# ROCK CLIMBING SUB-WORLDS: A SEGMENTATION STUDY

A Thesis

by

BRANDON WAYNE RAPELJE

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

August 2004

Major Subject: Recreation, Park & Tourism Sciences

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Approved as to style and content by:

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# ABSTRACT

Rock Climbing Sub-Worlds:

A Segmentation Study. (August 2004)

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Rock climbing participation is growing throughout the United States. Information on the participation patterns and preferences of groups of climbers can be used to help mangers make better informed decisions, allowing them to cater to the specific interests of climbing participants, ensure participant satisfaction and encourage continued patronage. This study explores variation in participant characteristics across segments of the climbing population. Because an individual's level of specialization will align him with other like-minded participants, an understanding of a participant's stages of involvement and level of specialization assists in understanding the social world's views and behaviors toward the resource and toward other participants. Information on participants' level of experience, level of commitment, and demographic dimensions can be used to better understand and manage climbers.

This study aimed to identify differences among groups of climbers. The study measured across 484 participants. The participants were described by

various dependent variables, which included demographic factors, level of specialization, motivations for climbing, types of conflicts and constraints experiences, and setting preferences. Measuring the climbers' participation patterns identified participant sub-world groups. The four groups of climbing participants, as identified by this study, were: infrequent climbers, frequent outdoor climbers, frequent indoor climbers, and avid climbers. While demographics are not significantly descriptive of climbing sub-world affiliations, this study found that there were differences among sub-world affiliates in terms of specialization level, motives, conflicts, constraints, and setting preferences.

## ACKNOWLEDGEMENTS

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# CHAPTER I

## INTRODUCTION

Climbers are a notable portion of the 69.2% of the American population who participate in outdoor recreation. The Outdoor Recreation Coalition of America (ORCA) reported that 4.1% of Americans, 8.8 million people, participated in some form of climbing in 2001. The number of rock climbing participants has steadily increased over the past three decades (Attarian & Pyke, 2000; Cordell et al., 1997; Heath, 1997;). While the number of participants has been increasing, the rise has only kept pace with general population growth. Figure 1 illustrates that, from 1998 to 2001, participation in outdoor recreation increased by 9.3%, while climbing participation increased by only 0.1%.

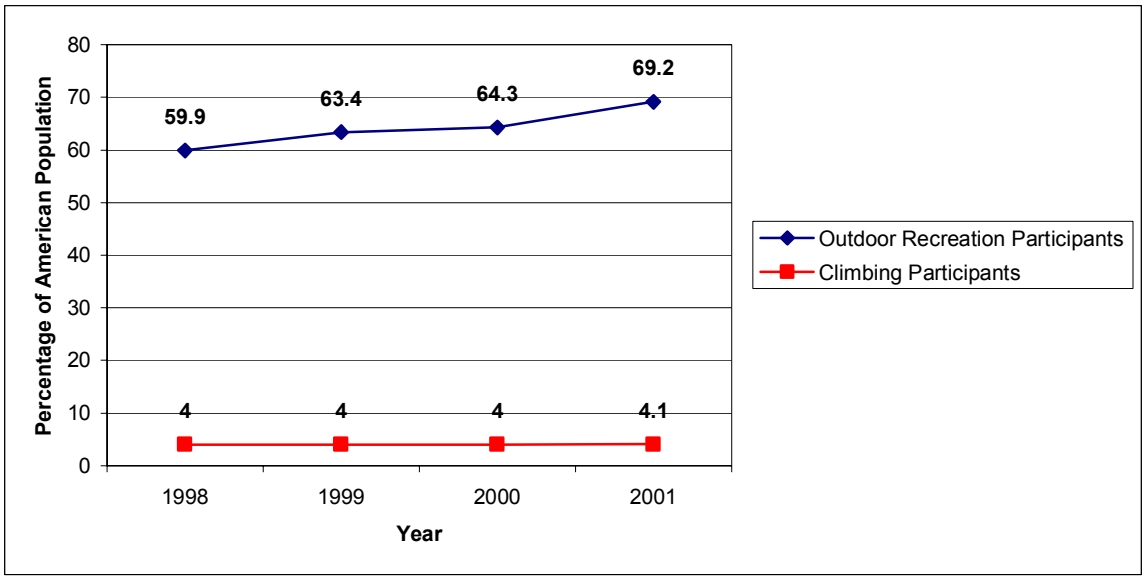


Figure 1. Participation Rates in Rock Climbing and Outdoor Recreation Over Time.

This thesis follows the style and format of the *Journal of Leisure Research*.

The sport of climbing changed significantly when climbers began to take pride in the accomplishment of climbing to a fixed belay point instead of the summit of a mountain (Long, 1993). Modern climbing as a sport began in the 1960's and continued to grow as advancements were made in equipment technology (Climbing, 1995; Hattingh, 1998). This revolution allowed for the expansion of climbing areas to include any vertical rock face. The introduction of the advanced style of rock climbing shoe in the early 1960s further revolutionized the way people approached the sport of climbing. The shoes' soft rubber sole provided improved traction and flexibility, allowing climbers to perform moves and climb faces previously thought to be impossible (Long, 1993). Other advancements in technology included improvements in rope design, the introduction of carabiners, and the development of more advanced harnesses (Climbing, 1995). Each advancement improved the safety and comfort of individuals participating in climbing. This encouraged new climbers to take up the sport and allowed existing climbers to further specialize.

The progressive advances of equipment led to the creation of unique climbing activity groups (Hattingh, 1998). These groups include indoor wall climbers, ice climbers, sport climbers, boulderers, free climbers, solo climbers, alpine climbers, and aid climbers (Dierick, 2002; Ewert & Hollenhorst, 1997; Hattingh, 1998; Long, 1993; Potterfield, 2001). Each of these groups represents a

segment of climbers who may differ in setting, style, and climbing method preference (Hollenhorst, 1990; McAvoy et al., 1997; Potterfield, 2001).

Variations in climbing preferences have also fostered the creation of separate climbing social worlds. According to Strauss (1984), one of the ways a social world segments is along areas of contention. A common source of contention that Strauss specifically discusses is the space in which an activity takes place. If the setting becomes central to the identity of an activity's participants, then any infringement on that setting could become the source of hostilities between social world groups. Setting segmentation lends itself to the study of specialization because climbers can be described by both location attributes and the difficulty rating of the routes they choose. Consequently, understanding the factors associated with participants at specific climbing locations provides important information about discreet climbing populations.

In ORCA's 2001 study, climbers were divided into three groups based on style of participation: artificial wall climbers, natural rock climbers and ice climbers. Preferred climbing setting was used as the basis of the breakdown of participants for the ORCA study, as shown in Table 1. The table describes both the total participation and the percentage of crossover participation between climbing styles. It is noteworthy that of the six million natural rock climbing participants included in the study, 55.5% also participated in artificial wall climbing at some time that year.

*TABLE 1*
*Number and Percentage of Participants in Different Climbing Activities*

| | Total Participation (Millions) | Artificial Wall Crossover Percentage | Natural Rock Crossover Percentage | Ice Crossover Percentage |
|---|---|---|---|---|
| Natural Rock Climbing | 6.0 | 55.5 | 100.0 | 81.0 |
| Artificial Wall Climbing | 6.0 | 100.0 | 55.0 | 90.5 |
| Ice Climbing | 1.1 | 17.3 | 15.3 | 100.0 |

ORCA further categorized individuals as either participants or enthusiasts based on frequency of participation. The description of individuals by these criteria is similar to specialization as described by Scott and Shafer (2001). The study of specialization, as described by Scott and Shafer, also includes the participant's level of skill and level of commitment. A participant's placement along the specialization continuum is seen to be related to their setting and social choices.

According to ORCA, natural rock climbers are individuals who climb outdoors in settings where natural features provide hand and foot holds. In contrast, artificial wall climbers climb on manufactured walls where artificial holds are used to simulate the natural environment. ORCA further describes the demographic variables both artificial wall climbers and natural rock climbers as being similar (Table 2).

*TABLE 2*
*Population Characteristics of Climbing Participants*

| | Natural Rock Climbers | Artificial Wall Climbers |
|---|---|---|
| Gender: Male | 66% | 64% |
| Age: 16 to 24 | 54% | 60% |
| Marital Status: Unmarried | 68% | 71% |
| Ethnicity: Caucasian | 84% | 76% |
| Household Income: <40,000 | 43% | 45% |

ORCA found that participation in climbing is strongly linked to participant age. The study found that the mean age for artificial wall climbing participants was 20 years, the youngest of any studied activity. Natural rock climbing participants had a slightly higher mean age of 24.8 years. The ORCA study further found that the demographic profile of all climbing participants in general was predominantly male, mostly unmarried, predominately Caucasian, and having a mean household income of over $50,000. The homogeneity of these findings illustrates that demographic differences between natural rock climbers and artificial wall climbers will probably not be a factor that differentiates between social world associations or the participant's level of specialization.

The ORCA study data provides demographic information about participants in different climbing settings, but does not tell managers how specialization affects individual differences between participants. These individual differences

are important because they can be the source of many important management concerns. Conflicts can arise between participants when two people hold incompatible goals or when one individual pursues goals that interfere with the goals of another (Ewert et al., 1999). Conflicts like these are important because they can lead to participant displacement or even overt hostility between user groups.

The tendency for some public and private land managers to cater to climbers as a way of diversifying their economic base intensifies the need for data describing the differences between climbing social worlds (Attarian & Pyke, 2000). The proliferation of climbing opportunities becoming available only increases the need to collect accurate data that will help to understand the attitudes and behaviors of different rock climbing groups. Data describing participant specialization will be able to provide insight into participants' level of commitment, frequency of participation and level of skill.

Bryan (1977, 2000) described specialization as a continuum of interest level ranging from low or novice to high or expert participants. The stages of involvement associated with specialization sub-worlds are strangers, tourists, regulars and insiders (Unruh, 1979). Bryan (2000) argued that there are likely to be distinctive patterns of behavior and attitude orientations among members at each stage of involvement. These patterns are apparent in the participants' "equipment preference, type of experience sought, desired setting for the

activity, attitudes toward resource management, preferred social context, [and] even vacation patterns" (Bryan, 2000, p. 18). Bryan (2000) argued that an individuals' level of specialization will align them with other like-minded participants. An understanding of a participants' stages of involvement and level of specialization will then assist in understanding the social world's views and behaviors toward the resource and toward other participants.

The recreation specialization framework, as described by Scott and Shafer (2001), conceived specialization as a developmental process through which a participant progresses. They contend that the progression can be best understood in terms of a focusing of behavior, the acquiring of skills and knowledge, and a tendency to become committed to the activity to such a degree that it becomes a central life interest. Scott and Shafer argued, however, that participants may not progress in a lock step manner.

Kuentzel and McDonald's study showed that level of experience, commitment, and lifestyle dimension were interrelated among individuals in the beginning stages of the specialization continuum (1992). Individuals demonstrating a higher level of experience, however, do not demonstrate similarly related levels of commitment and lifestyle choices. Scott and Shafer (2001) argued that individuals might maintain or decrease levels of involvement or participation over time. These individuals may not progress for many reasons; common reasons given by participants for this pattern of behavior is

work or family obligations. These and other possible conflicts were measured in this study. Information on participants' level of experience, level of commitment, and lifestyle dimension can be used to better understand and manage climbers.

Hollenhorst (1987) suggested that information gained from surveys of climbers could be used to help mangers make better informed decisions. Hollenhorst suggests that managers could use the knowledge gained from his study about female climbers to affect their level of participation. Hollenhorst also found that rock climbers were not significantly interested in the natural characteristics of the climbing site. Managers could utilize this information to create group norm profiles that may then allow them to cater to the specific interests of climbing participants. The norms of a particular group include those preferences or ideas that are shared by most group members. Norm preferences of climber groups could possibly be used as a baseline for the study of similar activity groups.

Norm factors that have been studied include participant preferences for environmental settings, orientation to social ideals, sensitivity to crowding, and what other types of activities they are likely to participate in (Hollenhorst, 1990). This type of information would provide managers with the opportunity to anticipate and prepare for climbing group needs based on compiled social world

preferences. Managers would be able to use this information to entice new clients and keep current users throughout the participation life cycle.

Rock climbers have been studied sporadically. Many of the studies utilized climbers in conjunction with other activity participants to study risk recreation or other general topics. With the exception of Hollenhorst's (1987) study of rock climbing specialization, the climbing population's internal dynamics are virtually unstudied. This study will use the recreation specialization framework to explore the diversity of behaviors and attitudes within the social world of climbing.

## Statement of the Problem and Objectives

The purpose of this study is to explore the variation in participant characteristics across segments of the climbing population. Two groups are popularly referred to by their choice of environmental locations: indoor climbing participants or outdoor climbing participants. The climbers of this study were primarily segmented on their frequency of participation, and further defined by the environmental location. The climber groups identified were treated as the independent variable for this study. One set of dependent variables was the specialization framework as defined by Scott and Shafer (2001): behavioral involvement, skill level, and commitment to the activity.

Other dependent variables discussed are participant motives for climbing, their setting preferences, conflicts and constraints affecting participation.

The following questions were examined in this study.

1. Do rock climbing sub-worlds differ in their level of specialization?
2. Do rock climbing sub-worlds differ in their motives affecting participation?
3. Do rock climbing sub-worlds differ in their social or setting preferences?
4. Do rock climbing sub-worlds differ in their conflicts and constraints?

## Justification for the Study

Understanding the differences among climbing sub-worlds will assist land and facility managers to better target programs and services to specific segments of the climbing population. Market segmentation has proven to be an effective way to target consumers with specific marketing strategies (Neal & Wurst, 2001). Frochot and Morrison (2000) argued that the use of a segmentation strategy to increase the competitiveness of a company's marketing strategy has been justified by its success. Dividing participants by activity, setting, or frequency are all example of segmentation. Segmenting the climbing social world by the participants' primary climbing setting aligns with Strauss' (1984) process of segmentation. However, frequency of participation is also a strong

segmentation variable, and therefore was the primary variable used to segment climbing sub-worlds.

## Definition of Terms

Climbing participants: Individuals who reported that they had participated in some type of rope and harness climbing in the past year, as defined by ORCA.

Indoor climber: Person who predominantly participates in climbing in artificial climbing facilities. For this study, all styles of climbing that occur in an artificial environment will be referred to as indoor climbing.

Outdoor climber: Person who predominantly participates in climbing in natural climbing settings. For this study, all styles of climbing that occur in the natural environment will be referred to as outdoor climbing.

Sub-world affiliate: The independent variable as defined by climber participation patterns, which include frequency and location.

Boulderer: Person who climbs short vertical distances at either an artificial wall facility or at a natural rock settings, utilizing little or no protection from falling.

Lead climber: Person who climbs a route without existing protection above themselves. This form of climbing utilizes the placement of anchors along the route to protect the climber in case of a fall.

Top rope: A rope anchored at the top of a route prior to the climber's start. This rope protects a climber from injury during a fall.

Sport climber: Person who climbs utilizing pre-bolted routes. This can be at either an artificial wall facility or at a natural rock setting.

Traditional climber: Person who climbs predominantly in natural rock settings, using passive forms of protection to protect from falls.

Recreation specialization: Defined by Bryan (2000) as a continuum of interest level ranging from low or novice to high or expert. Scott and Shafer (2001) further defined specialization as a developmental process that a participant progresses through. They contend that the progression can be best understood in terms of a focusing of behavior, the acquiring of skills and knowledge, and a tendency to become committed to the activity to such a degree that it becomes a central life interest.

Social world: Defined by Kling and Gerson (1978) as "a set of common or joint activities or concerns bound together by a network of communication" (p.26). Further, Ditton et al. (1992) contended that participants lie along a continuum from least to most specialized differing in the participants' level of orientation, experience, relationships and commitment.

## Organization of the Study

Chapter I provides a background and sets a context for the study. This chapter also includes a statement of the problem and objectives of the study, including a list of the study questions. This is followed by the justification for the study, and Chapter I is concluded with the definition of important terms. Chapter II presents a discussion of the past research. This includes the evolution of climbing, a description of social world theory, a description of the recreation specialization framework, a discussion on the importance of describing motives, and a description of conflicts affecting climbing. Chapter III reviews the procedures concerning research methodology, data collection, and processing. Chapter IV states the findings of the research and reports the findings to the research questions. Chapter V discusses the implications of this research and gives suggestions for further research.

# CHAPTER II

# LITERATURE REVIEW

Researchers have categorized participants into defined groups in order to better understand their attitudes and behaviors. Climbers are typically segmented into groups based on their environmental preferences and the features of the equipment they employ in their pursuits (Hattingh, 1998). Some of the common divisions include indoor climbing, ice climbing, sport climbing, bouldering, free climbing, solo climbing, alpine climbing, and aid climbing (Dierick, 2002; Ewert & Hollenhorst, 1997; Hattingh, 1998; Long, 1993; Potterfield, 2001;). Each grouping represents a segment of climbers who differ in setting, style, and climbing method preferences (Hollenhorst, 1990; McAvoy et al., 1997; Potterfield, 2001).

This chapter is comprised of eight sections. The first section provides a description of the evolution of climbing as a recreation activity. The second section describes rock climbing social worlds, which is the division of climbing participants by level of intensity, experience and specialization. The third section is a summary of climber socio-demographic characteristics. The fourth is a summary of the recreation specialization framework. The fifth is a summary of the motives associated with climbing. The sixth is a summary of participant conflicts. The seventh is a summary of constraints as identified in this study. The last section is a summary of the ideas presented.

# The Evolution of Climbing

## *Beginning*

Climbing began as an activity for adventurers to explore the majesty of the mountains (Hattingh, 1998; Long, 1993). As early as 1785, mountain climbers recorded ascents on peaks of great height using little more then wool clothing, nerve, and courage (Hattingh, 1998). Climbers' aspirations for more dramatic and extreme accomplishments increased as the margin of safety grew. The technological improvements of rope construction and other climbing gear systems gave climbers a safer and more manageable climbing experience. This, in conjunction with an expanding understanding of the natural world, significantly influenced climbers' perceptions of what was possible. To summit a mountain or climb to its highest point had become a sport by the late eighteenth century (Climbing 1995; Hattingh, 1998; Long, 1993). Some of the notable ascents included Mont Blanc by Paccard in 1786, the Matterhorn by Whymper in 1865, Mt. McKinley by Stuck in 1913, and K2 by Kacedelli in 1954.

## *Improvement of Equipment and Techniques*

Many of the publicized ascents, whether of mountains, peaks or walls, were made possible by the introduction of advanced equipment and the constant evolution of climbing techniques (Long, 1993). The advancement of anchoring practices in particular was instrumental in the sport's early growth, as these

safety procedures made it possible to access new areas and rock features. One significant achievement made possible because of new anchoring techniques was Will Unsoeld's first ascent of El Capitan's East Buttress in Yosemite National Park in 1953 (Long, 1993).

By the early 1960s, the advancements in equipment technology ushered in the era of modern climbing. The introduction of an advanced style of climbing shoe revolutionized the way people approached the sport of climbing. The shoes' soft rubber sole provided improved traction and flexibility, allowing climbers to perform moves, which were previously thought to be impossible (Long, 1993). Other technological advancements that contributed to the increasing safety of the sport included rope design, carabiners, and the development of more advanced harnesses (Climbing, 1995). Each new development impacted the sport's popularity and growth, by influencing trends and safety factors (Climbing, 1995; Hattingh, 1998). Advances in equipment design allowed individual climbers to better express their personal styles through participation choices (Hattingh, 1998). At the same time, specific styles of participation, such as ice climbing, influenced the advancement in the design of equipment because of its unique requirements.

Indoor climbing walls began to appear in Europe during the 1960s, but the first climbing gym in North America did not open until 1987 (Outdoor Recreation Coalition of America, 2001). In the United States, the Climbing Gym

Association listed a total of 343 climbing gyms in 1997. Of the gyms surveyed by ORCA in 1997, 89% offered a separate area for bouldering, and 87% offered lead climbing.

*Rating System*

The diversity of climbing styles and opportunities available created a need for a rating system to designate the relative difficulty of climbs. The climbing community consequently established numerous scales to create understood standards that conveyed the difficulty for specific climbing routes, providing a way to compare the skill level of an individual against other climbers and the population as a whole. Separate scales for alpine climbing, snow and ice climbing, aid climbing, rock climbing, and bouldering have been developed.

Many of the leading countries with significant involvement in climbing, including America, Great Britain, Australia, France, and Germany, have established rating scales for each climbing specialty (Long, 1993). In the United States, the most common rock climbing scale used is the American Rock Climbing Grading System (Hattingh, 1998), which is illustrated in Table 3. This scale was devised in the early 1930s and is based on a simple progression of difficulty. Technical rock climbing, which is category 5, is further divided by a point system describing the difficulty of climbable routes. The technical rock

climbing scale ranges from the "easy" 5.4 of a beginner's climbing route to the "nearly impossible" 5.14d (Long, 1993).

*TABLE 3*
*American Rock Climbing Grading System for Identifying Difficulty of Climb*

1. Walking (sidewalk)
2. Hiking (dirt trails)
3. Scrambling (requires the use of hands)
4. Climbing that is risky enough that a fall could be fatal (requires the use of a rope)
5. Technical rock climbing (requires the use of specialized equipment and techniques to protect against a fall)
    - 5.5. Typical beginner difficulty level
    - 5.9. Typical moderate difficulty level
6. A rock surface so sheer and smooth that it is considered impossible to climb

*Influence of the Media*

The dramatic popularization of climbing was, in part, due to the glamorization it received by the popular media (Dierick, 2002; Heath, 1997). Movies showing action stars performing incredible feats, such as Tom Cruise in "Mission Impossible 2" and Sylvester Stallone in "Cliffhanger," are only part of the total exposure that risk recreation receives. Many television commercials and print ads have featured extreme sports to entice adventure-seeking consumers. Climbing is one of many activities being publicized in this way. The trend of increased media exposure has increased interest and influenced newcomers to try out risk recreation activities, including climbing.

*Climbing Participation Options*

Climbing participants now have a multitude of climbing options available. In 1997, ORCA published a list of marketing data for over 350 climbing gyms. This data showed that artificial climbing walls are a recent phenomenon, as 73% of the facilities first began operating sometime during the three years previous of ORCA's study. These new climbing gyms attracted a variety of climbers, as 89% offered a separate area for bouldering. Almost half of the climbing gyms surveyed, 49%, are located in urban areas. This growth appears to support Ewert & Hollenhorst's (1997) argument that indoor wall climbing is a substitute for outdoor rock climbing. The number of natural areas allowing climbing has also increased in last few years. Both state and federal lands are increasingly allowing climbers to use those areas, and private lands are being opened as a potential source of profit for land owners. Besides designated climbing facilities, retailers, such as REI, have become increasingly likely to provide small indoor climbing walls in order to both introduce people to the sport and create interest in the store location. Opportunities for climbers to be introduced to and participate in climbing have greatly increased, making it easy for potential participants to find training in climbing basics through paid classes, at indoor facilities, or even through retailers such as REI.

## Social Worlds

Climbing has many social worlds, defined by Unruh as "an internally recognizable constellation of actors, organizations, events and practices which have coalesced into a perceived sphere of interest and involvement for participants" (1979, p. 115). Individuals involved in a social world are members of an informal group that communicate through face-to-face interaction, the mass media, and the Internet. In the case of rock climbers, I will associate climbers' setting preferences to their social world structure based on the importance placed on site type, location, and amenities. Technical climbing was first developed as a necessity for mountain climbers to summit mountains safely. As these techniques developed, a group of individuals refocused their energies from the summitting of mountains to the technical climbing of rock slabs. These individuals are the forefathers of modern rock climbers. Over time, individual participants, followed by entire groups, focused on various individual aspects of the sport. Figure 2 represents a conceptual description of climbing participant's mode of involvement. As identified by ORCA (1997), the sub-worlds of indoor wall climbing and outdoor rock climbing participants are separated by many factors, but they share a common history. ORCA (2001) has shown that the crossover between indoor wall climbing and outdoor rock climbing participants is high. In spite of the high rate of crossover, this study

attempted to describe climbing sub-world affiliate groups in terms of differences in level of specialization, motives, conflicts, constraints, and setting preferences.

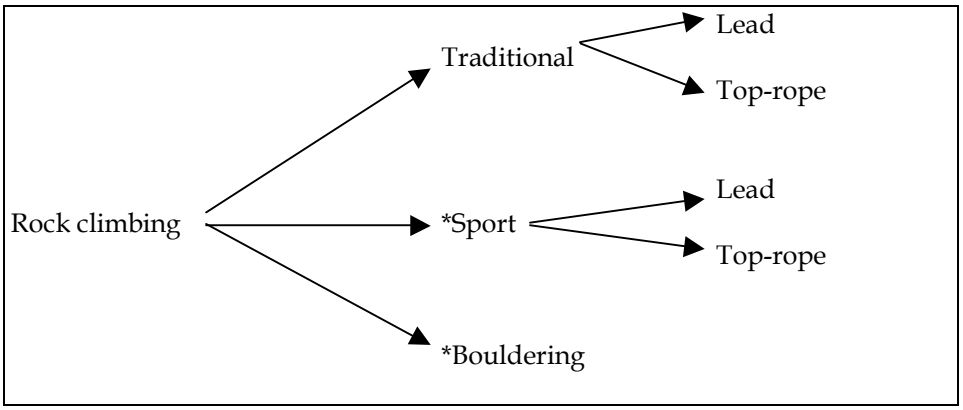


Figure 2. A Conceptual Representation of Climbing Types.

* Can take place in either an indoor or outdoor environment.

*Sub-worlds*

Ditton et al. (1992) argued that as a social world decreases in size, it becomes less dependent on mass media outlets such as magazines, newspapers and the Internet. Once a social world's avenue of communication lessens, its influence on the whole of its membership weakens. The contraction of communication can continue to the point that the social world further fractures into separate sub-worlds. A sub-world is defined by the uniqueness of the specific setting or other factors associated with a small specific group (Strauss, 1984). For example, in Hueco Tanks, the local climbers have become so engrossed in the local

specialty of environment features that they have created their own sub-world (Thorpe, 1996).

Unruh (1979) first classified members of a sub-world as either strangers, tourists, regulars, or insiders. For each of these participant levels, Unruh measured their level of orientation to the group, approximate experience level, relationship with other group members, and commitment to the sub-world. Ditton et al. (1992) argued that the specialization continuum may include distinct social worlds. This is supported by Hollenhorst's (1990) study in which levels of specialization approximately corresponded to Unruh's sub-world categories.

*Experience*

An individual's membership within a social world or one of its sub-worlds can be a defining factor in that individual's identity. Membership in a specific sub-world may cause an individual to take on the characteristics and preferences of that group. Hollenhorst (1990) argued that determining the experience levels of climbers allows managers to "infer frequency of participation, preferred social environmental settings, sensitivity to crowding and the likelihood of participation in other risk recreation activities" (p. 88). Furthermore, the use of a standardized ratings system provides an "objective, observable, and behavioral basis for classifying recreationists into meaningful

subgroups" (Hollenhorst, 1990, p 88). A standardized rating system allows managers to assess a participant's social world allegiance and therefore extrapolate by association the individual's norms and preferences.

*Specialization*

Ditton et al. (1992) argued that sub-worlds can be arranged along a continuum of specialization from least specialized to most specialized, and that each groups members could then also be arranged along a similar continuum. The segmentation of social world group members using the specialization framework has been shown to be a successful approach of describing participants (Cole & Scott, 1999). Kiewa (2001) argued that there are distinctions within the climbing community that define uniquely separate groups. Researchers have not yet fully distinguished between these groups, however, general literature refers to "traditional" climbers, "sport" climbers, boulderers, and gym climbers as being some of the distinctions within the climbing community. The goal of this paper is to begin the classification of climbing participants by their participation patterns. These participants, referred to as sub-world affiliate groups, have been described in this study by their level of specialization, motives, conflicts, constraints, and setting preferences, as measured by the study instrument. Ewert and Hollenhorst's (1997) study suggested that the use of indoor wall climbing is good practice as a training

activity for true traditional rock climbing. They argued, however, that its lack of "naturalness" and presence of "noncontrived risk" prevent it from being a true substitute for traditional rock climbing. Nevertheless, they acknowledge that indoor wall climbing can lead to greater levels of involvement in other wilderness activities. This ultimately leads to an increase in the number of climbers participating in both indoor wall and outdoor rock climbing.

## Socio-demographic Characteristics

Ewert and Hollenhorst (1994) described the risk recreation participant as an individual that tends to prefer smaller groups or solo activities, a higher level of risk, more natural settings, and have a higher level of skill and experience. ORCA's description of both indoor wall climbers and outdoor rock climbers indicates that demographic variables describing individual participants are similar. Outdoor rock climbers are individuals that climb in natural settings and do not utilize artificial holds. Indoor wall climbers climb on manufactured walls that have artificial holds. ORCA found that participation in climbing is strongly linked to the participant's age. Their study found that the mean age for indoor wall climbing participants was 20 years, the youngest of any measured activity. Outdoor rock climbing participants had a slightly higher mean age of 24.8 years. The ORCA study further found that the demographic profile of both indoor wall and outdoor rock climbing participants was unmarried, Caucasian male with a

mean household income of over $50,000. The homogeneity of these findings illustrates that demographic differences between outdoor rock climbers and indoor wall climbers are not likely to be a factor when describing climbing social worlds.

## Serious Leisure

Stebbins (1999) defined serious leisure as containing six distinctive qualities. The first of these qualities, the need to persevere in the face of challenges or even danger, describes individuals whose life centers on the activity. The second quality is that individuals must be able to find a career within or related to the activity. This insures the participant's continued acceptance and participation within the social world. Participants place high value on the third quality, the demonstration of significant effort by the participant in the form of acquired knowledge, training, and skill (Stebbins, 1999). The high status of this third quality is because of the commitment required to achieve these measurable attributes. Fourth, participants must receive durable benefits or rewards from the activity. Some of these have been identified as self-actualization, self-enrichment, self-expression, regeneration or renewal of self, feelings of accomplishment, pure fun, social interactions, and a renewal of self-image (Stebbins, 1999). The fifth quality is the strong identification of participants with their chosen pursuit. This identification is important because, without it,

individuals feel lost and directionless in their leisure pursuits. The sixth quality is the unique ethos, or social world, that grows around a given activity. Stebbins concludes that serious leisure pursuits rival family and work for a significant proportion of an individual's time. However, because leisure activities do not possess the wide social support of activities such as family or work, it is harder to dedicate time and money to their pursuit. A strong social-world influence provides the necessary support an individual needs to stay active within an activity. The qualities Stebbins (1999) used to describe serious leisure are mirrored in the definition of the specialization.

Bryan (1977, 2000) described specialization as a continuum of interest level ranging from low (novice level) to high (expert level) participants. The stages of involvement associated with the specialization of sub-worlds are strangers, tourists, regulars and insiders (Ditton et al., 1992; Unruh, 1979). Bryan (1977) argued that there are likely to be distinctive patterns of behavior and attitude orientations of social world members at each stage of the involvement process. These patterns can be seen in the participants' choice of equipment, the type of experience they are seeking, preferred setting, and future vacation patterns. Bryan (2000) also argued that an individual's level of specialization would align them with other like-minded participants.

Virden and Schreyer (1988) discussed the relationship between recreational specialization and preferences for specific types of recreational settings. They

argued that it may be possible to explain differences in physical, social, and managerial setting preferences among participants by identifying specific subgroups or social worlds within a given activity because members of these groups will act in a predictable pattern based on allegiances to social world ideals. An understanding of a participant's stage of involvement and level of specialization will aid in understanding their behavior and attitudes toward the resource and other participants.

## Recreation Specialization Framework

The recreation specialization framework, as described by Scott and Shafer (2001), conceived specialization as a developmental process whereby people progress over time. Scott and Shafer contend that this progression can be best understood in terms of a focusing of behavior, the acquiring of skills and knowledge, and a tendency to become committed to the activity to such a degree that it becomes a central life interest. They argued that the specialization process may lead to a more or less specialized state for the participant, although progression across all three dimensions is unlikely. Studies have shown that among individuals in the beginning stages of the specialization continuum, there is a moderate correlation between experience level, commitment, and centrality to lifestyle (Kuentzel and McDonald, 1992). An increase in experience, however, does not always entail a like progression in other aspects of

involvement. Scott and Shafer (2001) argued that individuals may maintain or decrease levels of involvement or participation over time. These individuals may want or be forced to remain at a lower state of participation. Common reasons given by participants for this pattern of behavior include obligations to work or family. A lower state of involvement may not necessarily involve a decrease in skill or affective attachment, but instead indicates a reordering of priority by the participant.

None of these approaches to specialization is far removed from the original suggested by Bryan in 1977. He argued that each level of specialization carries distinctive behaviors and orientations. Hollenhorst (1990) argued that the information gained from a survey of a climber's specialization level can help mangers make better decisions. The subjects utilized in Hollenhorst study were selected from a limited number of locations, creating an inherent bias in the results, therefore limiting the ability to generalize the results.

## Motives

Iso-Ahola described motivation as the "internal factor that arouses and directs human behavior" (p. 40). Motivations can then be used to explain why someone does something. For climbers, motivations have been used to describe participant experience levels, level of sensation seeking and self efficacy, or simply why they participate (Csikszentmihalyi 1975; Ewert 1985; Slanger &

Rudestam 1997). Researchers have identified five categories of motives that affect climbers. The categories include a participant's desire for challenge/risk, locus of control, recognition, catharsis, and creativity (Ewert 1985; Slanger & Rudestam 1997).

Ewert (1985) explored climbers' motivation in relation to the experience level of the participant. In general, Ewert found that climbers, like other risk recreation participants, perceive the perception of danger as a critical component of the activity. The climbers that participated in the study reported that they participated in the activity because of six factors: challenge and risk, catharsis and escape, recognition, physical setting, creativity and locus of control. Ewert (1985) found that when an individual begins climbing they are motivated by extrinsic reasons, and as they gain in experience their motivations change to more intrinsic reasons. Csikszentmihalyi (1975) was one of the first to study the motives of rock climbers. He interviewed a number of subjects in diverse activities, including music composers, chess and basketball players, dancers, surgeons, and climbers. He found that the key motive for involvement in all of these activities was the intrinsic rewards that the activity offers its participants. In Csikszentmihalyi's (1990) article describing Flow, he argued that individuals seek out activities that allow them to match skill level to challenge level. Climbing is one such activity because its wide variety of

environments and difficulty levels provides ample opportunity for participants to reach a state of Flow.

Heywood (1994) argued that the sport of climbing is departing from its original "adventure" qualities. Haywood further argued that "the unpredictability, the risk, the irrationality of climbing are substantially matters of choice" (1994, p.187) because climbers can choose the level of risk that they want. Slanger and Rudestam measured the motivations of high risk climbers by studying five participants identified as "free solo" climbers. The lack of data collected from indoor participants made it impossible to compare indoor wall climbing and outdoor rock climbing participant motives in Heywood's study. This study will gather data from multiple climbing environments in order to determine whether they differ in terms of motives.

*Conflicts*

Recreational conflict was defined by Ewert et al. (1999) as "a condition that exists when one person, or group of people, experience or perceive an interference of goals or the likelihood of incompatible goals, as the result of another person's or group's actions, threat of action, or personal/group attributes" (p. 337). Utilizing this definition, conflicts occur when the goals of one group are interfered with by another group. Ewert et al. further argued that with the increasing popularity of outdoor recreation pursuits there is an

increasing potential for recreational conflict. The most widely known theory describing recreational conflict was furthered by Jacob and Schreyer (1980). Their theory of goal interference argued that there are four critical influences on recreational conflict: the type of activity, the importance of a specific resource, the type of recreational experience, and the tolerance of different lifestyles exhibited by participants. Defining conflict through these factors allows for it to be accurately measured and defined.

Conflict in outdoor recreation settings, such as climbing, can best be defined as "goal interference attributed to another's behavior" (Jacob & Schreyer 1980, p. 369). As such, conflicts can occur between different user groups, and among different users within the same user group. Jacob and Schreyer argued that no actual contact among users need occur for conflict to be felt. Conflict has been found to be related to activity style (mode of travel, level of technology, environmental dominance, etc.), focus of trip, expectations, attitudes toward and perceptions of the environment, level of tolerance for others, and different norms held by different users. Conflict is often asymmetrical; one group affecting another group, but the reverse is not necessarily true (Ewert et al., 1999). For example, traditional rock climbers may be adversely affected by the presence of sport climbers; however, sport climbers are not influenced by the presence of traditional rock climbers.

According to Strauss (1984), one of the ways in which a social world segments is along areas of contention. These areas of contention can be found to be present in the use of specific types of equipment or the geographical setting the activity requires. Strauss specifically discusses space, or geographical setting, as a common source of contention between social worlds. Strauss argued that for there to be contention between group members, the space must be unique to the specific activity and an interaction between the individuals of the two social worlds must take place. If the setting is perceived as central to the identity of the activities' participants, then any encroachment on that setting could become the source of hostilities or conflict between the members of the social world groups. The interaction between participants can be physical, such as when both traditional climbers and sport climbers utilize the same climbing area at the same time, or the interaction can be perceived, such as when traditional rock climbers see chalk marks left by sport climbers at a natural wall site.

Conflicts can arise between participants because of conflicting norm situations from either the individuals' physical presence or their behavior (Carothers et al., 2001). Typical forms of norm conflicts between climbers include the use of chalk on walls, the use of bolts in natural rock, and even the amount of information about a site shared between individuals (Climbing, 1995). For example, some traditional rock climbers feel that "[c]limbers who use

these plastic walls . . . are missing the point of climbing. They are not risking enough" (Climbing, 1995, p. 88). Interpersonal conflict between climbing groups can be seen when sport climbers converge on a natural rock, gathering at the base of the rock to provide "beta," information on the route, and to cheer each other's progress. This creates a direct conflict with the traditional rock climbers who visit these sites to experience nature and escape from society.

The heart of many conflicts is participants' differing views of the importance of risk elements to the climbing experience. Lyng (1990) stated that the "high potential for personal injury or death" (p. 852) is integral for participants in the pursuit of high-risk sports such as climbing. This supports the idea that indoor wall climbers and outdoor rock climbers fundamentally differ in the goals they pursue through the activity. Lyng further argued that control over physical environment limits the risk faced by a participant. Therefore, according to Lyng's 1990 article, indoor wall climbing is not considered a high-risk sport because the controlled environment limits the risk; in contrast, outdoor rock climbing is a high-risk sport because of its lack of control over the environment. If the social worlds of climbers share Lyng's view, then conflict between them seems inevitable.

Researchers have found that the factors associated with participants' preferences can become the source of conflicts between social worlds. Some of the factors that have been identified as important to climber preferences are the

enjoyment of social relationships, to get exercise, to relieve stress, to commune with nature, for a sense of accomplishment, to incur the possibility of personal injury, for the fun of it, for the risk, for the challenge, and to gain recognition (Climbing, 1995; Crysdale, 2000; Dierick, 2002; Ewert & Hollenhorst, 1994; Ewert & Hollenhorst, 1997; Feher et al., 1998; Lyng, 1990; McIntyre, 1991). Each of these factors is related to or included in the overall group norms associated with climbing social worlds (Climbing, 1995). Each climbing social world associates a different importance level or weight to the factors as they relate to their preferences. For example, the social world of outdoor rock climbers feels that the indiscriminate use of bolts is highly offensive (Waldrup & McEwen, 1994). Their norms are consequently in direct conflict with that of sport climbers, who feel that it is appropriate and necessary to make climbing safer through the use of fixed bolts (Waldrup & McEwen, 1994). This conflict may manifest itself in many forms. The outdoor rock climbers could remove the bolts they find in the rock, consequently causing sport climbers to move to another setting. Alternately, the outdoor rock climbers could believe that the sport climbers' bolts have ruined the route, and will move to a different area. The loss of large groups of participants due to social world conflicts is the motivation behind conflict research. By understanding the potential factors leading to conflict between users groups, managers are better able to anticipate and limit their disruptiveness.

*Constraints*

Constraints to participation are generalized as intervening or influencing participation patterns (Jackson, 1990; Jackson & Rucks, 1993). They do not necessarily inhibit any participation; instead, they may act as a relative barrier by reducing the frequency of participation (Coalter, 1993; Jackson et al., 1993). Scott (1991) argued that participants may not only react to constraints by discontinuing participation, but by negotiating through them. Their form of participation my change in reaction to the type of constraint encountered, but they will continue to engage in the activity (Crawford et al., 1991).

Constraints are environmental or social factors that can influence an individual's ability to participate. Constraints can be in many forms, including cost prohibition, participant physical limitations, and competing interests (Coalter, 1993; Jackson & Rucks, 1993). In past research, constraints were seen as undermining an individual's opportunity to participate (Coalter, 1993). Recent studies of constraints have suggested that while constraints may influence participation to the point that it is completely curtailed, they are more likely to influence the way in which participation may take place (Jackson et al. 1993). Constraints may influence frequency, location, or several other factors of participation. For example, an individual may climb at an indoor facility instead of an outdoor facility because of convenience, lower gear costs, and ability to

climb in spite of environmental conditions such as darkness or inclement weather.

## Summary

This study tests whether climbing sub-world affiliate participants differ significantly in their level of specialization, motives, conflicts, or constraints. Establishing these differences allows for the conclusion that sub-world affiliate groups constitute separate social worlds. Understanding the direct relationship between these ideas and participant social worlds will provide managers with an invaluable tool to describe the visitors of their facility and consequently better manage the participants' needs.

# CHAPTER III

# METHODOLOGY

This chapter is comprised of four major sections. The first section describes the five separate sites and the sampling technique used at each. The second section discusses the method of data collection. The third section discusses the independent and dependent variables used in this study. The final section discusses the analysis used for this study.

## Site Information and Sampling Technique

Five different sites were used to gather the data for this study. Climbers were selected from the following locations: Texas A&M University Student Recreation Center, Austin Rock Gym north and south location, Enchanted Rock State Natural Area, and Reimer's Ranch climbing area.

### *Texas A&M University Student Recreation Center*

The Texas A&M University Student Recreation Center is located at Texas A&M University, College Station, Texas. A membership is required to utilize the facilities available at the Student Recreation Center; memberships are given to all students enrolled in at least one credit hour per semester. The general public can utilize the facility by either purchasing a day or month membership. The climbing wall requires an additional fee to participate.

The Student Recreation Center building is 373,000 square feet and features a variety of recreation opportunities, including a 42-foot indoor rock climbing facility with interchangeable handholds and footholds. The indoor climbing wall is located immediately inside the main entrance. The wall is 42 feet high and stands prominently in the center of the lobby. The wall was constructed with state of the art technology, which combines integral pseudo-rock with movable hand and footholds. There are 18 available top ropes and eight lead climbable routes. Gear rental is available at the climbing area check in desk. All participants are required to fill out a waiver form before climbing.

Surveys were distributed at the entrance to the climbing area. Because of the limited entrance area to the space, one person was able to distribute the surveys. During selected days, to include each day of the week, surveys were distributed during all of the hours that the climbing wall was open. All climbing participants were asked to participate in the study. They were given the option to fill out the survey before they participated that day, while on a break from climbing, or after they had finished for the day.

*Austin Rock Gym*

The Austin Rock Gym was selected because its two locations in Austin serve unique segments of the indoor climbing population. The north location is at 8300 N. Lamar, suite 102 B, and the south location is at 4401 Freidrich Lane, suite

300. Both facilities are climate controlled, have locker rooms with showers, and provide balcony areas for observation and parties. Both facilities also offer lessons, summer camp for kids, party packages, and team building events.

The north gym has 8,500 square feet of textured climbing surfaces. The gym is primarily bouldering areas, including both a shaped copy of a popular climb at Hueco Tanks climbing area and a 32-foot long, 45-degree overhang. Three top rope climbs are available to participants.

The south gym has 10,000 square feet of textured climbing surface. A majority of the gym's climbing area is designed to be used for top roping or lead climbing. There is a large overhang and cave area set aside for bouldering.

Climbers can purchase memberships to one or both gyms. Day passes are also available to the public. Participants are required to fill out a waiver form before climbing, and both facilities have climbing gear available to rent.

Surveys were distributed at the sign-in desk of both climbing areas. Because of the limited entrance of the area, one person was able to distribute the surveys. During selected days, to include each day of the week, surveys were distributed during all of the hours that the gyms were open. All climbing participants were asked to participate in the study. They were given the option to fill out the survey before they participated, while on a break, or after they had finished climbing for the day.

*Enchanted Rock State Natural Area*

The Enchanted Rock State Natural Area was selected because of the large number of climbers that visit the site. Enchanted Rock is located 18 miles north of Fredericksburg, Texas, on Ranch Road 965. The park includes 1643.5 acres, and its highest point is 425 feet above the valley floor. The park has 15 defined climbing areas, ranging widely in style and difficulty level.

When entering the park, all visitors must pay an entrance fee at the ranger station. Climbers must also sign a waiver form located in the main lobby of the ranger station. On-site camping is only available if booked in advance because of the park's popularity. The park entrance is regularly closed because of facility and parking limitations; during the busy months, this happens about mid-afternoon each day.

During selected days, to include each day of the week that the site was open to climbers, surveys were distributed throughout the day. I used two methods to distribute the surveys. First, surveys were distributed at the ranger station, next to the place where all climbers are required to sign a waver before climbing. Everyone that signed the climbing waiver was asked to participate in the study. Because some climbers were at the park for multiple days and only went to the ranger station on the first day, I also used a second method to distribute surveys. Once the entrance to the park was closed each day, I distributed surveys at various climbing areas around the park until dusk. These included the popular

Triple Cracks and Echo Canyon climbing areas. For each group of climbers that I encountered, I asked them to fill out my survey during a break from climbing.

*Reimer's Ranch*

Reimer's Ranch is a private outdoor facility that has hundreds of routes along a mile of limestone cliffs. The climbing area consists of two main walls, with routes ranging widely in style and difficulty level. The Reimer's Ranch climbing area was selected because of its proximity to Austin and the large number of climbers that visit the site. Reimer's Ranch is located 20 miles west of Austin, at 23610 Hamilton Pool Road in Dripping Springs. Climbers must pay an entrance fee and sign a waiver when entering the site. Camping is not available at Reimer's Ranch, so climbers are allowed to participate using day passes only.

During selected days, to include each day of the week that the site was open to climbers, surveys were distributed throughout the day. Surveys were distributed to climbers at the base of each wall. All climbers present were asked to participate in the study.

## Method of Data Collection

The survey instrument (Appendix A) was distributed at each site during the months of February, March, and April of 2003. All climbers that were encountered while visiting the sites were asked to participate. Survey collection

was limited to the target goal of 100 responses per site. Completed surveys were counted at each site; once the goal was reached, the distribution of surveys was halted. The survey instrument was designed using Scott and Lee's (2003) specialization survey, Ewert's (1985) motivation factors, Jacob and Schreyer's (1980) goal interference theory, and Ewert and Hollenhorst's (1994) study of risk recreation participants. The questions were adapted to insure relevance to the climbing population.

All climbers over the age of sixteen, who were present at the facility during the time of distribution, were asked to fill out a questionnaire. The surveys were distributed on site by myself and then gathered from participants upon completion. Each individual who agreed to participate was asked to also complete an informed consent form. There were two versions of the form: one for Texas A&M University (Appendix B) because of the rules surrounding use of subjects at the Recreation Center, and a second version (Appendix C) for all other participants. Participants that completed the questionnaire were offered a bottle of water as compensation for their time and energy. Altogether 536 climbers were asked to participate in the study,. Of these 27 declined to participate in the study. This yielded an overall response rate of 95% from all sites. Of these responses, 484 viable questionnaires were compiled.

## Independent Variables

The independent variable for this study was defined using participants' frequency of the participation. Participants were further defined by the environment of participation. These factors were measured by asking climbers to indicate how often they participated in various aspects of both indoor and outdoor climbing. Cluster analysis was used to assist in the identification of sub-world groups. The participants who were described by these factors will be identified as sub-world affiliates.

## Dependent Variables

Various dependent variables were included in the study, including demographic factors, level of specialization, motivations for climbing, types of conflicts and constraints, and setting preferences.

### *Demographic Characteristics*

Socio-demographic variables utilized for this study included gender, marital status, education, age, employment, and income. Each variable was selected from ORCA's (1997) study of climbing participants. Gender and marital status were reported as nominal data. The variable marital status included three options: single, married, or divorced/separated. The education variable asked respondents to indicate which of eight responses they most closely resembled:

sixth grade or less, less than 12 years, high school graduate, some college, a degree from a 2-year college or school, a degree from a 4-year college or university, some graduate school, or a graduate or doctorate degree. For the age variable, respondents were asked to write down their year of birth. The employment variable employment had seven possible responses: employed full time, employed part time, unemployed, self-employed, retired, student, or homemaker. The last demographic variable, income, had eleven possible responses, ranging from under $10,000 to $100,000 or more, with $10,000 increments.

*Specialization*

The specialization section of the study instrument was based on Scott and Lee's (2003) birding questionnaire. The questions used to describe specialization were divided into three sections: skill, behavior, and commitment. Three questions were used to identify a participants' level of skill. First, respondents were asked to identify, on a 1 (novice) to 7 (expert) scale, their perceived level of skill. Then, two questions utilized the American Rock Climbing Grading System, as shown in Table 3, to identify their competence. Respondents were asked to identify the appropriate skill level, ranging from 5.4 (novice) to 5.14 (expert), by circling the appropriate number. The first of these two questions asked respondents to identify the most difficult climb that they had ever

completed. The other asked respondents to identify the average difficulty level of climbs they had successfully attempted.

The second section of specialization focused on behavioral involvement. The behavioral questions consisted of two types. The first type asked respondents to indicate their choice by selecting an item along a scale of options. The first item asked respondents to indicate how often, on average, they participated in climbing. Respondents were given five response categories, ranging from once per year to five times per week. The second behavioral question asked respondents to indicate how far, on average, they traveled to climb. Respondents were given five choices of distances, ranging from less than five miles to more than one hundred miles. The last group of questions in the behavioral involvement section had respondents estimate how much climbing equipment they owned, including harnesses, climbing shoes, ropes, books, magazines and membership passes. These items were open-ended, allowing participants to answer with any number.

Commitment was measured using four statements. These were modified from Scott and Lee's (2003) birding questionnaire. Respondents were asked to indicate their level of agreement to each statement using a seven-point scale ranging from 1 (strongly agree) to 7 (strongly disagree). The four items were: "Most of my friends are in some way connected to climbing"; "I find that a lot of

my life is organized around climbing"; "Others would say that I spend too much time climbing"; and Climbing is very important to me".

*Motivations*

The motivation section was based on the motivation factors as found by Ewert's (1985) study of mountain climbers. The statements were adapted to insure their relevance to the climbing population being surveyed. Each of the motivational statements utilized a seven-point scale ranging from 1 (strongly agree) to 7 (strongly disagree) to measure the subjects' response. The statements utilized by Ewert were operationalised into five categories: challenge/risk, locus of control, recognition, catharsis, and creativity. For this study, a total of 24 items were created to measure participants' motivations.

Factor analyses was used to group motivational items into distinct factors. Principal components analysis with varimax rotation was used. Items with factor loadings of .40 or higher were included in a factor group. Factors were examined for their reliability, then multi-item scales were created by averaging items.

*Conflicts and Constraints*

Conflict was measured based on Jacob and Schreyer's (1980) theory of goal interference. Four items were used to describe the conflicts experienced by climbing area users. The items were divided into two styles: activity style and

mode of experience. The items used to measure activity style conflict were: "The use of chalk on natural walls bothers me"; "I don't like to climb with a lot of other climbers"; and "I don't like climbing around loud groups". The items used to measure mode of experience were: "I don't like it when other types of activities use the same site". The individual items utilized a seven-point scale to measure participant agreement ranging from 1 (strongly agree) to 7 (strongly disagree).

Constraints were measured using four items. The items were based on mode of experience and a tolerance of other lifestyles. The item used to describe mode of experience was "I don't climb often because I have too many leisure interests". The items used to measure tolerance of lifestyles were: "Family obligations interfere with my climbing"; "Work commitments make it difficult to climb regularly"; and "I don't climb as often as I would like because of a lack of money." The individual items utilized a seven-point scale to measure participant agreement ranging from 1 (strongly agree) to 7 (strongly disagree).

*Setting Preferences*

The setting preferences section utilized a seven-point scale ranging from "adds to strongly" (3) to "neutral" (0) to "detracts from strongly" (-3). The items were compiled from Ewert and Hollenhorst's (1994) study or risk recreation participants. Nine items were used to measure the setting preferences of

respondents. Five items were selected to measure items specific to indoor climbing sites. Those items included things such as: "Has bathrooms"; "Close to home"; "Climbing information is available at site"; "Instructors available at site"; and "Food available at site". Four were selected to measure items specific to outdoor climbing sites. Those items were: "Overnight camping is available"; "The site is undeveloped"; "Offers activities other then climbing on site"; and "A paved road goes right by the climbing area".

## Analysis

Analysis of variance (ANOVA) is used to determine whether or not a categorical variable with three or more groups differs in mean score for a continuous dependent variable. For this study continuous variables included participants' level of skill, behavior, commitment, motives, conflicts, and setting preferences. ANOVA tests differences among mean scores using the f-statistic.

Chi-square was used when analyzing one group of categorical data by another group of categorical data. Categorical variables included participants' demographics. Chi-square tests the goodness of fit of the data to the expected outcome.

# CHAPTER IV

# RESULTS

This chapter presents the results of the quantitative analyses used to answer the four research questions. The independent variable and its description are discussed., then, the demographics of the study participants are described. This is followed by a discussion of each of the research questions. First, do rock climbing sub-worlds differ in their level of specialization? Second, do rock climbing sub-worlds differ in their motives affecting participation? Third, do rock climbing sub-worlds differ in their social or setting preferences? Fourth, do rock climbing sub-worlds differ in their conflicts or constraints?

## Results of Cluster Analysis

Clusters analyses were run for two, three, four and five groupings of participants. The cluster analysis was used to discover logical groupings that had enough case items for analytical purposes. The four-group cluster results was selected because of the number of case studies per group as well as the possible explanatory value of its grouping. Table 4 shows the groupings of climbers by their choice of climbing environment (indoor versus outdoor) and their frequency of participation. The resulting four groups of climbing participants have been labeled: infrequent climbers, frequent outdoor climbers, frequent indoor climbers, and avid climbers.

The total number of infrequent climbers, as recorded by the cluster analysis, was 348 climbers, which comprised 72.0% of all respondents. Infrequent participants were so named because they climbed relatively infrequently indoors *(M=29.64)* and outdoors *(M=15.67)*. The group of frequent outdoor climbers consisted of 58 respondents, or 12.0% of the study population. Frequent outdoor climbers were over twice as likely to be participating outdoors *(M=142.72)* as indoors *(M=60.97)*. The group of frequent indoor climbers consisted of 65 respondents, or 13.5% of the study population. This group was named as such because participants were roughly four times more likely to be participating indoors *(M=208.78)* as outdoors *(M=47.88)*. The avid climbers group consisted of only 12 total respondents, which, accounted for 2.5% of the climbing study population. Avid climbers were likely to be found climbing wherever they could, whether that was outdoors *(M=463.50)* or indoors *(M=151.25)*.

*TABLE 4*
*Results of Cluster Analysis of Rock Climbers*

| | Rock Climbing Groups | | | | F-Value |
|---|---|---|---|---|---|
| | Infrequent N=348 | Frequent Outdoor N=58 | Frequent Indoor N=65 | Avid N=12 | |
| Indication of indoor participation | 29.64 | 60.97 | 208.78 | 463.50 | 737.67*** |
| Indication of outdoor participation | 15.67 | 142.72 | 47.88 | 151.25 | 217.64*** |

***= a significant ≤ .001

*TABLE 5*
*Demographic Characteristics of Respondents*

| | Number of Participants N | Percentage of Sample % |
|---|---|---|
| Gender | | |
| Male | 340 | 70.8 |
| Female | 140 | 29.2 |
| Marital Status | | |
| Single | 354 | 73.8 |
| Married | 103 | 21.5 |
| Divorced | 23 | 4.8 |
| Education | | |
| High School Graduate or Less | 31 | 6.5 |
| Some College | 195 | 40.7 |
| Bachelors Degree | 134 | 28.0 |
| Graduate Degree | 119 | 24.8 |
| Age | | |
| 25 and Under | 218 | 46.9 |
| 26 thru 35 | 171 | 36.8 |
| 36 thru 45 | 48 | 10.3 |
| 46 thru 55 | 25 | 5.4 |
| 56 thru 65 | 2 | 0.4 |
| 66 and Over | 1 | 0.2 |
| Employment | | |
| Full Time | 233 | 48.5 |
| Part Time | 31 | 6.5 |
| Unemployed | 15 | 3.1 |
| Self-employed | 16 | 3.3 |
| Retired | 5 | 1.0 |
| Student | 174 | 36.3 |
| Homemaker | 6 | 1.3 |
| Income | | |
| Under 10,000 | 106 | 23.4 |
| 10,000 thru 29,999 | 104 | 23.0 |
| 30,000 thru 59,999 | 116 | 25.6 |
| 60,000 and Over | 127 | 28.0 |

## Demographic Characteristics

The respondents of this study were predominately male *(70.8%)*, single *(73.8%)*, employed full time *(48.5%)*, and have taken some college courses but did not have a degree *(40.7%)*. Table 5 contains a simple description of participant demographics including the number of participants that answered an item and the percentage of the population that number represents.

Table 6 describes the percentage of participants by demographic variable across climbing groups. Determined by the chi-square significance test, the groups did not differ significantly in terms of gender marital status, education, employment and income. However, the climbing groups did differ significantly in terms of their age. Participants over the age of 45 were more likely to be infrequent or frequent indoor participants.

*TABLE 6*
*Demographic Characteristics of Respondents by Climbing Group*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent % | Frequent Outdoor % | Frequent Indoor % | Avid % | Chi-Square |
| Gender | | | | | |
| Male | 71.2 | 12.4 | 13.8 | 2.6 | |
| Female | 73.6 | 11.4 | 12.9 | 2.1 | 0.32 |
| Marital Status | | | | | |
| Single | 71.8 | 11.3 | 14.7 | 2.3 | |
| Married | 71.8 | 15.5 | 9.7 | 2.9 | |
| Divorced | 73.9 | 8.7 | 13.0 | 4.3 | 3.36 |
| Education | | | | | |
| High School Graduate or Less | 67.7 | 6.5 | 19.4 | 6.5 | |
| Some College | 73.3 | 10.8 | 12.3 | 3.6 | |
| Bachelors Degree | 73.9 | 12.7 | 12.7 | 0.7 | |
| Graduate Degree | 68.9 | 15.1 | 14.3 | 1.7 | 8.33 |
| Age | | | | | |
| 25 and Under | 75.2 | 3.2 | 5.5 | 16.1 | |
| 26 thru 35 | 67.3 | 2.3 | 20.5 | 9.9 | |
| 36 thru 45 | 70.8 | 2.1 | 12.5 | 14.6 | |
| 46 thru 55 | 88.0 | -- | 4.0 | 8.0 | |
| 56 thru 65 | -- | -- | 100.0 | -- | |
| 66 and Over | 100.0 | -- | -- | -- | 40.28*** |
| Employment | | | | | |
| Full Time | 73.0 | 12.9 | 12.0 | 2.1 | |
| Part Time | 64.5 | 19.4 | 9.7 | 6.5 | |
| Unemployed | 73.3 | 13.3 | 13.3 | -- | |
| Self-employed | 68.8 | 18.8 | 12.5 | -- | |
| Retired | 40.0 | 40.0 | 20.0 | -- | |
| Student | 71.8 | 8.6 | 16.7 | 2.9 | |
| Homemaker | 100.0 | -- | -- | -- | 15.60 |
| Income | | | | | |
| Under 10,000 | 71.7 | 8.5 | 15.1 | 4.7 | |
| 10,000 thru 29,999 | 62.5 | 13.5 | 20.2 | 3.8 | |
| 30,000 thru 59,999 | 73.3 | 16.4 | 8.6 | 1.7 | |
| 60,000 and Over | 74.8 | 11.0 | 13.4 | 0.8 | 14.12 |

***= a significant ≤ .001
-- = no study participants were identified as being in the group

## Research Question 1

The first research question asked: do rock climbing sub-worlds differ in their level of specialization? Specialization was operationalised as having three distinct dimensions: skill, behavior, and commitment.

### *Skill of Participants*

Table 7 summarizes differences in skill among climbing groups. The first of the items asked respondents to rate their skill level on a 1 (novice) to 7 (expert) scale. As expected, infrequent participants expressed a significantly lower level of perceived skill *(M=3.07)* than all other participant groups. Both frequent outdoor climbers *(M=4.77)* and avid climbers *(M=5.50)* indicated a significantly higher level of perceived skill than the other two groups.

The next two questions measured participant skill level utilizing the American Rock Climbing Grading System, as shown in Table 3. For each of these questions, respondents were given the choice to select the appropriate skill rating ranging from 5.4 (novice) to 5.14 (expert). The data was recorded as 4 to 14, therefore a score of 9 relates to a 5.9 level of skill. The first of these questions asked respondents' to indicate the most difficult climb that they had completed. Infrequent participants had a significantly lower self-rating *(M=9.21)* than the other three groups. The second question asked respondents to indicate the difficulty level of climbs that they have most often successfully attempted.

Infrequent participants again indicated a significantly lower level of difficulty *(M=8.37)* of climbs successfully attempted than all other groups.

*TABLE 7*
*Mean Level of Skill by Rock Climbing Groups*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | F-Value |
| Perceived level of skill at rock climbing | $3.07_a$ | $4.77_c$ | $4.05_b$ | $5.50_c$ | 40.41*** |
| The most difficult climb completed | $9.21_a$ | $11.47_b$ | $10.68_b$ | $11.92_b$ | 27.31*** |
| Average difficulty level of climbs successfully attempted | $8.37_a$ | $10.50_b$ | $9.94_b$ | $11.09_b$ | 33.17*** |

abc Groups with different subscripts are significantly different at .05 level of confidence.
***= a significant ≤ .001

*Behavior of Participants*

Eight questions were used to determine participants' behavior patterns as these related to levels of specialization. The results are summarized in Table 8. The first item had respondents indicate how often, on average, they participated in climbing. The participants' response options ranged from 1 (once per year) to 5 (five times per week). Not surprisingly, it was found that infrequent climbers participated significantly less often *(M=2.94)* then all other climbing groups. The second item asked respondents to indicate how far, on average, they traveled to climb. Participants were given a choice of responses ranging from 1 (less than five miles) to 5 (more than one hundred miles). Avid climbers

traveled significantly farther *(M=4.75)* than all other climbing groups, while infrequent climbers traveled the least distance of any climbing group.

The next six questions asked respondents to indicate the number of listed items that they owned. The items listed were climbing harnesses, climbing books, climbing magazine subscriptions, climbing shoes, climbing facility memberships, and climbing ropes. Table 8 summarizes participants' responses. The number of climbing magazines subscriptions owned was the only item that was not significantly different across climbing groups. Infrequent climbers *(M=0.97)* owned significantly fewer harness than either frequent indoor climbers *(M=1.23)* or frequent outdoor climbers *(M=1.63)*. The largest difference found between participants was in the number of climbing books owned. Frequent outdoor climbers *(M=6.60)* were found to own many more books than any other group. The number of climbing shoes owned was significantly greater for both frequent outdoor climbers *(M=2.98)* and avid climbers *(M=3.50)* than the other two groups. While infrequent climbers *(M=1.38)* owned the fewest climbing shoes of all the climbing groups. Both frequent indoor climbers *(M=1.20)* and avid climbers *(M=1.33)* were found to be more likely to own climbing facility memberships than the other two climbing groups. Frequent outdoor climbers *(M=1.95)* were significantly more likely to own a climbing rope than either infrequent climbers *(M=0.70)* or frequent indoor climbers *(M=0.89)*.

*TABLE 8*
*Mean Behavior Scores by Rock Climbing Groups*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | F-Value |
| How often on average do you climb? | $2.94_{a}$ | $3.79_{b}$ | $3.92_{b}$ | $4.50_{b}$ | 36.65*** |
| How far on average do you travel to climb? | $2.64_{a}$ | $3.28_{b}$ | $2.82_{ab}$ | $4.75_{c}$ | 11.35*** |
| How many climbing harnesses do you own? | $0.97_{a}$ | $1.63_{b}$ | $1.23_{b}$ | $1.17_{ab}$ | 10.31*** |
| How many climbing books do you own? | $2.10_{a}$ | $6.60_{b}$ | $2.15_{a}$ | $2.58_{ab}$ | 4.14** |
| How many climbing magazine subscriptions do you own? | 0.25 | 0.40 | 0.35 | 0.67 | 1.94 |
| How many climbing shoes do you own? | $1.38_{a}$ | $2.98_{c}$ | $2.08_{b}$ | $3.50_{c}$ | 27.34*** |
| How many climbing facility membership passes do you own? | $0.76_{ac}$ | $0.84_{ac}$ | $1.20_{b}$ | $1.33_{bc}$ | 8.36*** |
| How many climbing ropes do you own? | $0.70_{a}$ | $1.95_{b}$ | $0.89_{a}$ | $1.25_{ab}$ | 21.90*** |

$_{abc}$ Groups with different subscripts are significantly different at .05 level of confidence.
**= a significant ≤ .01
***= a significant ≤ .001

*Commitment of Participants*

A respondent's level of commitment was measured by four questions that utilized a seven-point scale, ranging from 1 (strongly agree) to 7 (strongly disagree). The reliability among the individual items was measured using Cronbach's Alpha *(∂=0.76)*, which found a strong conceptual similarity between items. The questions asked were: most of my friends are in some way connected with climbing; I find that a lot of my life is organized around climbing; climbing is very important to me; and others would say I spend too much time climbing.

This group of questions was treated as one item for analysis. Table 9 summarizes the results. The format of the questions was such that a lower mean score indicated a higher level of commitment to the activity. Infrequent participants were found to have a significantly lower level of commitment *(M=4.22)* than all other climbing groups. Avid climbers showed the most commitment *(M=1.94);* this was significantly different from both infrequent climbers and frequent indoor climbers.

*TABLE 9*
*Mean Commitment Level by Rock Climbing Groups*

| | Rock Climbing Groups | | | | F-Value |
|---|---|---|---|---|---|
| | Infrequent N=348 | Frequent Outdoor N=58 | Frequent Indoor N=65 | Avid N=12 | |
| Level of Commitment | $4.22_a$ | $2.84_{bc}$ | $3.22_b$ | $1.94_c$ | 40.36*** |

$_{abc}$ Groups with different subscripts are significantly different at .05 level of confidence.
***= a significant ≤ .001

## Research Question 2

The second research question asked: do rock climbing sub-worlds differ in their motives affecting participation? A total of twenty four items were used to describe a participant's motives. The motivation items were compiled using the motivational factors found by Ewert's (1985) study of mountain climbers. Each of the motivational statements measured participant motives utilizing a seven

point scale ranging from 1 (strongly agree) to 7 (strongly disagree). A factor analysis of participants' responses was used to produce a five-factor solution (Table 10). The first factor included four items and reflected respondents' attitudes about catharsis, relaxing one's mind. The second factor included four items pertaining to participants' ability to assert control over themselves and their environment. The third factor included three items that reflected respondents' attitudes about personal expression. The fourth factor included six items that described respondents' attitudes about recognition. The final factor included five items pertaining to attitudes about personal accomplishment. Together, the five factors explained 57.2% of the variance. The five motivation factors demonstrated adequate reliabilities, with alphas ranging from .64 to .84.

*TABLE 10*
*Factor Analysis of Motivation Items*

| | Factor Loading | Eigen Value | Variance Explained | Alpha |
|---|---|---|---|---|
| Catharsis (M=3.57) | ---- | 1.17 | 4.87 | 0.64 |
| I climb to slow my mind. | 0.67 | | | |
| I climb for relaxation. | 0.62 | | | |
| I enjoy the solitude of climbing. | 0.60 | | | |
| I climb to disengage from reality. | 0.56 | | | |
| Control (M=3.51) | ---- | 1.23 | 5.13 | 0.66 |
| I climb to gain control over part of my life. | 0.64 | | | |
| I climb because it allows me to think. | 0.52 | | | |
| I enjoy climbing because I can make my own decisions. | 0.50 | | | |
| I climb because of the friendships I have with other climbers. | 0.44 | | | |
| Personal Expression (M=3.80) | ---- | 1.97 | 8.19 | 0.75 |
| I climb because of personal values. | 0.76 | | | |
| Creativity draws me to climbing. | 0.74 | | | |
| Self-expression is why I climb. | 0.70 | | | |
| Recognition (M=4.81) | ---- | 3.40 | 14.19 | 0.75 |
| I climb to show others that I can. | 0.82 | | | |
| I climb to gain recognition. | 0.73 | | | |
| I enjoy the competition of climbing. | 0.60 | | | |
| I climb because of risk. | 0.59 | | | |
| I climb to be a "Climber." | 0.56 | | | |
| I climb to escape authority. | 0.52 | | | |
| Personal Accomplishment (M=2.58) | ---- | 5.95 | 24.80 | 0.84 |
| I climb to test my physical skill. | 0.79 | | | |
| I climb for the accomplishment. | 0.76 | | | |
| I climb to develop my abilities. | 0.75 | | | |
| I climb because it gives me an opportunity for personal testing. | 0.68 | | | |
| I climb to use my mind. | 0.61 | | | |

Table 11 summarizes differences in motivations among climbing groups. A low mean score reflects a stronger motive influence on participants' behavior. Infrequent climbers *(M=3.65)* were found to have significantly lower motives of catharsis than frequent indoor *(M=3.24)* or avid climbers *(M=2.75)*. Infrequent climbers *(M=3.61)* had significantly lower motives of control than both frequent indoor *(M=3.19)* or avid climbers *(M=2.71)*. The motive of personal expression was significantly stronger in avid climbers *(M=2.44)* than among infrequent *(M=3.91)* or frequent indoor climbers *(M=3.68)*. The recognition motive was significantly stronger in avid climbers *(M=3.86)* than among either frequent indoor *(M=4.93)* or frequent outdoor climbers *(M=5.48)*.

Personal accomplishment had the strongest alpha of all motive factors *(∂=.84)*, which indicates that the items within that category have the strongest link to each other. The mean score of personal accomplishment was lowest among all motive factors*(M=2.58)*, indicating a strong attachment to the individual items. Personal accomplishment was the strongest participant motive for the entire population. The personal accomplishment motive was not significantly different among climbing groups.

*TABLE 11*
*Mean Motivation Scores by Rock Climbing Groups*

| | Rock Climbing Groups | | | | F-Value |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | |
| Catharsis | $3.65_{a}$ | $3.59_{ab}$ | $3.24_{b}$ | $2.75_{b}$ | 4.38** |
| Control | $3.61_{a}$ | $3.45_{ab}$ | $3.19_{b}$ | $2.71_{b}$ | 4.95** |
| Personal Expression | $3.91_{a}$ | $3.52_{ab}$ | $3.68_{a}$ | $2.44_{b}$ | 5.63*** |
| Recognition | $4.71_{ac}$ | $5.48_{b}$ | $4.93_{a}$ | $3.86_{c}$ | 10.06*** |
| Personal Accomplishment | 2.66 | 2.45 | 2.41 | 1.93 | 2.61 |

$_{abc}$ Groups with different subscripts are significantly different at .05 level of confidence.
**= a significant ≤ .01, ***= a significant ≤ .001

## Research Question 3

The third research question asked: do rock climbing sub-worlds differ in their social or setting preferences? Setting preferences were operationalised from Ewert and Hollenhorst's (1994) study of risk recreation participants. Nine statements were used to identify participants' setting preferences. The items utilized a seven-point scale, ranging from "adds to strongly" (3) to "neutral" (0) to "detracts from strongly" (-3). The summary of the results is illustrated in Table 12. The more positive the mean score results, the more important each item was to the respondents. The following items were found to be significant among climbing participants: presence of bathrooms, availability of other activities, availability of food, availability of guides or instructors, and availability of climbing information at the site. The other four items did not

significantly differ among climbing participants. Presence of bathrooms at a site was significantly less important to frequent outdoor climbers *(M=0.31)* that it was to infrequent climbers *(M=0.94)*. Availability of other activities was much more important to infrequent climbers *(M=0.64)* than to frequent outdoor climbers *(M=0.07)*. Frequent outdoor climbers were significantly less likely to want food *(M=-0.55)*, climbing guides or instructors *(M=-0.34)* at a site than infrequent climbers. Both infrequent climbers *(M=1.24)* and frequent indoor climbers *(M=1.31)* were significantly more likely to want climbing information to be available at a site than frequent outdoor climbers *(M=0.53)*.

The items concerning the site's closeness to home and the availability of overnight camping were found to not be significant across rock climbing groups, but were both considered strongly favorable to all climbing participants, as is evident by the high mean values recorded for each group. Of these, the most noteworthy is the importance that avid climbers place on the availability of overnight clamping *(M=2.09)*, while the site's closeness to home was important to infrequent climbers *(M=1.76)*.

*TABLE 12*
*Mean Setting Scores by Rock Climbing Groups*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | F-Value |
| Has bathrooms. | $0.94_{a}$ | $0.31_{b}$ | $0.52_{ab}$ | $0.17_{ab}$ | 6.11*** |
| A paved road goes right by the climbing area. | -0.23 | -0.55 | -0.45 | -0.75 | 1.24 |
| Offers activities other than climbing on site. | $0.64_{a}$ | $0.07_{b}$ | $0.19_{ab}$ | $0.25_{ab}$ | 4.70** |
| The site is undeveloped. (no roads or services) | 0.69 | 0.84 | 0.89 | 0.83 | 0.48 |
| Overnight camping is available. | 1.50 | 1.33 | 1.78 | 2.09 | 2.18 |
| Food is available at the site. | $0.23_{a}$ | $-0.55_{b}$ | $-0.03_{ab}$ | $0.00_{ab}$ | 5.74*** |
| Climbing guides or instructors are available at the site. | $0.61_{a}$ | $-0.34_{b}$ | $0.29_{ab}$ | $-0.25_{ab}$ | 8.59*** |
| Climbing information is available at the site. | $1.24_{a}$ | $0.53_{b}$ | $1.31_{a}$ | $1.33_{ab}$ | 5.97*** |
| Close to home. | 1.76 | 1.50 | 1.48 | 1.58 | 1.46 |

$_{abc}$ Groups with different subscripts are significantly different at .05 level of confidence.
**= a significant ≤ .01, ***= a significant ≤ .001

## Research Question 4

The fourth research question asked: do rock climbing sub-worlds differ in their conflicts or constraints? The conflicts between participants were operationalised from Jacob and Schreyer's (1980) theory of goal interference. Respondents' level of conflict was measured by four statements that utilized a seven-point scale, ranging from 1 (strongly agree) to 7 (strongly disagree). The results are summarized in Table 13. For each of the items, infrequent climbers were more likely to agree that the item affected their ability to participant in climbing, however they were no other significant differences between climbing

groups. All climbing groups did agree that climbing around loud groups was not something they enjoyed.

*TABLE 13*
*Mean Conflict Scores by Rock Climbing Groups*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | F-Value |
| I don't like it when other types of activities use the same site. | 4.28 | 4.42 | 3.86 | 4.08 | 1.39 |
| I don't like climbing around loud groups. | 2.96 | 2.84 | 2.74 | 2.58 | 0.42 |
| I don't like climbing with a lot of other climbers. | 3.86 | 4.21 | 4.05 | 3.83 | 0.76 |
| The use of chalk on natural walls bothers me. | 5.23 | 5.31 | 5.75 | 5.50 | 1.73 |

abc Groups with different subscripts are significantly different at .05 level of confidence.
*= significant ≤ .05, ***= a significant ≤ .001

Constraints were measured by four statements that utilized a seven-point scale, ranging from 1 (strongly agree) to 7 (strongly disagree). The results are summarized in Table 14. A strong significant difference was found between infrequent climbers *(M=4.16)* and all other groups with regard to belief that participation in other leisure interests affected their ability to climb. All groupings of climbers agreed that work commitments adversely affected their ability to climb.

*TABLE 14*
*Mean Constraint Scores by by Rock Climbing Groups*

| | Rock Climbing Groups | | | | |
|---|---|---|---|---|---|
| | Infrequent | Frequent Outdoor | Frequent Indoor | Avid | F-Value |
| I don't climb often because I have too many leisure interests. | $4.16_a$ | $5.53_b$ | $5.31_b$ | $5.83_b$ | 20.11*** |
| Family obligations interfere with my climbing. | 4.93 | 5.21 | 5.09 | 4.08 | 1.33 |
| I don't climb as often as I would like because of a lack of money. | 4.21 | 4.53 | 4.50 | 3.08 | 2.13 |
| Work commitments make it difficult to climb regularly. | 3.23 | 3.61 | 3.82 | 4.33 | 2.95* |

$_{abc}$ Groups with different subscripts are significantly different at .05 level of confidence.
*= significant ≤ .05, ***= a significant ≤ .001

# CHAPTER V

# DISCUSSION AND CONCLUSION

The primary purpose of this study was to explore the differences among rock climbing participants with regard to their level of specialization, motives, preferred settings, social conflicts and constraints. Climbing participants were segmented into four distinct groups based on climbing use patterns. Using cluster analysis the four groups were identified as: (1) Infrequent climbers, (2) Frequent outdoor climbers, (3) Frequent indoor climbers, and (4) Avid climbers. The segmentation of participants in this manner is based on Ditton et al. (1992) social world perspective. This chapter evaluates the extent to which the study's questions were answered. Included are a summary of the results, discussion and contribution to the study, suggestions for future study, and the limitations of the study.

## Summary of the Results

Consistent with previous research of climbing participants (Hollenhorst, 1990; Bryan, 1977; Ewert, 1985), demographics are not significantly descriptive of climbing sub-world affiliations. However, in exploring the differences among rock climbing participants, this study found that there were differences among sub-world affiliates in terms of specialization level, motives, conflicts, constraints, and setting preferences.

Infrequent climbing participants, as expected, were the least skilled of all climbing groups but were the largest group, comprising 72% of the sample. Compared to other sub-world groups, infrequent climbers participated in climbing the least often and traveled the shortest distances. As expected, infrequent climbers owned the smallest amount of climbing paraphernalia and demonstrated the lowest level of commitment among climbing sub-worlds. Infrequent climbers were primarily motivated by personal accomplishment, but they had the weakest motivations of all climbing groups. Infrequent climbers were most concerned with how close the site was to their home, but their other setting requirements were not significantly different than those of other climber groups. Infrequent climbers experienced significantly stronger constraints than other sub-world affiliates concerning the influence of other leisure activities on their ability to climb.

Frequent indoor climbers represented 13.5% of the sample, and had a significantly lower perceived level of skill than frequent outdoor climbers. Frequent indoor climbers, not surprisingly, possessed considerably more facility membership passes and were also significantly more committed to climbing then other sub-world affiliate groups. Frequent indoor climbers had notably stronger motives of catharsis and control than infrequent climbers. Frequent indoor climbers were significantly more likely than frequent outdoor climbers to want information, about the site and climbing to be available on site. Finally,

frequent indoor climbers experienced no significant differences in levels of conflicts or constraints from other sub-world affiliate groups.

Frequent outdoor climbers represented 12.0% of the study sample, and were significantly more skilled than infrequent and frequent indoor climbers. Frequent outdoor climbers also owned substantially more books than other climbing sub-world affiliate groups. Frequent outdoor climbers were slightly more committed to climbing then frequent indoor climbers. However, this difference was not statistically significant. The motive of recognition was less important to frequent outdoor climbers than other climbing sub-world affiliates. The presence of food to purchase at the site was found to be the most detrimental aspect to the climbing experience by frequent outdoor climbers. Frequent outdoor climbers did not significantly differ from other sub-world affiliates in terms of conflict or constraints.

Avid climbers, notably, demonstrated a higher degree of specialization and motives than other sub-world affiliates. Avid climbers comprised the smallest portion (2.5%) of the climbers studied, and were the most skilled group of participants. Avid climbers were willing to travel the farthest to participate in climbing and owned the greatest number of climbing shoes. Compared to other sub-world affiliate groups, avid climbers exhibited a higher level of commitment to the activity. The motive of recognition was much stronger among avid climbers than either frequent indoor climbers or frequent outdoor climbers. The

motive of personal expression was also more important to avid climbers than either infrequent climbers or frequent indoor climbers. Lastly, avid climbers showed little difference from other groups in terms of setting preferences or attitudes about conflicts or constraints.

Certain items were of equal importance to all rock climbing affiliate groups. All groups indicated a considerable lack of interest in subscribing to climbing magazines. The motive of personal accomplishment was a strong indicator across all climbing groups. Personal accomplishment was rated as the strongest motivator of all motive factors among climbers. Certain setting preferences, most notably closeness to home and the availability of overnight camping, were considered strongly favorable by all climbing participants. All groupings of climbers agreed that work commitments adversely affected their ability to climb, and that the strongest conflict they encountered was while climbing around other loud groups of participants.

## Discussion and Contribution of the Study

It is important for managers of climbing facilities or climbing areas to understand the dynamics of the population that they wish to attract. Findings from this study will give these managers a better understanding of the recreational sub-worlds of rock climbing participants. This will enable them to

provide relevant programs and services to ensure participant satisfaction and encourage continued patronage.

The recreation specialization framework was significantly descriptive of the climbing sub-world affiliate groups identified in this study. Sub-world affiliate groups are strongly linked to the recreation specialization framework because a participant's frequency of participation is strongly related to their level of skill and commitment to the activity. The recreation specialization framework was measured using three dimensions: skill, behavior, and commitment. A participant's skill level is strongly related to frequency of participation, as their skill level is likely to improve as they climb more frequently. The behavior of participants was measured utilizing frequency of participation and other factors, which were directly related to how sub-world affiliates were defined in this study. There is a strong relationship between sub-world affiliate groups and the specialization framework because both measures utilize the same base set of descriptive data. Finally, a participants' level of commitment is directly related to their frequency of participation, and therefore is equally descriptive of both climbing sub-world affiliate groups and the recreation specialization framework.

This study found that setting preferences were an important factor for all climbers. For all groups of climbing participants, certain setting preferences, most notably closeness to home and the availability of overnight camping, were

considered to be strongly favorable. However, unlike other climbing sub-world affiliate groups, frequent outdoor climbers considered certain setting attributes to be significant deterrents to their participation; these included food and guides being available at the site. As indicated by these preferences, frequent outdoor climbers had a significantly stronger desire for natural settings. Consequently, the findings of this study are in contrast to the findings of Ewert and Hollenhorst's (1997) study of climbing participants, which found that settings cannot be used to describe participants. Instead, this study suggests that the settings surrounding a climbing activity are important to the goal achievement of all participants.

This study found that an extremely high rate of crossover participation exists between climbing sub-world groups. This finding is similar to those reported by ORCA (2000) to be among natural rock climbers, artificial wall climbers and ice climbers. The high rate of cross-over participation found in this study among sub-would affiliate groups indicates that both indoor and outdoor climbing environments provide similar benefits. This indicates that participants are equally likely to climb indoors as outdoors. Therefore managers should understand that both facility environments are in direct competition for clientele.

Managers can utilize these finding to better understand their participant population. A manager of a climbing facility would want to be aware of the

following findings. First, the largest population of visitors to a facility will be infrequent climbing participants; these climbers want a helpful staff and for there to be easy to understand information available. Infrequent climbers also want other amenities such as bathrooms and paved roads at the site. Second, frequent indoor climbers want to be able to receive recognition for their climbing abilities. This may be facilitated with tournaments, a "wall of fame", or having bells at the top of select routes to attract attention when a route has been completed. Third, frequent outdoor climbers own the most climbing paraphernalia, including climbing ropes, shoes, and books. Finally, managers should also be aware of the wide demographic potential of climbers. While the climbing population is commonly perceived as being young males, the actual population is much broader. To take advantage of these potential clients, a facility should design programs specifically for both older and female participants, as well as creating programs for groups such as youth and families.

The independent variable for this study describes climbers along a participation frequency continuum. The largest group was infrequent participants, while the smallest group was comprised of avid participants; the remaining participants were frequent climbers. Frequent participants were further defined by their tendency to participate most often in either indoor or outdoor climbing. Defining climbers by frequency is useful to managers because it identifies the differences between the largest group of potential

climbers (infrequent participants), and people who already climb often (frequent participants). Because these infrequent participants are the greatest source of potential income, facility managers may cater to them in order to increase a facility's use and earnings. Managers can use information from this study to identify specific needs or factors that affect the participation of infrequent climbers, and then can modify the climbing facility to take advantage of this group's identified norms. Managers can also gain a greater understanding of the differences between frequent climber groups in order to better understand the disparate needs of users, and specifically to identify items that may enhance the experience of climbing group segments.

Climbers can be described in ways other than divisions by frequency and location of participation. For example, climbers can be identified by climbing type, participant skill level, or the exclusivity of climbing as an activity. While each of these divisions of climbing participants can be important in the discussion of climbing concerns, this study chose to describe the segmentation of climbers by frequency and location attributes. These variables had a direct practical application for facility managers, and could be presented in a format that was easily understandable without requiring prior knowledge of a rating scale or multiple technical definitions for climbing.

## Suggestions for Future Research

Future research is needed into the progression of climbing participants' throughout their participation lifecycle. In particular, research should study if individual climbers progress along a continuum, from novice to expert, as suggested by Bryan (1979). This could be discovered through the continued study of a fixed climbing group over time. Comparing participant responses to items that measure a participant's progression over time would show the lifecycle changes of that participant. Scott and Shafer (2001) identified three contingencies that can influence the progression of a participant within the sub-world: the support that the participant receives from significant others; the participants' gender; and the availability of opportunities and personal resources. The study of these items may lead to a greater understanding of participants' progression within the climbing sub-worlds over time.

A future study of the differences between male participants and female participants would be of significant value to the economic community of climbing. Males currently account for over 70% of the population. Female's account for nearly 30% of the total climbing population, which is a significant enough group to warrant study. The number of females involved in climbing could be greatly increased if efforts were made to determine their specific need and wants.

Climbers in this study were not adequately defined by Ewert's setting preferences. Therefore, further research should be attempted including the use of the Driver's Recreation Experience Preference (REP) scales. The conflicts and constraints measured in this study did not adequately describe the variety of differences among participants. Therefore, further research should be conducted focusing on the influence of constraints on participation and what types of conflicts climbers identify. Both areas should receive a more detailed and comprehensive study.

## Limitations of the Study

This study has its limitations, namely that the ability to generalize this study to all climbing populations is questionable. First, populations of climbers differ from one geographical area to another. Respondents for this study were gathered from south-central Texas, and therefore do not represent other areas of Texas or of the United States. This study was also conducted over the course of three months and therefore does not account for seasonal participation. Second, approximately half of the sample was under the age of 25, which could be due to the selected study locations. This bias toward student age participants can be partially explained by the choice of a college campus for one study location. Third, the affluent nature of the Austin population could have created a bias towards upper income participants. Clearly, additional studies are needed to

provide greater understanding into the full range of attitudes, behaviors, and needs of the climbing population.

An additional limitation of this study is that some items of the survey were ambiguously worded. For example, one question asked respondents to indicate the number of climbing shoes that participant owned; some respondents interpreted this question as all of the shoes they owned, while other respondents listed the number of individual climbing shoes, not pairs, that they owned. Consequently, the study results could be compromised because of a lack of clarity of those items. Therefore, additional studies could provide clarification in these areas.

The selection process for the sample of climbers is also subject to critique. All individuals, climbing at the facility within the time of the survey was administered, who were within the age bracket of the study were asked to participate in the study. Without a random sampling process, a group of participants sharing a particular view type could inadvertently be selected for the study and unduly influence the sample results.

This study utilized Ewert's scale of motives. This scale does not include social motives or nature appreciation. These sets of motives can be found in Driver's REP scale, but were not incorporated in this study. This exclusion of sampling participant motives surrounding nature and social interaction prevented the study from measuring a full range of reason why people rock climb.

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# APPENDIX A

# CLIMBING SURVEY INSTRUMENT

1) How often (on average) do you climb?

☐ Once a year ☐ Once a month ☐ Once a week

☐ Three times a week ☐ Five times a week

2) How far on average do you travel to climb?

☐ Less than five miles ☐ Less twenty miles ☐ Less then fifty miles

☐ Less then one hundred miles ☐ More then one hundred miles

3) How many of the following items do you own?

_____Climbing Harnesses

_____Climbing Shoes (# of pairs)

_____Climbing Ropes

_____Climbing Guide Books

_____Subscriptions to Climbing Magazines

_____Membership Passes to Climbing Areas/Facilities

4) Please rate your skill a rock climbing. (CIRCLE ONE NUMBER)

| Novice | | Intermediate | | | Expert | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5) Please circle the level of the most difficult climb you have ever completed. (CIRCLE ONE NUMBER)

| Novice | | | Intermediate | | | | | Expert | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5.4 | 5.5 | 5.6 | 5.7 | 5.8 | 5.9 | 5.10 | 5.11 | 5.12 | 5.13. | 5.14 |

6) Please circle the average difficulty level of climbs you successfully attempt. (CIRCLE ONE NUMBER)

| Novice | | | Intermediate | | | | | Expert | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5.4 | 5.5 | 5.6 | 5.7 | 5.8 | 5.9 | 5.10 | 5.11 | 5.12 | 5.13. | 5.14 |

7) What types of climbing did you participate in during the last 12 months and how often?

☐ Indoor Lead climbing _____days

☐ Indoor Top-rope climbing _____days

☐ Indoor Bouldering _____days

☐ Outdoor Lead climbing _____days

☐ Outdoor Top-rope climbing _____days

☐ Outdoor Bouldering _____days

**8) FOR EACH OF THE FOLLOWING STATEMENTS, CIRCLE THE NUMBER THAT BEST DESCRIBES YOUR LEVEL OF AGREEMENT.**
**1 – 7 STRONGLY AGREE TO STRONGLY DISAGREE**

| | Strongly Agree | | | Neutral | | | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| a. I climb for the exhilaration | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. I climb to slow my mind | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. I enjoy climbing because I can make my own decisions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | Strongly Agree | | | Neutral | | | Strongly Disagree |
|---|---|---|---|---|---|---|---|---|
| d. | Work commitments make it difficult to climb regularly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. | I climb for the excitement | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. | I climb to develop my abilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| g. | Most of my friends are in some way connected with climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| h. | I climb to gain control over part of my life | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| i. | Family obligations interfere with my climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| j. | I climb to escape authority | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| k. | I climb because of the friendships I have with other climbers | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| l. | I climb to gain recognition | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| m. | I don't like to climb with lot of other climbers | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| n. | I climb because of risk | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| o. | I climb to show others that I can | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| p. | I enjoy the solitude of climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| q. | Others would say that I spend too much time climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| r. | I climb to disengage from reality | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| s. | I don't like climbing around loud groups | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| t. | I climb because of personal values | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| u. | Creativity draws me to climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| v. | I find that a lot of my life is organized around climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| w. | I climb because it gives me an opportunity for personal testing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| x. | I don't climb as often as I would like because of a lack of money | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| y. | Self-expression is why I climb | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| z. | I climb to text my physical skill | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| aa. | I climb to use my mind | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| bb. | I climb to be a "Climber" | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| cc. | I climb because it allows me to think | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| dd. | I don't like it when other types of activities use the same site | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ee. | I climb for the accomplishment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ff. | I don't climb often because I have too many leisure interests | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| gg. | I enjoy the competition of climbing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| hh. | I climb for relaxation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ii. | The use of chalk on natural wall bothers me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| jj. | Climbing is very important to me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

9) Please rate how the following characteristics **ADD TO** or **DETRACT FROM** your climbing *enjoyment*.

| | | Adds to Strongly | | | Neutral | | Detracts from Strongly | |
|---|---|---|---|---|---|---|---|---|
| a. | Has bathrooms | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| b. | Close to home | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| c. | Climbing information available at site | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| d. | Climbing guides or Instructors available at site | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| e. | Food available at site | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| f. | Overnight camping available | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| g. | The site is undeveloped (i.e., no roads, no services) | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| h. | Offers activities other than climbing on site | 3 | 2 | 1 | 0 | -1 | -2 | -3 |
| i. | A paved road goes right by the climbing area | 3 | 2 | 1 | 0 | -1 | -2 | -3 |

**This final section of the survey asks for information about you and your household. You may be assured that this information will be kept confidential and used for statistical purposes only.**

Are you ☐ Male ☐ Female

What is your current marital status?
☐ Single ☐ Married ☐ Divorced or Separated

What is the highest level of formal education that you have completed?
☐ Sixth grade or less
☐ Less than 12 years
☐ High school graduate
☐ Some college
☐ A degree from a 2-year college or school
☐ Graduated from 4-year college or university
☐ Some graduate school
☐ A graduate or doctorate degree

In what year were you born? _____

Which of the following categories apply to you?
☐ Employed full time
☐ Employed part time/temporary
☐ Unemployed
☐ Self-employed
☐ Retired
☐ Student
☐ Homemaker

What is your approximate annual household income BEFORE TAXES?
☐ Under $10,000
☐ $10,000-19,999
☐ $20,000-29,999
☐ $30,000-39,999
☐ $40,000-49,999
☐ $50,000-59,999
☐ $60,000-69,999
☐ $70,000-79,999
☐ $80,000-89,999
☐ $90,000-99,999
☐ $100,000 or more

Thank you for taking the time to complete this survey.

# APPENDIX B

## INFORMED CONSENT FORM

## TAMU PARTICIPANTS

# INFORMED CONSENT FORM
## TAMU Participants

**Identification of Project:**

Differentiation of Rock Climbing Participant Social Worlds

**Purpose of the Research:**

This is a research project that will describe the relationship between the specialization level, setting preferences, and motives of Rock Climbers to climbing social worlds.

**Procedures:**

I understand that I must be 18 years of age or older to participate. I understand that participation in this study will require approximately 15 minutes of my time. I will be asked to complete a three page survey consisting of 3 sections. The first section is 6 multiple choice questions. The second section is 36 Likert type statements, and the last section is another 9 Likert type statements. The responses on the survey will be correlated with my Socio-Demographic information.

**Risks and/or Discomforts:**

I understand that there are no risks or discomforts associated with this research.

**Benefits:**

The information gained from this study may help us to better understand the Social World of Rock Climbers.

**Anonymity:**

I understand that the information obtained during this study is anonymous. The data will be stored by the investigator and will only be seen by individuals directly involved with the study. The original survey forms will be destroyed after the data has been input into a statistical software package. The information obtained in this study will be published in Brandon Rapelje's Master's Thesis and my be published in scientific journals or presented at scientific meetings, but the data will be reported as summative data only.

**Compensation:**

None.

**Opportunity to Ask Questions:**

I may ask questions concerning this research at any time during the survey process. I understand that this research study has been reviewed and approved by the Institutional Review Board – Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, I can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of Vice President for Research at (979) 458-4067.

**Freedom to Withdraw:**

I understand that I am free to decide not to participate in this study or to withdraw at any time.

**Consent:**

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study. I have been given a copy of this consent form.

_____ _____

Research Participant : Date

_____ _____

Principal Investigator: Brandon Rapelje Date

# APPENDIX C

## INFORMED CONSENT FORM

# INFORMED CONSENT FORM

**Identification of Project:**

Differentiation of Rock Climbing Participant Social Worlds

**Purpose of the Research:**

This is a research project that will describe the relationship between the specialization level, setting preferences, and motives of Rock Climbers to climbing social worlds.

**Procedures:**

I understand that I must be 18 years of age or older to participate. I understand that participation in this study will require approximately 15 minutes of my time. I will be asked to complete a three page survey consisting of 3 sections. The first section is 6 multiple choice questions. The second section is 36 Likert type statements, and the last section is another 9 Likert type statements. The responses on the survey will be correlated with my Socio-Demographic information.

**Risks and/or Discomforts:**

I understand that there are no risks or discomforts associated with this research.

**Benefits:**

The information gained from this study may help us to better understand the Social World of Rock Climbers.

**Anonymity:**

I understand that the information obtained during this study is anonymous. The data will be stored by the investigator and will only be seen by individuals directly involved with the study. The original survey forms will be destroyed after the data has been input into a statistical software package. The information obtained in this study will be published in Brandon Rapelje's Master's Thesis and my be published in scientific journals or presented at scientific meetings, but the data will be reported as summative data only.

**Compensation:**

I will receive an 8 oz. bottle of water.

**Opportunity to Ask Questions:**

I may ask questions concerning this research at any time during the survey process. I understand that this research study has been reviewed and approved by the Institutional Review Board – Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, I can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of Vice President for Research at (979) 458-4067.

**Freedom to Withdraw:**

I understand that I am free to decide not to participate in this study or to withdraw at any time.

**Consent:**

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study. I have been given a copy of this consent form.

_____ _____

Research Participant : Date

_____ _____

Principal Investigator: Brandon Rapelje Date

# VITA

**Permanent Address**

Brandon Wayne Rapelje
508 North Ford St., Golden, CO 80403

**Education**

Bachelor of Arts, Outdoor Recreation/Leadership. Western State College of Colorado, August 1998

Master of Science, Recreation, Park and Tourism Sciences. Texas A&M University, August 2004

**Professional Recreation Experience**

Wilderness Trip Instructor: Planned, organized, outfitted, and led extended trips. Participants ranged in ages from 9 to 18; group types included at-risk youths, summer camp participants, and high school students. Trips varied in length from one week to several months.

Ropes Course Instructor: Constructed and tested courses, defined and implemented safety procedures, and led groups of participants through ropes course elements. Participants ranged in ages from 8 to 28; experience levels ranged from first-time participants to very experienced.

Rock Climbing Instructor: Managed an indoor climbing facility, taught climbing skills classes, built and designed indoor climbing walls, led outdoor trips, and taught anchoring techniques. Worked with participants ranging in age from 5 to 50 and groups of sizes from 1 to 100.

Search and Rescue: Experienced with professional Search and Rescue techniques in finding lost persons in wilderness areas. Applicable skills include map and compass use, radio communications, tracking, recovery, first aid, use of Search Dogs, avalanche and high-angle rescue, and search management. Worked as the training coordinator and taught each of these skills to new members.

White Water River Guide, Class I-IV: Experienced in leading raft, canoe, and kayak trips, guiding techniques, and equipment maintenance. Worked as a professional guide for tourists, fellow professionals, school groups, and friends.

Scuba Diving Divemaster: Experienced in teaching skills, organizing, and leading dive trips. Have participated in a wide range of diving environments: Wisconsin, lakes; Cozumel, reefs; Hawaii, blue water; and Texas, fresh water springs.