a rough trail tread and multiple, sequenced tight curves, requires the mountain biker to process many details in a short amount of time. Meanwhile, the mountain biker must blend the vast amounts of extra details in the surrounding environment in order to avoid sensory overload. This concentration, or overall amount of intense focus required during the dual process of examining one area or element in detail while simultaneously spatially blending another area, creates an overall focused mode of experience throughout the entire trail segment. The opposite of these focused segments would be the smooth, open sections that the mountain bikers referred to as "breathing spaces" or "breaks."

In addition to viewing detail within the trail terrain or tread, mountain bikers do sometimes catch and enjoy small details in the surrounding area. Mountain Biker 12 explained that he took the picture of the bark on the tree shown in Figure 61 because he noticed the difference in its color and texture. Mountain bikers also discussed times when they have slowed down or even stopped their ride to look at flowers, unique features, or to watch sunsets. Such practices seemed more indicative of rides that Mountain Biker 08 defined as: ”Sunday morning strolls”.

Figure 61. Mountain Biker 12’s photograph focusing on color differences in tree bark.

RQ[5]: How do Findings Underlie or Relate to Outdoor Recreation Conflict?

The findings in this study point out that mountain bikers and hikers view different areas and elements in the settings in different ways. However, the findings also indicate that some consensus may exist in *Where*, on *What*, and *How* all participants focus during their trail experiences.

Further analysis of cognitive processes indicates that both the mountain bikers and hikers focused on elements of interest and contrast. At times, both groups of participants also zoned in on specific elements while disregarding their backgrounds. Furthermore, they both viewed distant expansive areas in their surroundings.

Previous discussions point out that various settings and sequences influence when participants focus on specific elements or general spaces during their experiences. Jacob and Schreyer (1980) define mode of experience as "the varying expectations of how the natural environment will be perceived (p. 370)". In turn, they theorize that the mode of experience creates or contributes to conflict when sensory interactions ranging along a focus continuum create variations in participants' interactions with nature. Jacob and Schreyer (1980) explain that conflict occurs when participants experience settings in ways that require them to observe their surroundings with different degrees of attention and in varying amounts of detail. Thus, the authors suggest that these conflicts or interruptions are based on how focused or unfocused participants are when they experience the environment.

The findings in this study indicate that participants expect both positive and negative variations in their interactions with nature due to the multiple factors or

dynamic settings they encounter during their activities. When asked what influences their focus/mode of experience to change and if these changes were positive, negative, or neither, participants indicated that for the most part they expected and preferred changes.

Mountain bikers explained that changes keep the ride exciting and challenging. They make it a "bigger sensory experience" (MB 02). However, MB 11 explained that change depends on the participant's perception at that time; for example, at times, his evaluations of changes "depend on [his] mood. If [he has] a rough day, [he] want[s] other things to go smoothly". Thus, some changes that he is not used to may bother him more on these days than on days when he is in a good mood.

In general, the mountain bikers explained that negative changes usually involve encountering elements that may cause potential accidents, such as people changing or moving trail elements that regular users expect to be there. Change can be appraised negatively when too much change prevents participants from being able just to ride or causes them to have to think too much. Mountain bikers explained that changes in focus that grab attention are evaluated as a matter of perception. For instance, a bright flower that stands out might be a positive distraction from their path/line formation; however, an animal sound that forces a mountain biker to split his or her attention between a technical section and the noise might be perceived negatively.

The hikers in this study also explained that change in the environment is good (such as viewing plants, openings/closings, flowers, and berries) when it introduces excitement to the experience. Meanwhile, extreme weather, negative human impacts, and rough terrain can introduce settings and changes in focus that do not provide

positive or expected outcomes. Abrupt surprises in focus, such as hearing a snake, seem to bother hikers as well. Also, some changes, such as differences in nearby land uses can cause lingering thoughts or non-positive reflections. Thus, the hikers tend to prefer changes that do not detract from their expected modes of experience.

Jacob and Schreyer (1980) also questioned why identical settings are sources of conflict for some groups or participants and not for others. Findings from this study indicate that the dynamic experience may account for some of the reasoning. The previous sections on sequencing and goals revealed how focus was influenced by the order in which elements were experienced in contrast to each other. Furthermore, the participants' pre-established goals as well as their goals developed while experiencing the settings also influence how and on what they focused. For example, entering an open, flat area might be a nice change for a hiker at first and then quickly become mundane. The same setting might allow a mountain biker more time to look around as well as provide a break from difficult trail tread sections.

The changing, dynamic experience and focus factors underlying conflict appear to be setting-dependant. Jacob and Schreyer (1980) explain that the greatest and least degrees of potential for conflict depend on specific setting factors that provide elements for detailed or non-detailed examination. As previous discussions indicate, various settings can influence focus. For example, during the levee portion of the trail, the hikers experienced having enough room from the bikers, hearing loud enough tire noises on the gravel to know when bikers were coming, and being surrounded by vast, pleasant views; thus, the hikers did not notice or comment that bikers passed them. Meanwhile,

some hikers and mountain bikers studied elements in detail while experiencing this setting; others simply looked at elements (in a less detailed manner); and some simply moved along.

Furthermore, findings also indicate that mode of experience based conflicts can be emotion-laden. Jacob and Schreyer (1980) explain that perceptually-based conflicts are also influenced by the participants' ability to meet or achieve their goals. Hoger and Chavez (1998) discuss how conflict is underlined by perception especially because a user can be dissatisfied or unable to obtain his or her goals after only one encounter with a rider or one reminder that bikers might be there (e.g., seeing tire tracks). Conflict deters participants from meeting their goals and thus introduces a stressor that can influence more than one portion of the participants' mode of experience and setting-based experience. Conflicts often cause lingering thoughts that modify the participant's mode of experience/focus as they move onward. The hikers in this study indicated that as they were sharing trails with mountain bikers they continued to think about them after their initial encounters.

Throughout the trail experiences mountain bikers' and hikers' degrees of focus fluctuated. At times, when they were both determining where to go, or enjoying the sun over the lake, both groups appeared to share some common degree of focus/mode of experience. Thus, timing in a specific setting seemed to influence the degree of difference mountain bikers and hikers experience in surrounding environments.

On the other hand, the hikers that discussed having conflicts with mountain bikers were not experiencing the setting in a great degree of different focus. None of

these hikers were interrupted while studying the environment. Furthermore, one hiker that experienced conflict did not even encounter a mountain biker, but was reminded that they might be on the trail because he saw erosion.

Findings indicate that mountain bikers may actually spend lengths of time in a focused or more intense mode of experience, as they perceive multiple elements in the environment at various hierarchies, in order to maintain and develop an understanding of the path/line they will travel. Such modes are often interrupted by various elements, but are snapped back into because they must make decisions about how to travel through the trail. As a result, mountain bikers may encounter perceptual interruptions but easily return to their previous mode of experience. Even if thoughts or perceptions do linger, the overload of processing so much so quickly may force them to forget or move on.

In contrast, hikers tended to have a more point-to-point experience with contrasting extremes from perceiving absolutely nothing to studying elements in great detail. They also encountered settings for longer and thus were not introduced to novelty as quickly as mountain bikers. The time to contemplate and sometimes lack of focus may allow the hikers to dwell on the interruptions and contemplate them at length.

These times when the hikers focus on nothing may seem unfocused but may actually provide an escape from daily hassles or allow a time of contemplation that represents the hikers' desired mode of experience. Although it seems unfocused perceptually, it is important to understand if and how these perceptual states contribute to mode of experience in general.

Jacob and Schreyer's discussion of stopping and motion provides an explanation of the differences in experiences along the continuum; however, their indications that speed means flying through the environment with disregard and perceiving everything in a blur does not account for the mountain bikers' experiences described in this study. It also does not provide enough depth to understand perception-based conflict among groups that do not fall at opposite ends of the spectrum.

Throughout this study, focus was referred to with several different connotations, including occasions when participants' focus entailed using an overall general mode; lengthy times when participants' focused throughout an area; shifts in focus that did or did not detract from their general mode; and the focus or study of specific elements. Thus, future research needs to examine how long participants actually "study" or spend time in focused modes of experience. Future research also needs to account for these different forms of focus; determine where they fall on the focus continuum; and understand how they contribute to or are susceptible to perception-based conflicts.

CHAPTER V

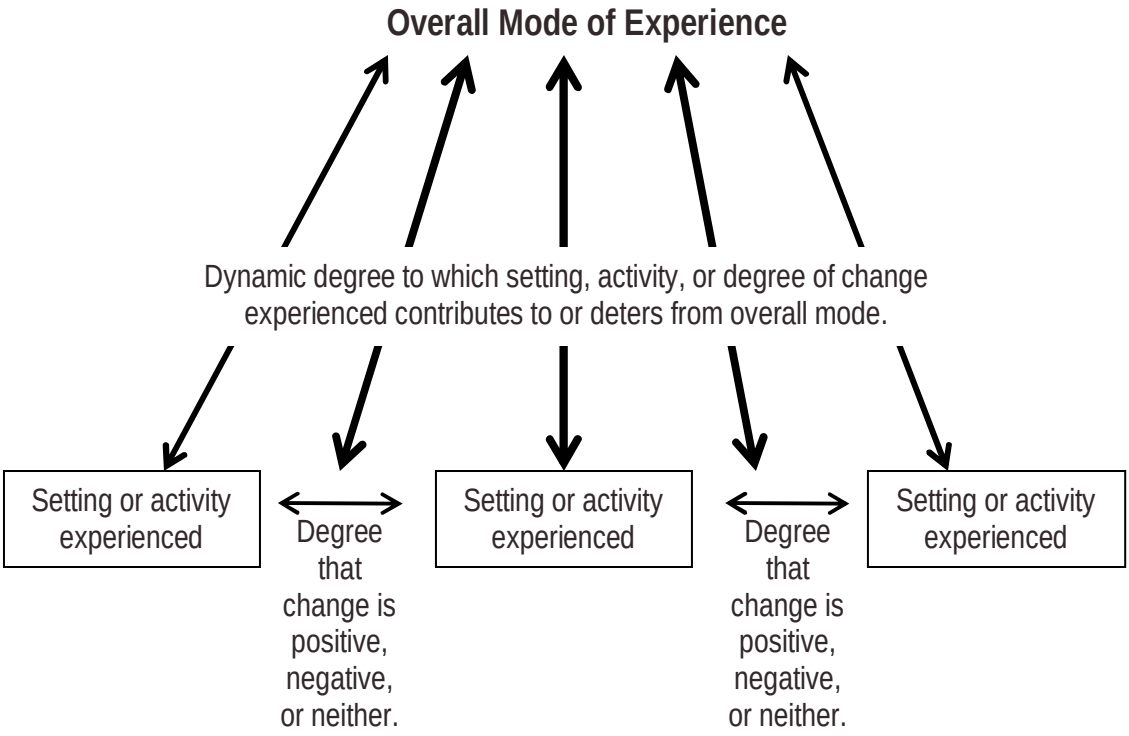
CONCLUSIONS

RESEARCH IMPLICATIONS

Understanding How Mode of Experience Underlies Conflict in Dynamic Experiences

In order to understand how the mode of experience concept underlies or explains perceptual-based conflicts during dynamic experiences, the participants' overall mode of experience, the dynamic changes in focus participants experience, and the specific settings and activities they encounter during their experiences need to be considered. Furthermore, mode of experience also needs to account for the relationships that exists between these three factors (see Figure 62).

Figure 62. Understanding mode of experience in dynamic experiences.



Jacob and Schreyer (1980) explain that the mode of experience creates or contributes to conflict when sensory interactions ranging along a focus continuum create variations in participants' interactions with nature. Thus, conflict often occurs when user groups or participants interact with nature in ways that require them to observe the setting with different degrees of attention and in varying amounts of detail.

Their explanation discusses the participants' interactions with settings but does not convey the importance of their overall mode of experience or desired state of mind. In order to better understand conflicts created by differences in mode of experience, it is essential to understand the participants' overall perceptual states (e.g., the degree of flow created by a mostly positive relationship between the participant's desired state of mind and the settings or activity based outcomes they experiences).

As discussed previously in this study, mountain bikers and hikers both mentioned a common mode of experience, the desire to be immersed in nature and enjoy their natural settings. Hikers discussed additional overall modes including socialization, connecting with nature, traveling to a place, exercising, or just wanting to experience serene environments away from daily stressful activities and surroundings. Mountain bikers discussed modes during which they desired the opportunity to practice techniques or simply ride.

In addition to understanding the participants' general mode of experience, it is important to understand their dynamic focus throughout the experience (e.g., the degree to which changes experienced contribute to or deter from their overall desired mode).

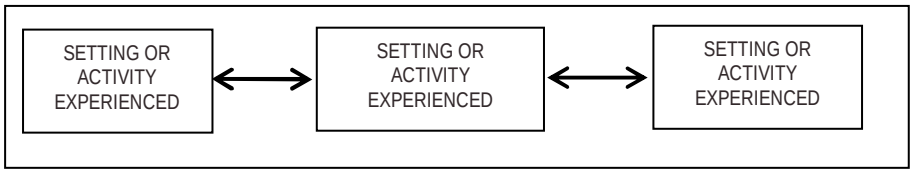
Jacob and Schreyer (1980) indicated that the focused extreme of the continuum involved stopping to study elements in extreme detail. On the opposite extreme, the environment was experienced as perceptual blurs. The findings in this study indicate that focus/mode of experience may be more complex and dynamic throughout the experience.

Jacob and Schreyer (1980) explain the mode of experience as "the varying expectations of how the natural environment will be perceived (p. 370)." The findings in this study indicate that mountain bikers and hikers expect changes in focus or variations in their degrees of focus as part of their overall experience. Mountain bikers and hikers both displayed varying degrees of focus from viewing nothing to detailed examination. Cherem and Driver (1983) discuss how different energy gradients, information processing, human signs, object types, and sensory contrasts encountered at different places during the experience, influence participants' focus. Hull, Stewart, and Yi (1992) explain that as hiking is a dynamic experience, emotions and focus change throughout the experience. Furthermore, one's mood, after encountering one area of the trail, can influence future mood in other areas of the trail (Hull and Stewart,1995). This concept may apply to focus/mode of experience as well. Therefore, it is important to understand what changes occur and how they contribute to or deter from the participants' mode of experience.

The findings in this study also indicated that to manage conflict, researchers, land managers, and trail designers must understand what parts of the experience make up or influence the holistic outcome. Thus, it is important to understand how specific

activities and settings contribute to mode of experience. As discussed previously in this study, the mountain bikers usually try to form a path/line indicating where to traverse through the trail environment. Consequently, they may wish to encounter settings that allow them to engage in such activities. In turn, a hiker may encounter an area of thick brush where he or she expects to view birds. If a mountain biker rushes by and scares the birds, the setting did not provide what the hiker expected. These examples point out the importance of understanding what settings create specific activity expectations and what activities require specific settings (see Figure 63).

Figure 63. Settings and activities encountered.



In addition to understanding participants' overall mode, the dynamics of the experience, and the specific settings and activities, it is essential to understand the relationships between all three. Mode of experience is a dual process in which the overall desired mode can influence how susceptible to or patient with the dynamic changes encountered the participants are; and how the users appraise if the specific settings and activities encountered add to or deter from their overall modes of experience. In turn, the specific activities and settings encountered coupled, with positive or small degrees of dynamic change can add up and relate to each other in a way that creates an overall mode of experience that was not expected or looked for, but

created by the sequencing and dynamics of the various settings experienced (see Figure 64). The specific settings and activities have relationships between how they contribute to the overall mode of experience on their own and how extreme they are in focus from each other (positive or negative change).

Figure 64. Examples for understanding mode of experience during dynamic experiences.

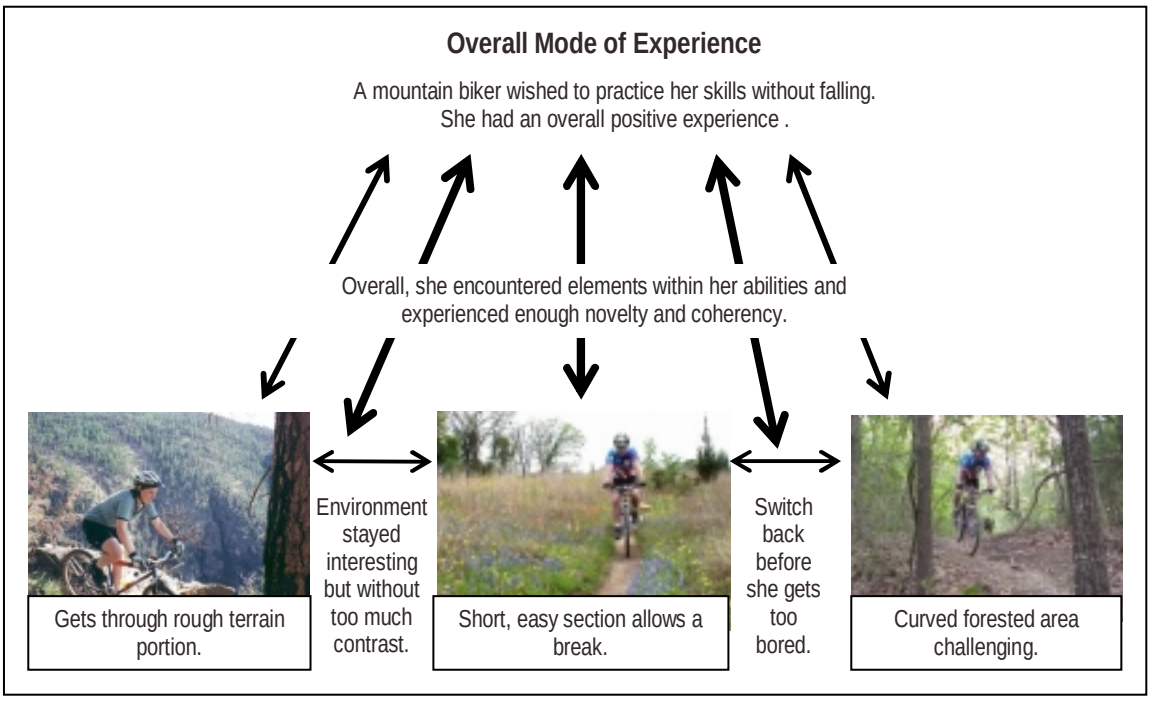
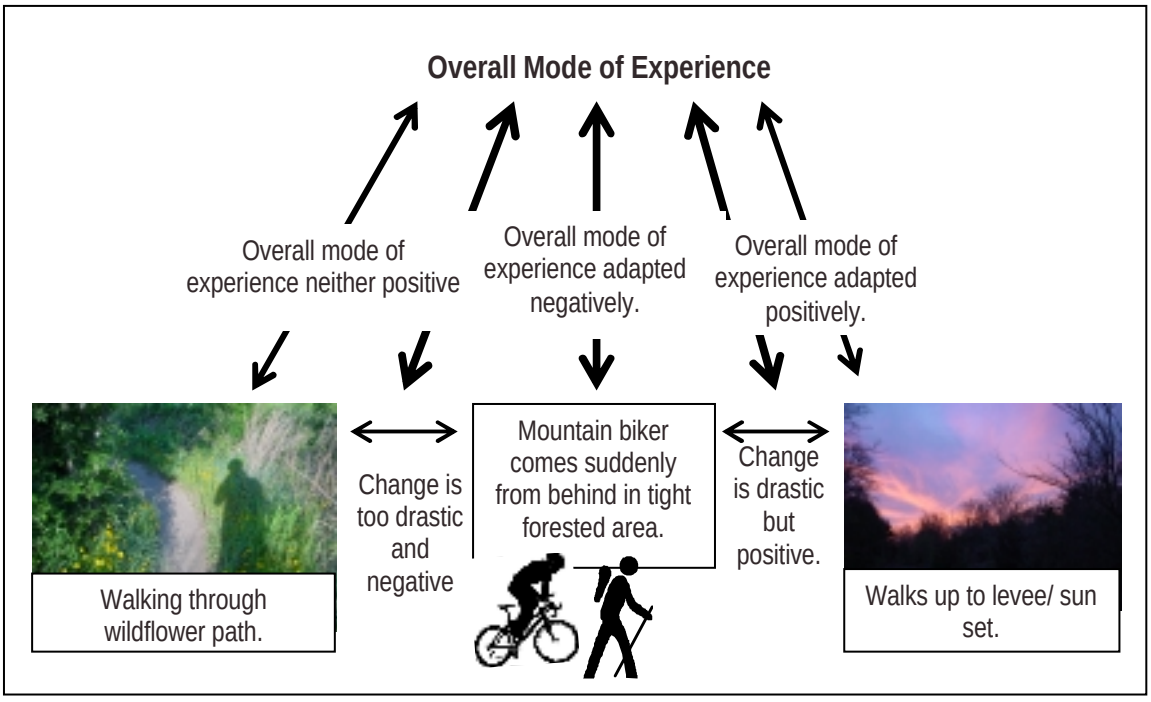
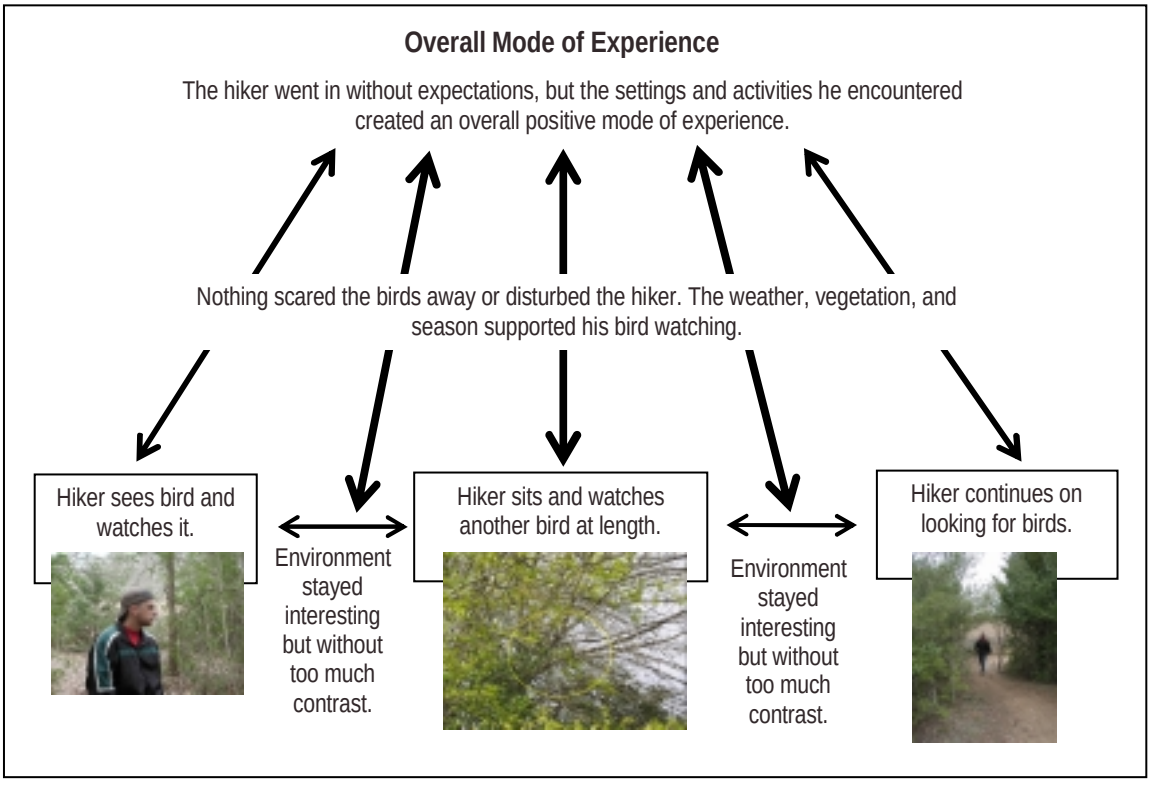


Figure 64 Cont.


Overall Mode of Experience
Overall mode of experience neither positive
Overall mode of experience adapted negatively.
Overall mode of experience adapted positively.
Walking through wildflower path.
Change is too drastic and negative
Mountain biker comes suddenly from behind in tight forested area.
Change is drastic but positive.
Walks up to levee/ sun set.


Overall Mode of Experience
The hiker went in without expectations, but the settings and activities he encountered created an overall positive mode of experience.
Nothing scared the birds away or disturbed the hiker. The weather, vegetation, and season supported his bird watching.
Hiker sees bird and watches it.
Environment stayed interesting but without too much contrast.
Hiker sits and watches another bird at length.
Environment stayed interesting but without too much contrast.
Hiker continues on looking for birds.

Thus, in examining mode of experience, it is essential to understand the participants' overall general mode, the dynamic changes, the specific settings and activities, and the relationships and complexities in how all three combined relate together to form the perceptual experience. By further researching all three components, studies may be able to provide planners and mangers with more information about setting-based outcomes that alleviate or prevent conflict situations.

Understanding the Dynamic Experience and Lingering Appraisals

As discussed previously, the findings of this study support Hull and Stewart's (1995) conclusion that participants' reactions to settings can create emotions that linger. Future research needs to determine if such reactions influence how individuals appraise elements encountered later in the experience.

Future research also needs to explore if one encounter ruins the entire experience, or if conflict or negative encounters collectively add up and break the recreationist's threshold. Furthermore, research needs to examine if recall bias influences participants to blame one source of conflict for ruining their experience. For instance, in some cases, the overall feeling of conflict or inability to connect with nature may not be a result of one encounter. Hammit and Cherem (1980) discuss that settings with strong sensory contrasts are recalled more often. Likewise, the participants may encounter several negative factors during their experiences that add up to create an overall feeling of conflict. However, conflicts with other users may be perceived as strong sensory contrasts, such as, they may be the easiest form of conflict for the participant to verbalize

or recall. Thus, these negative encounters might, at times, be held responsible for a participant's negative setting based outcome that was actually a result of various negative encounters.

Mitigating Conflict: Designing to Create or Influence Mode of Experience

Findings indicate that emotion-laden or even stressful reactions and feelings during the recreation experience may alter a participant's modes of experience and create or add to conflict. Although some groups may not be able to share environments or all segments of trails, it may be possible to use some settings to mitigate the emotion-laden reactions or stressors introduced in the experience.

Ulrich (1999) explains that environments plagued with the presence of protruding negative characteristics such as noise, traffic, and boring or overbearing settings can produce anxiety or stressful outcomes or experiences. In turn, environments that provide positive distractions such as vegetation, water, and flowers, buffer stress. Enjoying these positive elements can assist individuals in maintaining control, meditating, and inducing positive feelings. Such factors can even diminish or eliminate negative environmental characteristics by creating buffers.

Hikers from this study discussed their lingering anxiety regarding mountain bike encounters, however, they also discussed the calm, positive feelings or appraisals they had when on the levee viewing the sun over the lake. Thus, findings indicate that some settings during an experience may mitigate negative appraisals from conflicts that occurred in other settings.

If participants encounter paths and signs that offer choices and provide information, these elements may create a sense of control that supports their goals/experiences and thus makes their experience more positive or restorative (Ulrich, 2001). For instance, if participants know that some sections may be more stressful while others are more restorative, they may adjust their experience goals in some areas, and expect- and perhaps minimize- appraisals of conflicts in other areas. Meanwhile, the calmer, more positive areas might serve as motivation or as positive destinations (i.e., areas users look forward to experiencing) (Ulrich, 1991).

Ulrich (1991) also found that participants recovered more quickly from stress when they were exposed to natural environments as opposed to urban environments. Individuals recover more quickly from stressors after viewing natural settings than after viewing built or negatively appraised environments (Ulrich et al., 1991; Ulrich, 1993). Under these circumstances, built environments tend to increase sadness and invoke anger and aggression while natural scenes calm fear and arousal (Ulrich, 1999). Consequently, the elements in natural settings, such as trees and water, reduce stress (caused by the daily activity of urban living) and restore well-being.

But what happens when stress and anger are introduced and invoked in a natural setting? Can designers and managers design settings to mitigate or facilitate better outcomes? Can they identify the factors that contribute to user groups' conflicts or the participants' thresholds within the dynamic experience?

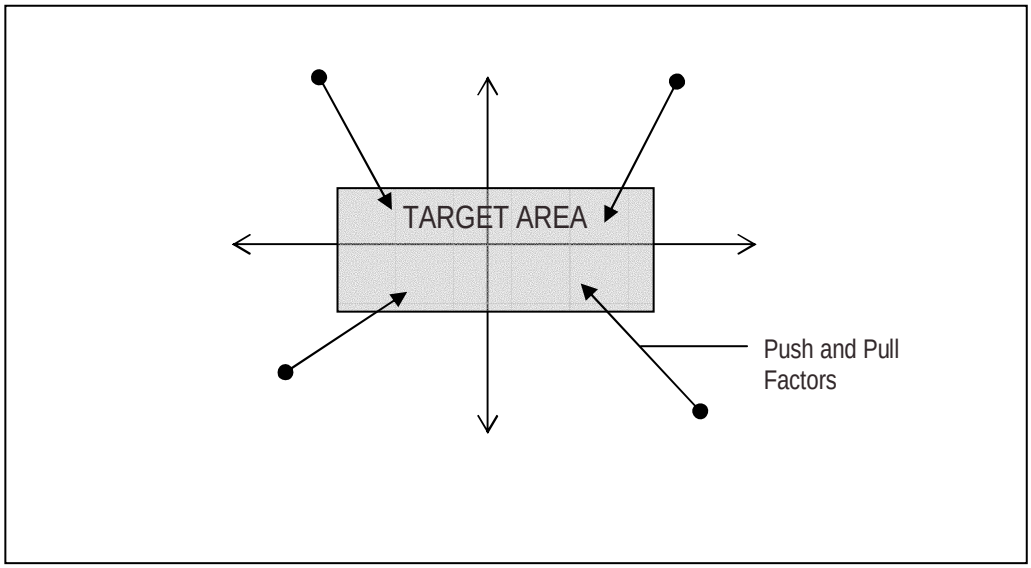
In order to address these questions, research needs to understand what positive and negative factors recreationists encounter and how prevalent such factors are in

specific settings/areas they use. These findings will assist researchers and managers in determining how to create and maintain positive experience outcomes using setting-based management.

Using a model that includes the focus continuum, the threshold for desired experiences, push and pull factors, and participants in various states of mind, can provide researchers, designers, and managers, with a tool to understand examples of factors that will move a people into their preferred modes of experience and thus diminish or eliminate conflict.

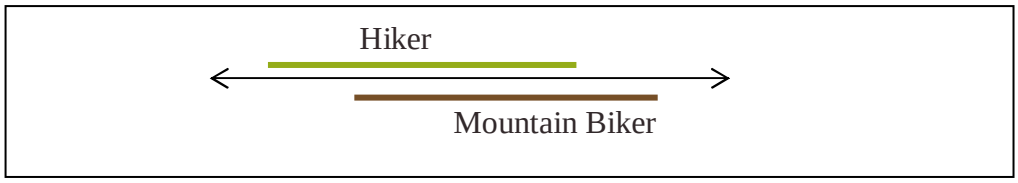
Figure 65 depicts how the focus continuum axis, supportiveness axis, and push and pull factors may work together to assist recreationists in maintaining their preferred modes of experience.

Figure 65. Example of model.



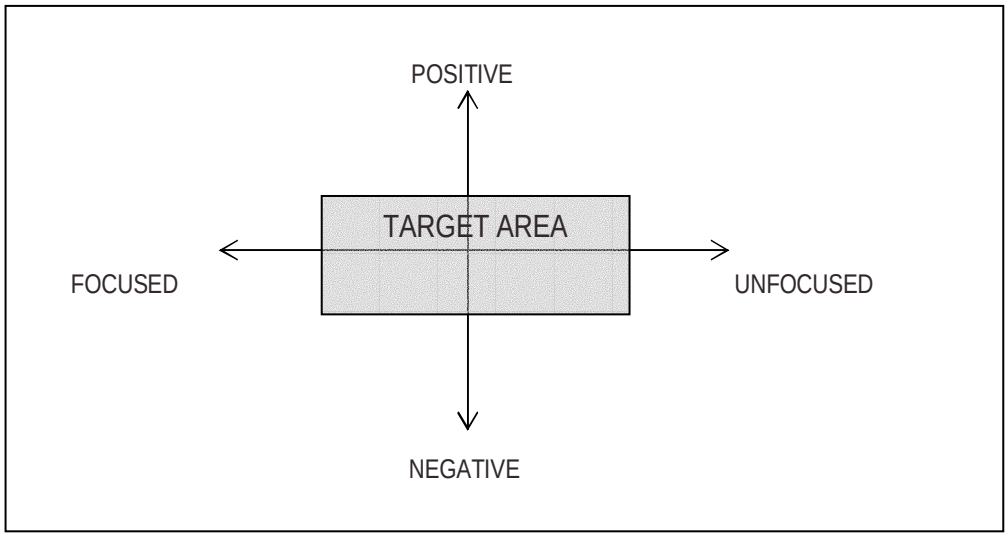
To begin, the focus continuum axis reveals that various user groups have different preferred modes of experience (see Figure 66). For example, in the case of mountain biker and hiker conflict, mountain bikers and hikers might prefer different extremes of focus but some overlap would exist in some settings or among all or certain types of participants from each group.

Figure 66. The model includes focus continuum.



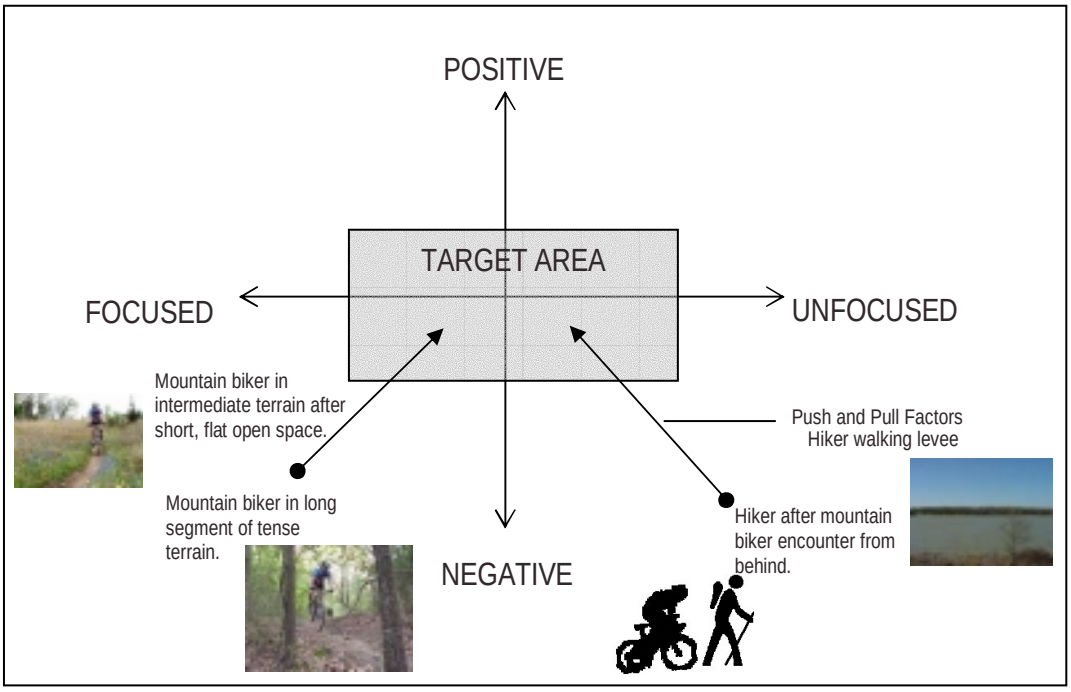
In addition to their desired modes of experience, Figure 67 indicates that both user groups have a threshold for the degree of supportive/positive and stressful/negative characteristics or settings encountered. Together, the focus continuum and their threshold create a target area for their preferred modes of experience.

Figure 67. Target area for mode of experience.



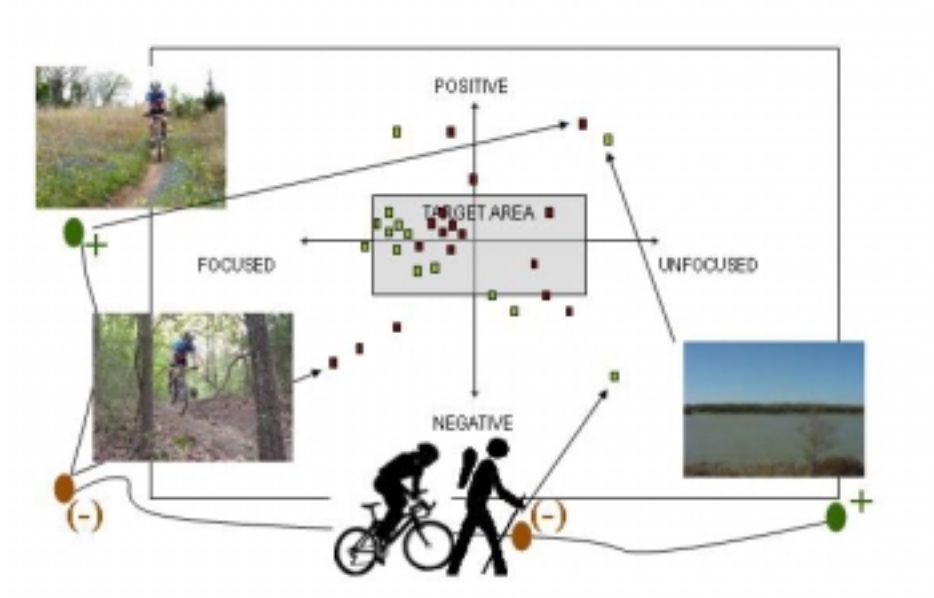
Along with knowing the target area preferred by recreationists, it is important to understand what factors influence their modes of experience by pushing and pulling them into and out of their ideal setting experience (see Figure 68).

Figure 68. Example of push and pull factors on the model.



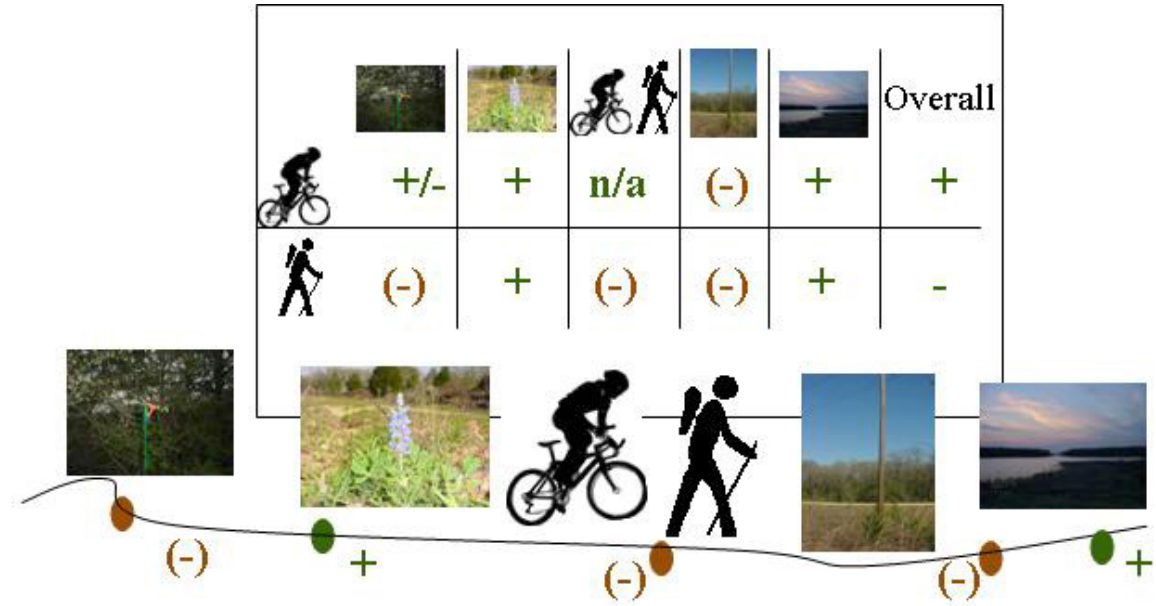
Although the model represents a frame or still picture of one moment during a dynamic experience, future research might use the suggested model to examine what and how various factors and settings push and pull user groups into and out of their desired mode of experience along the focus continuum. Future research might also use the model to understand who or what types of users have more potential to fit together and in what settings (see Figure 69).

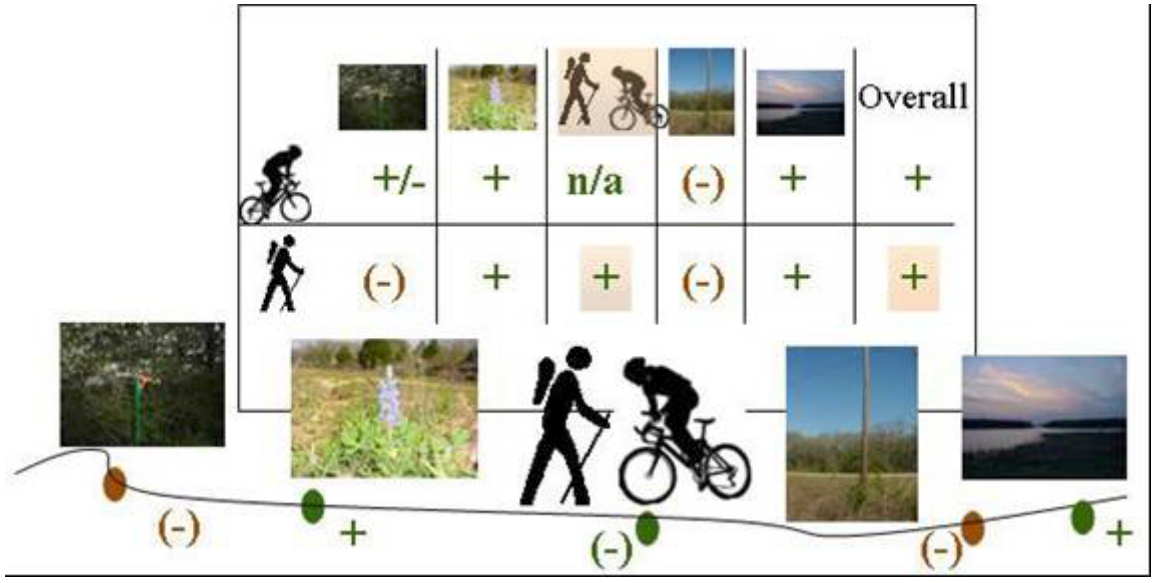
Figure 69. Example of experience points plotted on the model.



In turn, future research needs to examine what multiple factors and environmental sequences might contribute to or underlie mode of experience in relation to conflict. In planning multi-use trails, some conflict might always exist between users, but such instances might not have to overshadow the participants' overall experience. Thus, it is important to understand participants' overall appraisals and the settings' collective abilities to maintain a participants' focus as they cope with a number and degree of intrusions or negative factors throughout their dynamic experience (see Figure 70).

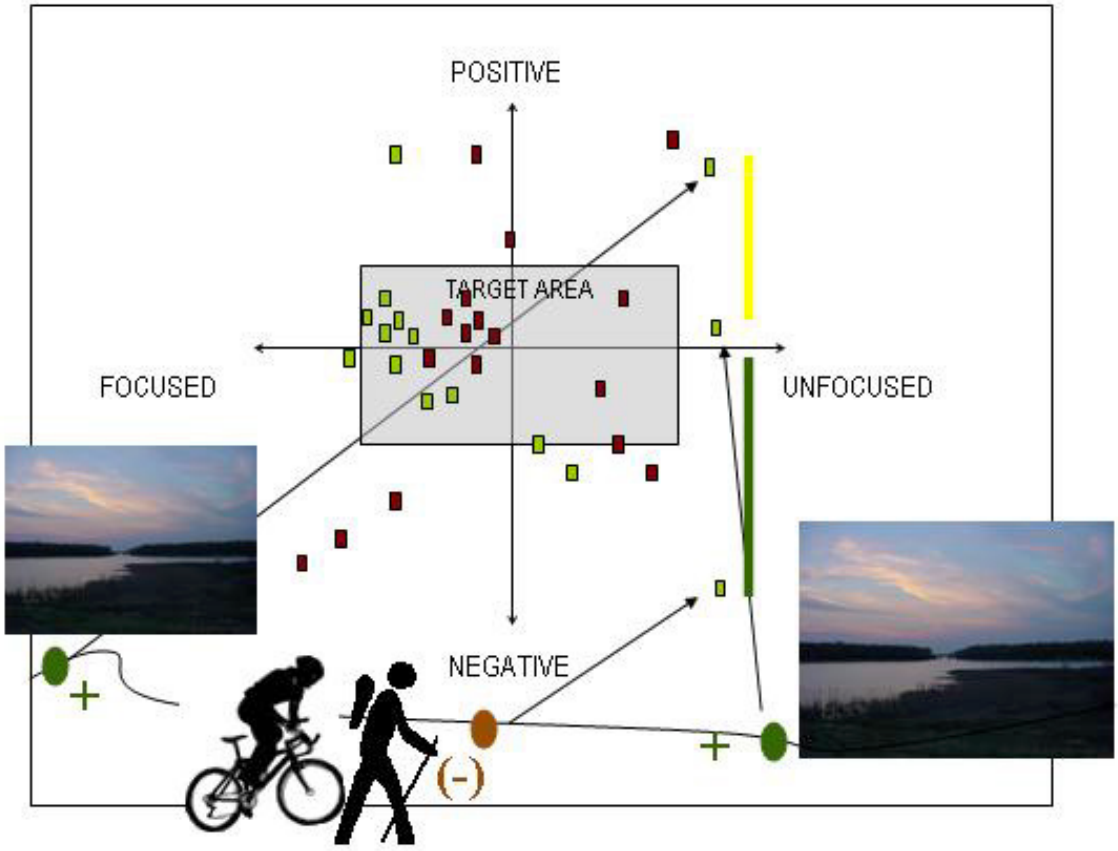
Figure 70. Mitigating conflict in dynamic experiences.





Future research needs to explore the concerns of multiple hazards and sequencing, and determine to what extent trail design and positive buffers can mitigate multiple negative encounters (see Figure 71) (Greenberg and Schneider, 1999).

Figure 71. Mitigating conflict with positive buffers.



DESIGN SUGGESTIONS FOR HIKER AND MOUNTAIN BIKER CONFLICTS

Splitting Trails

Findings here suggest that mountain bikers and hikers at Lake Bryan can share some settings, such as the wide levee with good views, where both user groups slow

down; they can share some straight trail areas where the vegetation is not as tight and they both tend to have good forward views; they can share areas where they both concentrate on the topography climbing inclines while experiencing little or no conflict.

Some trails might need to be designed so that segments are shared and others split users from each other. The Lake Bryan trails, like many others, have the space and topography to split trail segments, offer two different settings, and then bring the trails back together. Such practices can allow them to share settings that produce little conflict and be split in others (e.g., not sending mountain bikers and hikers together through areas with extreme curves). Although this might require more land development and possibly create more erosion, it might be the most sustainable practice for areas with land scarcity issues compared to alternatives. For instance, managers and planners might prefer to split trails rather than limiting user groups to only use trails at specific times or on specific days or to build or maintain full length, separate trails and their amenities (e.g., parking lots, maps, kiosks, maintenance).

Signage

On some trails, designating areas and providing information using signs might also adapt expectations and diminish conflict. Several mountain bikers and hikers explained how they looked for wildflowers because they were in the trail segment labeled “Wildflower Alley.” The environment can facilitate or instigate an individual’s specific knowledge and behaviors (Lynch, 1960). Providing clear signage and environmental cues can facilitate movement, decrease apprehension and confusion, and

can increase the participants' knowledge about settings-based outcomes or experiences (Kaplan, Kaplan, and Ryan, 1989). By letting mountain bikers and hikers know that specific areas might have faster speed limits for mountain bikers, several turns, mountain bikers coming from behind, nice views, or wildflowers, recreationists might know what to expect and, therefore, adjust their intended outcomes for those segments.

Trail Directions

Some trail areas might not be able to be separated due to their topography and resource availability. However, trails might also provide better experiences if mountain bikers and hikers knew each other's locations in order to avoid surprise encounters. Thus, some trail managers might encourage hikers and mountain bikers to travel in opposite directions so that they see each other coming in most trail sections. Most trails listed in a Texas trails book start and end within a reasonable distance of each other (Youman and Youman, 1999). Therefore, hikers could begin their activity at the trail end and mountain bikers could start at the trailhead. The user groups could switch starting and ending points on specific days. Such practices might create a new perceptual experience based on the sequences in which they encounter elements and might also assist with erosion control or dispersion.

Erosion

Using VEP and understanding mountain bikers' preferences and mode of experience might also assist with managing for erosion and choosing erosion control practices or elements.

Symmonds and Hammitt (2000) examine how trail features, including types of erosions and erosion control practices, contributed to mountain bikers' experiences. Written comments in their data revealed that mountain bikers did not desire the use of plastic strips because they perceived them as unnatural and not a part of the environment.

The authors discuss that when mangers are trying to protect the natural environment they must take into account the trail's location. They suggest that trail designers locate areas that can sustain the activity as well as sustain the preferred experience. Furthermore, they explain the need to implement erosion practices that also sustain both preference and environmental protection.

VEP studies, like this one, can assist land managers in determining what erosion control practices mountain bikers prefer or dislike on specific trails. Furthermore, as indicated in this study, VEP data might point out areas where mountain bikers choose to travel or what areas they plan to fit their bikes and themselves into and how. The data might locate areas of concern by indicating places that mountain bikers plan to use in specific ways that that might create or increase erosion. For instance, VEP, might identify where mountain bikers locate where harder packed sand meets softer packed sand; where they widen trails because of sitting water, or where they create new lines of travel because other areas or dips have become too deep or difficult. Such findings might be particularly helpful when combined with assessments of the corresponding section's abilities to sustain such practices.

Furthermore, VEP studies might also point out where erosion creates or introduces emotion laden or negative appraisals for both mountain bikers and hikers.

Land Use

Land use is often a sensitive issue with mountain bikers because, in some areas, they are allowed on trails only at certain times, certain days, or not at all. Furthermore, as the number of people participating in trail-based activities continues to increase, locating space to develop trails is becoming a more important issue. Findings from this study indicate that land managers might be able to use smaller areas to create trails and creatively string diverse segments of land together to create mountain biking trails.

Trails are typically designed as loops that use expansive amounts of land. Findings in this study imply that mountain bikers' experiences were not heavily influenced by surrounding uses to the same extent as hikers. Thus, as at Lake Bryan, mountain biking trails might be able to be designed to loop over and twist back over themselves along narrow tracks of land.

Lake Bryan provides an example of how well alternative tracks of lands-that in many cases would not or could not be used for anything else- can be used to create trail-based opportunities. The use of the levee to create switchbacks and provide open views, having some tight and open areas, and the planting of wildflower seeds show how management and design practices can creatively use topography and settings within a narrow area to provide novelty, simplicity, and access to nature. The trails also show how tightly woven tracks still provide positive outcomes. The limited perception of the

surrounding environment uses might also indicate that right-of-ways and other multi-use areas can be used for mountain biking trails without compromising the experience to a great degree as long as vegetation and topography provide enough novelty to act as the primary areas of interest.

In addition to using less land, findings indicate that mountain biking trails can be built using a variety of settings and not just expansive tight forest, single-track areas. As discussed previously, mountain bikers indicated that they enjoy tight segments, curves, straight-aways, open areas (especially for breaks), and novel views such as the lake. Cessford (1995) explains that the mountain bikers' adaptability to ride through various settings suggests a wide range of opportunities to provide mountain biking trails. Thus, mountain bikers might not have to compete for land or create conflicts since land alternatives can be used. He suggests that farmland and forest areas might be difficult to obtain due to private ownership with possible priorities that would not support or include recreation. However, in Texas, landowners are searching for alternative means for land use such as recreation-based tourism. Thus, land owners with some access to creek beds, tall grass, hills, slopes, or drop offs can use the mixed land features to create trails. Although they are appreciated, mountain biking trails might not need an extensive number of highly extreme natural beauty attractions. The users might have enough positive experiences enjoying everyday nature. Furthermore, the combination of being able to overlap trail segments next to each other (with no loop) and the appreciation mountain bikers have for changing terrain and surrounding features such as opening/closings, turns, and views indicate that various amounts, shapes, and types of

land can be used to build trails. In addition using ROS, the Recreation Opportunity Spectrum, on private lands, in correlation with trail design and development, might assist in determining which landowners could support trail use and their existing priorities on the same or neighboring areas of their land. This might also indicate where state and local parks might be able to use combined types of topography to create trails, as opposed to looking for large sections of forested areas. In turn, such practices could alleviate the conflicts in obtaining resources.

MANAGEMENT IMPLICATIONS

The Recreation Opportunity Spectrum

Multi-use trails are often composed of varying surroundings and topography. Therefore, setting-based outcomes can change as one travels along the trail and encounters different users. Furthermore, trail managers and designers are often faced with balancing resource management with recreation opportunities. As depicted in the findings of this study, trail-based recreation experiences and outcomes involve diverse social, cognitive, and resource needs and outcomes. Thus, multi-use trails need to be managed using a framework that accounts for all three factors.

Managers and policy makers responsible for the distribution and management of recreation experiences often rely on the Recreation Opportunity Spectrum (ROS) framework to inventory and analyze the environments, resources and alternative actions, and decisions related to outdoor recreation (Clark and Stankey, 1979). ROS was created and developed to ensure optimal uses of settings; to provide adequate recreation

experiences; and to preserve settings and different types of experiences. Clark and Stankey (1979) define recreation opportunity settings "as the combination of physical, biological, social, and managerial conditions that give value to a place" (pp. 1). ROS reveals and explains the ability to zone landscapes based on settings and can help determine facility amounts, types, and influences within each area or experience. By doing so, ROS assists in creating a plan and in developing an understanding of what needs to be done to limit impact or to sustain environments and experiences by correlating settings to experiences (Bell, 1997). Some factors influencing opportunities include natural qualities such as vegetation landscape, scenery and topography; recreational use qualities like intensity and type of use; and managerial qualities such as rules and infrastructure (Clark and Stankey, 1979). The purpose of understanding the various qualities and of providing a mix and variety is to offer multiple recreation opportunities settings (Clark and Stankey, 1979) and therefore addresses the need to supply diversity (Driver, Brown, Stankey, and Gregoire, 1987).

ROS advanced previous planning systems that did not adequately inventory opportunities in relationship to the value of the setting provided (Driver, Brown, Stankey, Gregorie, 1987). It also addresses the rapid infrastructure growth and intensifying needs demanded by increased numbers of participants seeking diverse activities and opportunities (Driver, Brown, Stankey, and Gregoire, 1987). The ROS basis simply entails determining a range of classes for differentiated recreational experiences, understanding and determining indicators within the setting that allow for the opportunity, and creating standards and distinctions within each opportunity in order

to provide guidance for development and management (Driver, Brown, Stankey, and Gregoire, 1987).

Providing opportunities with various settings indicates that users have a choice. Thus, it is important to offer diverse opportunities and to know that understanding the relationship between settings and experiences is necessary to achieve this goal (Clark and Stankey, 1979).

In order to manage trail based settings and experiences, managers need to understand that the environments encountered and perceived are not static or the same but dynamic (Hall, Stewart, and Yi, 1992). Furthermore, settings involve managing and understanding the immediate trail path and the context of adjacent areas or surrounding uses it passes through or by (Shafer, Scott, and Mixon, 2000). And, managers must take into account the local conditions and resource availability to best plan how to minimize conflicts (Moore and Barthlow, 1997).

Furthermore, because mountain bikers increase their preference for more challenging, single track segments as they gain experience, managers need to use a planning model such as ROS to provide and manage settings that account for such changes in preferences (Cessford, 1995). Such practices might also assist managers in identifying and managing multi-use trail settings for user groups with various preferences, modes of experiences, and preferred setting outcomes throughout the dynamic experience.

Driver and Brown (1978) discuss recreation opportunity and the relationship to settings in terms of the setting's capabilities to support or sustain the desired or

demanded experience. A demand hierarchy with four levels supports the foundation for their setting-based opportunities approach. In order to apply successfully a form of the ROS, managers need to adapt parts of the framework. For example, the demand hierarchy may need to be adapted so that:

Level One, demands for recreation activity: manages multi-use trails for conflict when managers know if and what settings can sustain and provide various activities and users.

Level Two, demands for opportunities to experience those situation attributes or elements of the physical, social, and managerial setting: manages multi-use trail activities and conflict prevention management by accounting for the dynamic experience and the influence different user groups have on other users' preferences and choices. It must also account for balancing resource protection with preferred recreation outcomes for multiple user groups (Symmonds and Hammitt, 2000).

Level Three, demands for opportunities to realize specific physiological outcomes: multi-use trail managers must also consider the multiple factors that positively or negatively influence mode of experience.

Level Four, demands for opportunities to realize the benefits that flow from the satisfying experience: multi-use trail managers must determine to what extent such outcomes are possible when various user groups and types share trails or trail segments at the same time or in passing.

Since place is specifically related to an activity, the characteristics that comprise an environment will influence if and to what extent an individual will recreate there

(Clark and Stankey, 1979). Thus, it is important to understand and identify these characteristics or factors and how they relate to each other while considering trail environments and the dynamic experience. Clark and Stankey (1979) present four criteria used to define factors that can be related to the multi-use trail settings:

(1) The factor is observable and measurable, such as the characteristics influencing shifts in focus/mode of experience identified by VEP procedures and follow-up interviews;

(2) The factor is directly under management control, such as the settings and encounters that mitigate or cause conflict;

(3) The factor is related to recreationists' preferences and affects their decisions about areas to use, such as supportive or unsupportive elements experienced; and

(4) The factor is characterized by a range of conditions, such as the degree to which it influences focus/mode of experience and conflict.

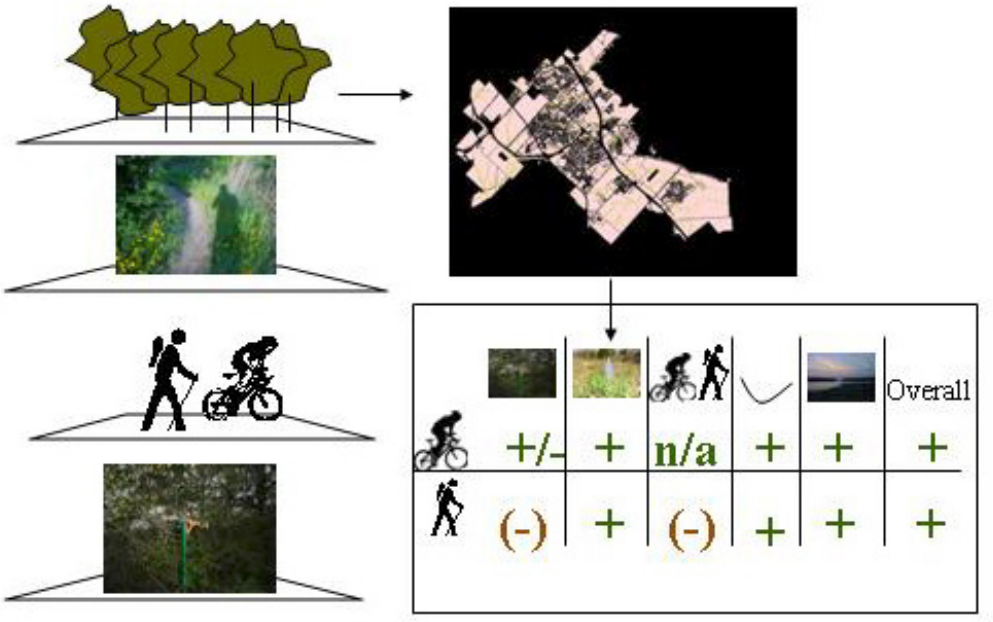
To meet their needs addressing the three major setting components and indicators for biophysical, social, and managerial issues, many authors and the Forest Service propose six points along the ROS spectrum: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban (USDA Forest Service, 1990). Each opportunity class divides areas on the basis of their ability to provide specific activities and experiences related to a variety of physical, social, and managerial settings (Brown, Driver, and McConnell, 1978). These include the amount of infrastructure, non-recreational use, and naturalness that in turn account for the ability to sustain

solitude, safety, risk and many other outcomes (Brown, Driver, and McConnell, 1978). Furthermore, they have also determined what resources enhance or hinder experiences. Such attributes include meadow-forests adding strongly, dense vegetation adding moderately, and intrusions detracting slightly. By integrating these attributes with the understanding of psychological outcomes, planners, mangers, and policy makers have a better framework to inventory, manage, and meet the demands for diverse experiences (Brown, Driver, McConnell, 1978).

To manage a multi-use trail system that aims to prevent conflict while sustaining experience preference outcomes for various user groups, the spectrum should be based on managing settings for their focus/mode of experience outcomes.

An ROS-based planning system for multi-use trails can provide a comprehensive framework for identifying, zoning, and managing the setting-based opportunities related to positive and negative (e.g., conflict) experiences available along trails. The spectrum can aid trail managers and planners in specifically identifying setting opportunities that mitigate or prevent conflict or simply separate various trail users. A GIS, Geographical, Information Systems, based approach to ROS planning can allow managers to examine factors (e.g. surrounding uses, vegetation, encounters) and appraisals (positive, negative, mitigating, lingering) on their specific sites to determine how individual changes adapt the overall mode of experience for various users (see Figure 72).

Figure 72. A GIS approach to a conflict mitigation ROS.



Integrating User Participation in Management Decisions

Trail design is typically comprised of the manager's preferences or interpretations. Mangers need to consider mountain biker experiences and preferences more when making decisions (Symmonds and Hammitt, 2000). Trail users' needs and preferences also need to be provided for when trails are designed (Hammitt and Cherem, 1980).

Knowing and determining user preferences can assist trail mangers in designing environments that provide more opportunities for gratifying experiences (Hammitt and Cherem, 1980). VEP can assist in quantifying visitors' environmental reactions, especially when it is often difficult to include participants in trail design and management (Cherem and Driver, 1983). VEP methodology can assist in pointing out

where a consensus of participants prefer or perceive their surroundings either positively or negatively (Hammitt and Cherem, 1980). Using a triangulation of simple data collection procedures based on VEP methodology should improve the visitor experience (Hammitt and Cherem, 1980; Hull and Stewart, 1995).

"It is essential for a resource manager to see what the public is seeing, or might see, in a resource before that resource is altered." VEP can point out where "nodes" exist and can be used as an inventory method on existing trails to determine where managers should not try and compete with PENs or CPs in interpretation hikes, trail design decisions, etc (Cherem and Driver, 1983).

Participant involvement is essential in creating and maintaining desired setting based outcomes. As this study shows, their inventories and analysis can provide insight about seasonal impacts, variations in use, positive elements, and factors creating intrusions such as conflicts or other negative impacts.

As depicted in the study, such methods can also assist in understanding how and where participants perceive conflict, where erosion might need to be controlled, and what areas are of high use and lead to conflict. They might also point out what areas of trails are valued or are not particularly important for different user groups and where to split trails to avoid conflict. Furthermore, participants included in the process and allowed to provide feedback are often more open to following rules, compromising, and working with the land managers.

LIMITATIONS

The study sample size, 24 participants, limits the findings to provide a detailed examination of the mode of experience and stimulate discussion and future research, but does not allow the findings to be generalized to the mountain biking and hiking populations.

Interrupting the participants during their experiences and giving them cameras to take pictures might have altered their experiences. The inconsistencies in self-reported skill levels limited the study from exploring focus differences or tendencies based on skill level. Recall bias might have limited the follow-up interviews due to the time elapsed between the actual trail experience and the interviews.

VERIFICATION

A triangulation of data: using multiple methods consisting of interviews, written descriptions, and VEP assisted in eliminating the limitations of using one particular method.

Cherem and Driver (1983) explained that VEP studies send users on a corridor or linear route with a camera and thus, capture direct perceptions during the experience with the click of the shutter as opposed to relying on a verbal response. Thus, the method provides an actual representation of their perceptions that measure their responsiveness to their surroundings (Cherem and Driver, 1983).

Instructing participants to take pictures of whatever they were looking at during the experience increased the reliability because the photos were not limited to capturing

extremely positive or negative instances in the experience, but were capturing representations of what participants actually looked at (Cherem and Driver, 1980; Hull and Stewart, 1995).

Follow-up interviews integrated member checking, by allowing the participants to validate interpretations of their modes of experience and their actual focal points with their photographs and descriptions. This method assisted the researcher in better understanding on what and how the participants actually focused during their experiences compared to what the picture recorded. For example, Hiker 11 explained that in one panoramic picture, he was looking at a far more expansive view than the camera could capture. Hiker 02 took a picture of a flower and did not even realize that another flower and blades of grass were there. Hiker 01 explained that her photograph of red berries and cedar could not convey why the feature captured her attention because it did not "depict the red contrast against cedar [because it was] flat, not 3D." And, Mountain Biker 07 appeared to circle a tree in his picture but explained that he was actually looking at the trail behind it. Other hikers and mountain bikers often indicated that they were focusing on the trail but would later explain that they were looking far down the trail at where they were going (see Figure 73).

Figure 73. Examples of participants' photographs that captured images that were better understood after follow-up interviews including Hiker 11's expansive view, Hiker 02's cedar composition, Hiker 03's flower, and Mountain Biker 07's trail view behind a tree.

Figure 73: Cont.

The questions and interviews also provided the researcher with further descriptions, understandings, and verification of meanings from participants in order to limit unsubstantiated analysis and unjustified assumptions of the primarily nominal or ordinal data gathered from the photographs alone (Gollege, 1991). The combined methods, including the written descriptions and interviews, also expanded the data from supplying a "stagnate" or still picture type view of the trail experience, and assisted in offering a better understanding of the complex, sequential experience (Golledge, 1976).

Carr and Schissler (1969) determined that a positive correlation existed between where their study participants looked during their experiences (captured by eye movement mechanisms during the experience) and the recalled objects other participants discussed after taking the same route. Hull and Stewart (1995) also used this finding to validate the recall data participants provided in their study.

Kevin Lynch (1960) found that, although users have their own perceptions and meanings, members of the same group often have agreement and often create the same or similar images. Hammitt and Cherem (1980) explain that it is possible to determine what landscape scenes and patterns appeal to groups of people. Cherem and Driver (1983) discuss that both Cherem (1973) and Traweek (1977) found that users share consensus for what they photograph during VEP studies.

REFERENCES

Allen, G. and Kirasic, K. (1985). Effects of the cognition organization of knowledge on judgments of macro-spatial distance. *Memory and Cognition, 13,*218-227.

Appleton, J. (1996). *The experience of landscape*. London: John Wiley & Sons Ltd.

Appleyard, D., Lynch, K., and Myer, J. (1963). *The View from the road*. Cambridge, MA: MIT Press.

Barlow, H. (1990a). Yes! Mountain bikers are not outlaws, and we have a right to use public trails as we choose. *Bicycling, 31* (May), 98-100.

Barlow, H. (1990b). The art of riding softly: the toughest off-road techniques to master are awareness and respect. *Bicycling, 31* (May), 101-105.

Bell, S. (1997). *Designing for outdoor recreation*. London: E& FN Spon.

Carr, S., and Schissler, D. (1969). The city as a trip: perceptual selection in memory in the view from the road. *Environment and Behavior, 1*, 7-35.

Cessford, G. R. (1995). *Off road mountain biking: a profile of participants and their recreation setting and experience preferences*. Online. Available at www.mountainbike.co.nz/politics/doc.profile/. Accessed May 2001.

Chavez, D.J., Winter, P.L., and Bass, J.M. (1993). Recreational mountain biking: A management perspective. *Journal of Parks and Recreation Administration, 11*(3), 29-36.

Cherem, G. J. (1973). Visitor responsiveness to a nature trail environment. Ph.D. dissertation, University of Michigan, Ann Arbor.

Cherem, G. J., and Driver, B.L. (1983). Visitor employed photography: a technique to measure common perceptions of natural environments. *Journal of Leisure Research, 15*(1), 65-83.

Clark, R. N., and Stankey, G.H. (1979). *The recreation opportunity spectrum: a framework for planning, management and research.* General Technical Report PNW-98. Portland, OR: U.S.D.A. Forest Service.

Driver, B.L., and Brown, P.J. (1978). The opportunity spectrum concept and behavioral information in outdoor recreation resource supply inventories: An application. In *Proceedings of the workshop on integrated inventories of renewable natural resources,* (pp. 24-31). Tech. Cords. H. Gyde Lund et al. USDA Forest Service General Technical Report RM-55. Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.

Driver, B.L., Brown, P.J., Stankey, G.H., and Gregoire, T.G. (1987). The ROS planning system: evolution, basic concepts, and research needed. *Leisure Sciences, 9,* 201-212.

Golledge, R. (1976). Methods and methodological issues in environmental cognition research. In G.T. Moore, and R.G. Gollege (Eds.), *Environmental knowing* (pp. 300-313). Stroudsburg, PA: Dowden, Hutchinson & Ross.

Golledge, R. (1991). Environmental Cognition. In D. Stokols and I. Altman (Eds.), *Handbook of environmental psychology, vol. 1* (pp. 131-174). Malabar, FL: Kreiger.

Greenberg, M. R., and Schneider, D. (1996). *Environmentally devastated neighborhoods: perceptions, policies, and realities.* New Brunswick, NJ: Rutgers University Press.

Hammitt, W.H. (1978). *Visual and user preference for a bog environment*. Ph.D. Dissertation. University of Michigan, Ann Arbor.

Hammitt, W.H. and Cherem, G. J. (1980). Photographic perceptions as an on-site tool for designing forest trails. *Southern Journal of Applied Forestry, 4*(2), 94-97.

Hoger, J. and Chavez, D. (1998 September). Conflict and management tactics on the trail. *Parks and Recreation*, 41-54.

Hollenhorst, S., Schuett, M., Olson, S. and Chavez, D. (1995). An examination of the characteristics, preferences, and attitudes of mountain bike users of the national forests. *Journal of Parks and Recreation Administration, 13,* 41-51.

Hull, R. B. and Stewart, W. P. (1995). The landscape encountered and experienced while hiking. *Environment and Behavior, 27*(3), 404-426.

Hull, R. B., Stewart, W. P., and Yi,Y. (1992). Expereince patterns: the dynamic nature of a recreation experience. *Journal of Leisure Research, 24,* 240-252.

Jacob, G.R. and Schreyer, R. (1980). Conflict in outdoor recreation: a theoretical perspective. *Journal of Leisure Research, 12,* 368- 380.

Kaplan, R. (1976) Way-finding in the natural environment. In G.T. Moore, and R.G. Gollege (Eds.), *Environmental Knowing: Theories, perspectives, and methods* (pp. 46-57). Stroudsburg, PA Dowden, Hutchinson & Ross.

Kaplan, R. and Kaplan, S. (1989). *The experience of nature: a psychological perspective*. New York: Cambridge University Press.

Kaplan, R., Kaplan, S. and Ryan, R. (1998) *With people in mind*. Washington, DC: Island Press.

Kaplan, S. (1973) Cognitive maps in perception and thought. In R.M. Downs and D. Stea (Eds.), *Cognitive mapping: images of spatial environments* (pp. 63-78). Chicago: Aldine-Atherton.

Kaplan, S. (1976) Adaptation, structure and knowledge. In G.T. Moore, and R.G. Gollege (Eds.), *Environmental knowing* (pp. 32-45). Stroudsburg, PA: Dowden, Hutchinson & Ross.

Kaplan, S. and Kaplan, R (1982) *Cognition and environment: coping in an uncertain world*. New York: Praeger.

Kaplan, S. and Wendt, J.S. (1972). Preference and the visual environment: complexity and some alternatives (pp. 6-8-1 – 6-8-5). In Mitchell, J. (Ed.), *Environmental design: research and practice*. Proceedings of the EDRA 3. University of California, LA.

Lynch, K. (1960) *The image of the city*. Cambridge, MA: MIT Press.

Moore, R. and Barthlow, K. (1997). Principles for minimizing trail conflicts: applications to mountain biking. *Trends, 34* (3), 11-14.

Nasar, J.L and Jones, K.M. (1997). Landscapes and fear and stress. *Environment and Behavior, 29* (3), 291-323.

Neisser, U. (1976) *Cognition and reality: principles and implications of cognitive psychology*. San Francisco: Freeman and Company.

Platt, J. R. (1961). Beauty: pattern and change. In D.W. Fiske and S.R. Maddie (Eds.), *Functions of varied experience* (pp. 402-430). Homewood: IL, Dorsey Press.

Ramthun, R. (1995). Factors in user group conflict between hikers and mountain bikers. *Leisure Sciences, 17,* 159-169.

Schroeder, H.W. and Anderson, L.M. (1984). Perception of personal in urban recreation sites. *Journal of Leisure Research, 16*(2), 178-194.

Shafer, C.S., Scott, D., and Mixon, J. (2000). A greenway classification system: defining the function and character of greenways in urban areas. *Journal of Park and Recreation Administration, 18*(2), 88-106.

Shuett, M.A. (1997). State park director's perceptions of mountain biking. *Environmental Management, 21*(2), 239-246.

Symmonds, M.C., Hammitt, W.E. and Quisenberry, V.L. (2000). Managing recreational trail environments for mountain bike user preferences. *Environmental Management, 25*(5), 549-564.

Traweek, D. E. (1977). *Visitor employed photography on the Huron River: a tool for interpretive planning*. Ph.D. Dissertation. Columbus: Ohio State University.

Ulrich, R.S. (1993). Biophilia, biophobia, and natural landscapes. In S.R. Kellert and E.D. Wilson (Eds.), *Biophilia hypothesis* (pp. 73-137). Washington, DC: Island Press.

Ulrich, R.S. (1999). Effects of gardens on health care outcomes: theory and research (pp. 27-86). In C.C. Marcus and M. Barnes (Eds.), *Healing gardens*. New York: John Wiley.

Ulrich, R.S. (2001). Effects of healthcare environmental design on medical outcomes (pp. 49-59). In *Proceedings of the Second International Conference on Design and Health 2001*. Stockholm, Sweden.

Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, A., and Zelson, M. (1991). Stress Recovery During Exposure to Natural and Urban Environments. *Journal of Environmental Psychology, 11*, 201-230.

Wagner, M., Baird, J.C., and Barbaresi, W. (1981). The locus of environmental attention. *Journal of Environmental Psychology, 1*, 195-206.

Youman, R. and Youman, B. (1999) *Mountain biking central Texas*. Austin, TX: Ragged Edge Riders.

APPENDIX A

ADDITIONAL TABLES AND FIGURES

Table 14. Additional features and sounds influencing participants' focus listed in immediate follow-up interviews.

	Mountain Bikers	Hikers
Features or Elements		
	Flowers	Trash
	Snakes	Park maintenance
	Sunlight rays	Flowers
	Flagging (trash)	Ruts
	Orange fence	Birds
	Brush pile	Frogs
	Switchbacks	Butterflies
	Downhill climbs	Factory
	Creek beds	The lake
	Birds	Snakes
	Technical	Branches moving
	aspects	Power lines
	Erosion	Sun light rays
		Over hanging trees
		Navigating puddles
Sounds		
	Voices	Voices
	Road noise	Road noises
	Birds	Birds
	Leaves	Frogs
	Wildlife	Boats
	Pump station	Planes
	Tape	Music
		Rustling leaves
		Wind
		Wildlife
		Bikers

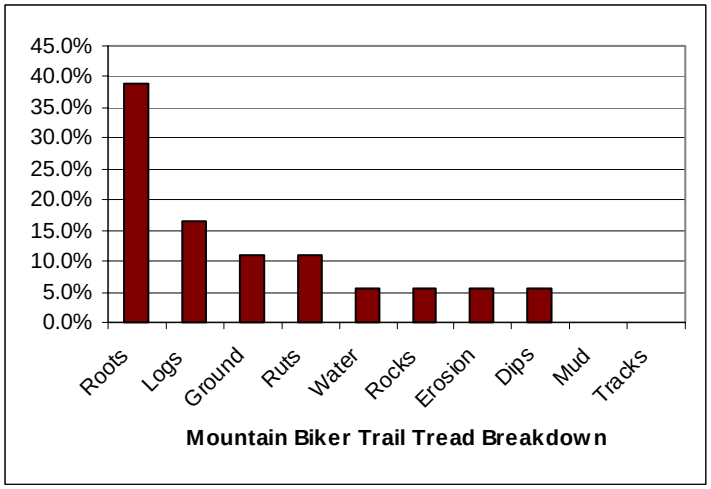
Table 15. Specific breakdowns of *What* mountain bikers' and hikers' photographs indicate they focused on during their trail experiences.

	Mountain Biker		Hiker		Total	
What Specific	#	%	#	%	#	%
Trail Tread	18	19.4	20	16.5	38	17.8
Ground	2	2.2	9	7.4	11	5.1
Ruts	2	2.2	1	0.8	3	1.4
Rocks	1	1.1	0	0.0	1	0.5
Roots	7	7.5	1	0.8	8	3.7
Mud	0	0.0	1	0.8	1	0.5
Puddles/Water	1	1.1	4	3.3	5	2.3
Tracks	0	0.0	1	0.8	1	0.5
Erosion	1	1.1	3	2.5	4	1.9
Dips	1	1.1	0	0.0	1	0.5
Logs	3	3.2	0	0.0	3	1.4
Vegetation	11	11.8	26	21.5	37	17.3
Trees	9	9.7	7	5.8	16	7.5
Berries	0	0.0	6	5.0	6	2.8
Flowers	2	2.2	7	5.8	9	4.2
Shrubs/Bushes	0	0.0	2	1.7	2	0.9
Seedling/Growth	0	0.0	3	2.5	3	1.4
Branches	0	0.0	1	0.8	1	0.5
Wildlife	0	0.0	5	4.1	5	2.3
Animals	0	0.0	2	1.7	2	0.9
Birds	0	0.0	3	2.5	3	1.4
Trail Corridor	48	51.6	31	25.6	79	36.9
Where Going	23	24.7	6	5.0	29	13.6
Ahead/Around	12	12.9	15	12.4	27	12.6
Turn/Corner	9	9.7	3	2.5	12	5.6
Bridge	2	2.2	1	0.8	3	1.4
Sign	2	2.2	6	5.0	8	3.7

Table 15. Cont.

	Mountain Biker		Hiker		Total	
What Specific	#	%	#	%	#	%
Views	6	6.5	17	14	23	10.7
Clearing/Through	5	5.4	7	5.8	12	5.6
Lake	0	0.0	3	2.5	3	1.4
Around	1	1.1	7	5.8	8	3.7
Human Impacts	6	6.5	5	4.1	11	5.1
Trash	4	4.3	1	0.8	5	2.3
Fence	2	2.2	0	0.0	2	0.9
Poles/Wires	0	0.0	3	2.5	3	1.4
House/Building	0	0.0	1	0.8	1	0.5
Noise	1	1.1	12	9.9	13	6.1
People	1	1.1	5	4.1	6	2.8
Wind	0	0.0	1	0.8	1	0.5
Unknown	0	0.0	1	0.8	1	0.5
Birds	0	0.0	2	1.7	2	0.9
Road Noises	0	0.0	2	1.7	2	0.9
Planes	0	0.0	1	0.8	1	0.5
Nothing	0	0.0	4	3.3	4	1.9
Equipment/Other	2	2.2	1	0.8	3	1.4
Equipment	2	2.2	1	0.8	3	1.4
Other	1	1.1	0	0.0	1	0.5
Total	93	43.5	121	56.5	214	100.0

Figure 74.Histograms of *What* Mountain Bikers viewed specifically in their environment.



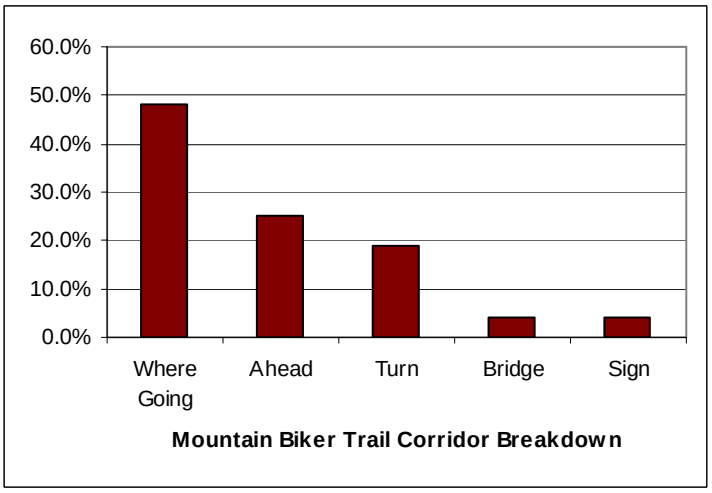
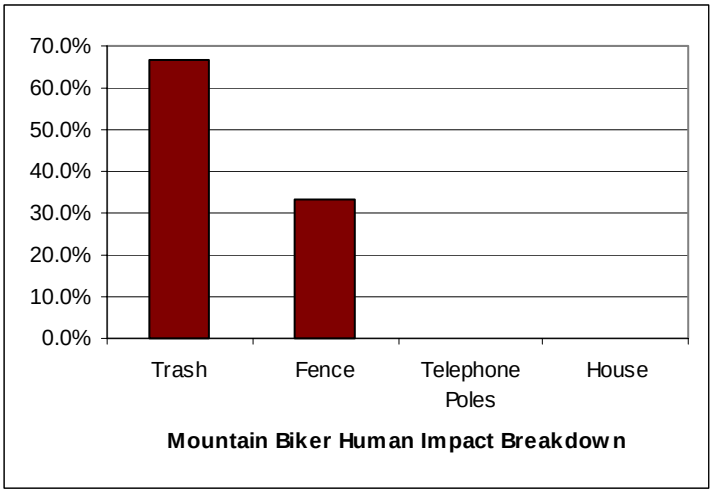


Figure 74. Cont.



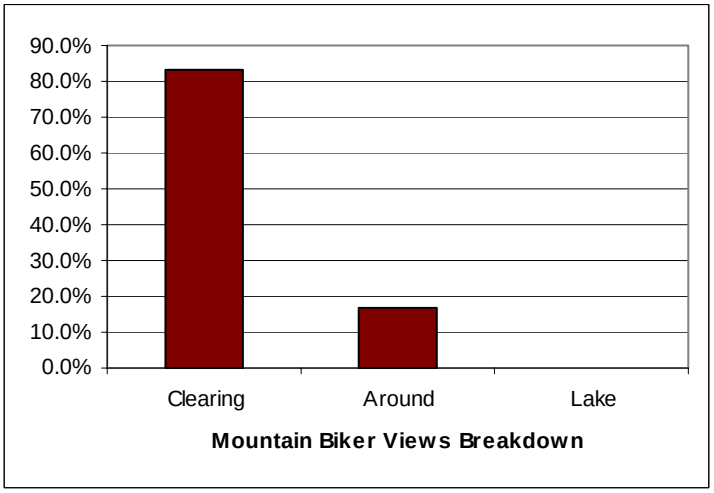
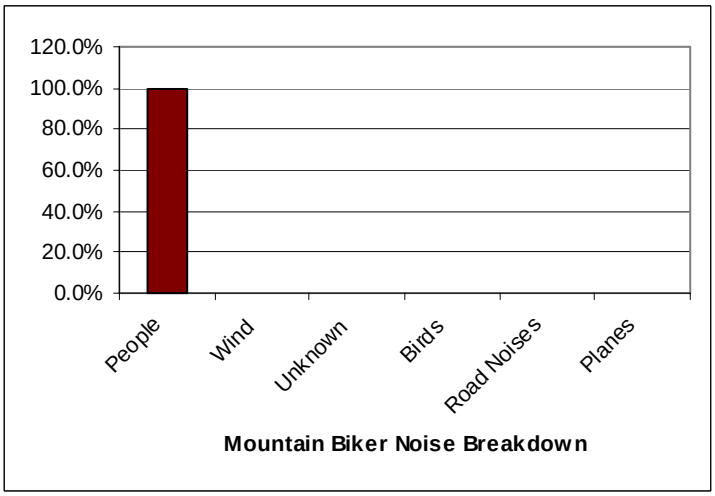


Figure 74. Cont.



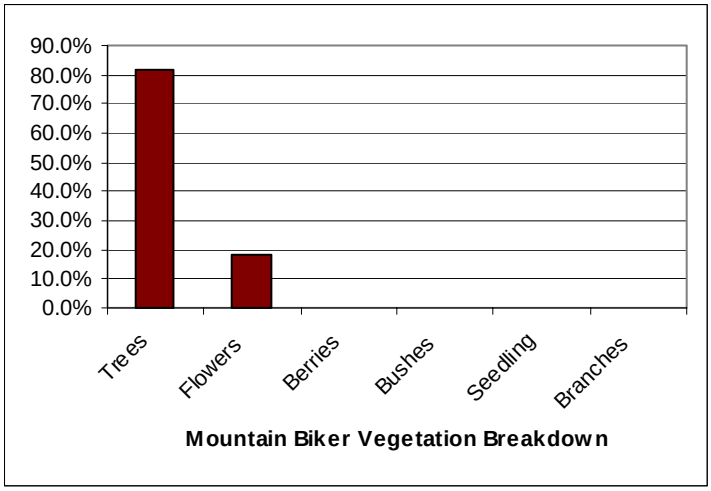
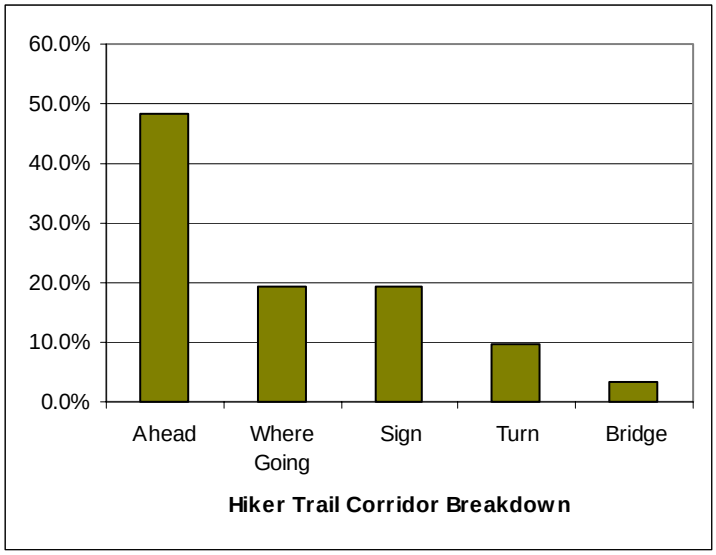


Figure 75. Histograms of *What* Hikers viewed specifically in their environment.



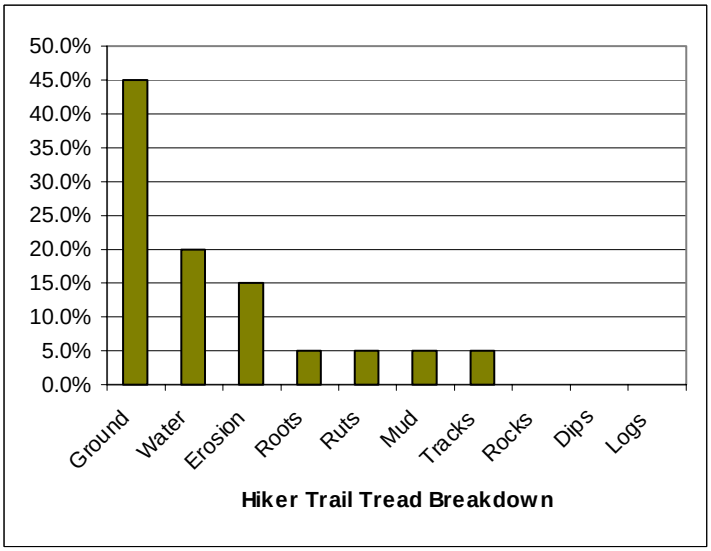
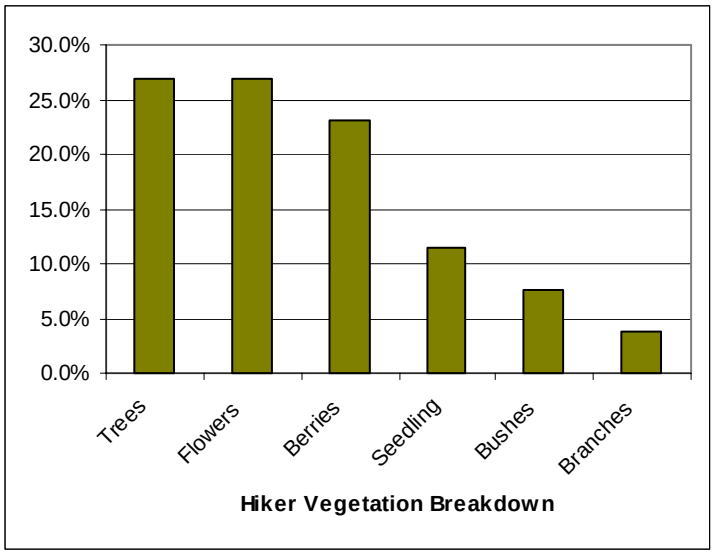


Figure 75. Cont.



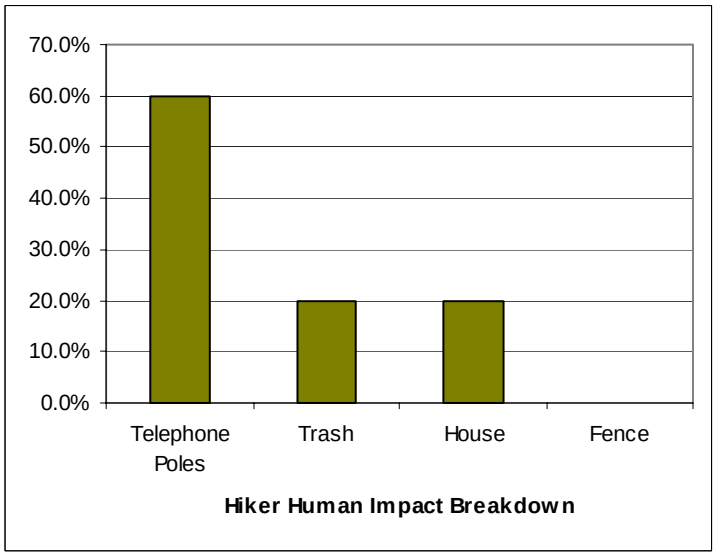
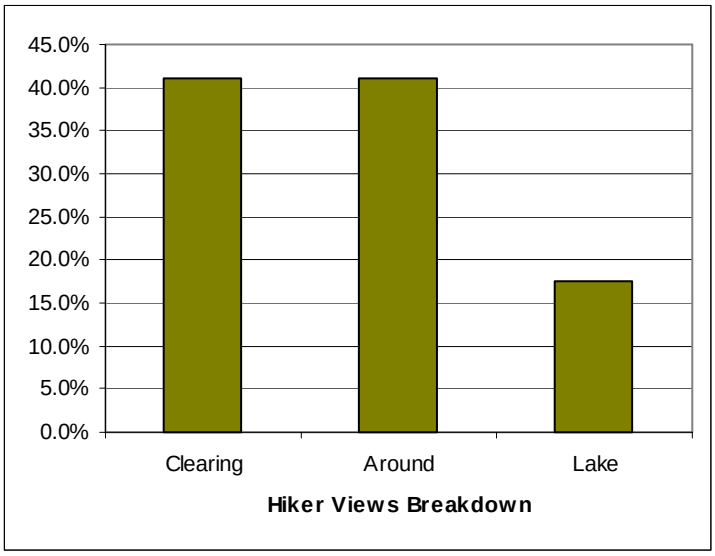


Figure 75. Cont.



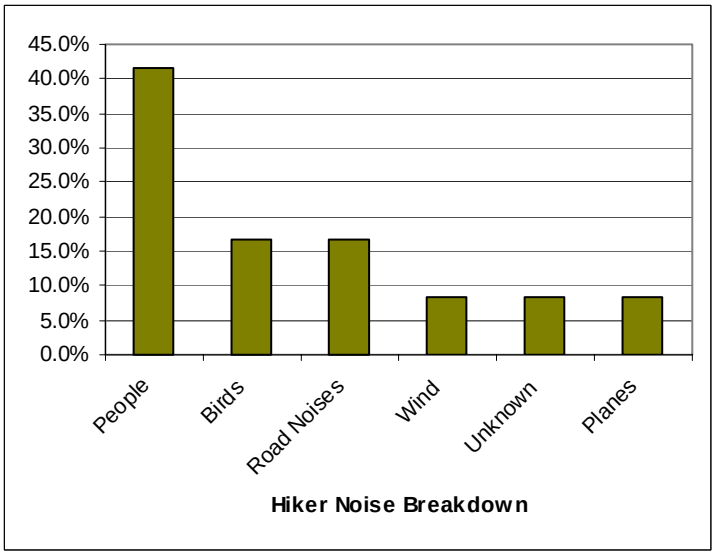
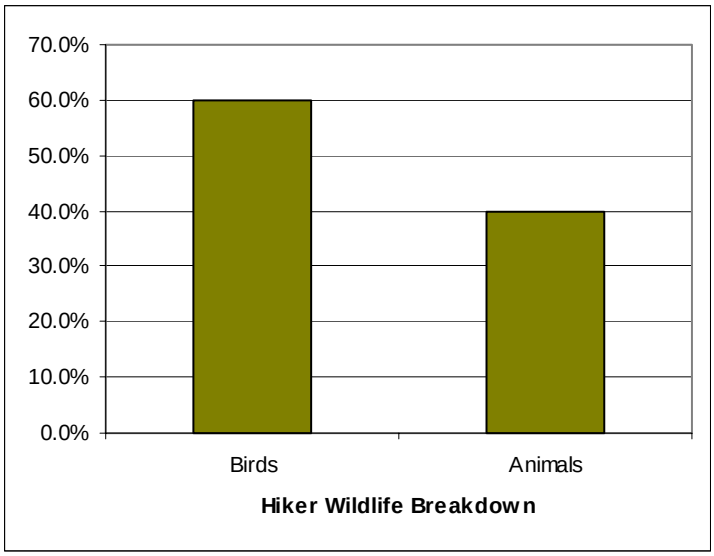


Figure 75. Cont.



VITA

Education

MS, Recreation, Park and Tourism Sciences: Texas A&M University_ *May 2003*
BS, Recreation, Park and Tourism Sciences: Texas A&M University_ *May 1999*

Course Projects/Papers

Social, Cultural and Economic Issues in Outdoor Recreation and Natural Resources_ RPTS

- Course Paper: Sustaining Community Health: Converging Preventative Medicine and Land Use and Planning

Tourism and the Natural Environment_ RPTS

- Course Paper: ROS: An Urban Application for Environmental Physical Activity Health Opportunities

Visual Quality Analysis in Design and Planning_ Landscape Architecture and Urban Planning

- Research/Design Project: Fear and Safety: Perceptions of natural corridors in community neighborhoods.
- Research/Design Project: Restorative Visual Settings: Comparing neighborhood parks.

Introduction to GIS_ Landscape Architecture and Urban Planning

- Mapping Presentation and Paper: A GIS application for rating a community environment's supportiveness for human activity.

Health Design and Research_ Department of Architecture

- Research/Design Project: Resident's knowledge of neighborhood recreation opportunities: exploring wayfinding using objective mapping.
- Research/Design Project: Environmental factors influencing residents' non-auto dependant activity: a restorative and stressful characteristics inventory.

Contact Information

4217 Woodfin Dallas, TX 75220