

**FROM SUBSTITUTION TO COPING:  
DEVELOPING AND TESTING A LEISURE CONSTRAINTS-BASED COPING  
MODEL**

A Dissertation

by

YUNG-PING TSENG

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

DOCTOR OF PHILOSOPHY

August 2009

Major Subject: Recreation, Park and Tourism Sciences

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Major Subject: Recreation, Park and Tourism Sciences

## ABSTRACT

From Substitution to Coping:

Developing and Testing a Leisure Constraints-Based Coping Model. (August 2009)

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The conceptualization of leisure constraints is dependent on negotiating a hierarchy of intrapersonal, interpersonal, and structural leisure constraints. It has become a recognizable and distinct subfield within leisure studies. Research has shown that the leisure constraints should not be necessarily viewed as insurmountable obstacles. Individuals can negotiate constraints by applying an array of coping mechanisms. Recently, Iwasaki and Schneider (2003) and Schneider and Stanis (2007) proposed that constraints negotiation and coping with stress share much in common. Leisure constraints are considered elements of stress, whereas constraint negotiation appears to share commonalities with ways of coping with stress. The distinction between negotiation and coping is that negotiation is something people have engaged in prior to participating in the activity, whereas coping involves strategies people more typically engage in during active participation (in response to unwanted or unanticipated situations). Based on past literature, I constructed a constraints-coping model to extend our understanding of

constraints negotiation by integrating an understanding of coping mechanisms into leisure constraints-negotiation models. In order to broaden the scope of a constraints-coping framework, I integrated additional social indicators (e.g., commitment, motivation, place attachment, and frequency of participation) into my hypothesized model.

First, my testing of the constraints-coping model provided empirical support for Iwasaki and his colleagues' suggestion that coping strategies can be potentially integrated into models of constraints-negotiation processes. Second, I confirmed that the three types of onsite constraints continue to have relevance for active participants. The three types of constraining factors directly influence subsequent aspects of leisure engagement for recreationists already participating. Third, I confirmed that recreationists are more likely to cope with constraints by employing an array of problem-focused coping strategies, rather than to simply adjust cognitively. However, my findings illustrate that recreationists' coping responses vary in response to different types of constraints encountered (e.g., intrapersonal, interpersonal, and structural). The experience of constraints did not universally result in the increased use of coping. Fourth, my results confirm that motivation is an immediate antecedent of constraints as well as a potential trigger for encouraging more problem-focused coping strategies. Last, four selected key variables (e.g., place attachment, commitment motivation, and frequency of participation) demonstrated different effects on influencing active participants' perceived constraints and subsequent coping strategies. Future investigations of coping

strategies should continue to explore how active participants cope with onsite constraints based on a constraints-coping model in different settings.

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## TABLE OF CONTENTS

|  | Page |
|--|------|
| ABSTRACT .....   | iii  |
| ACKNOWLEDGEMENTS .....   | vi   |
| TABLE OF CONTENTS .....  | viii |
| LIST OF TABLES .....   | xii  |
| LIST OF FIGURES .....  | xiii |
| <br>CHAPTER  |      |
| I        INTRODUCTION AND LITERATURE ANALYSIS .....  | 1    |
| From Substitution to Coping: Literature Over 30 Years .....                                    | 3    |
| The First Generation of Substitution Research .....  | 3    |
| The Second Generation of Substitution Research .....   | 4    |
| The Third Generation of Substitution Research .....  | 6    |
| Development of My Research Agenda .....  | 7    |
| Objectives and Hypotheses .....  | 8    |
| Purpose and Organization of the Proposal .....   | 14   |
| II        MODELING ANGLERS' WILLINGNESS TO SUBSTITUTE USING<br>MULTIATTRIBUTE INDICATORS ..... | 16   |
| Introduction .....   | 16   |
| Literature Review .....  | 18   |
| Variables Affecting Willingness to Substitute .....  | 18   |
| How Does Specialization Affect Resource Substitution? .....                                    | 20   |
| How Does Place Attachment Affect Resource Substitution? .....                                  | 22   |
| How Does Motivation Affect Resource Substitution? .....  | 23   |
| How Do Demographic Characteristics Affect Resource<br>Substitution? .....                      | 24   |
| Methods .....  | 25   |



| CHAPTER  | Page   |
|--|--------|
| Measures .....   | 26     |
| Data Analysis .....  | 33     |
| Results.....   | 36     |
| Descriptive Findings .....   | 36     |
| Model Testing.....   | 36     |
| Interactive Effects .....  | 37     |
| Main Effects.....  | 39     |
| Discussion.....  | 40     |
| <br>III   COPING WITH CONSTRAINTS: AN INVESTIGATION OF ACTIVE<br>RECREATIONAL BOATERS..... | <br>49 |
| Introduction.....  | 49     |
| Literature Review .....  | 52     |
| Leisure Constraints and Negotiation.....   | 52     |
| Coping as a Constraint Negotiation Response.....   | 54     |
| Constraints in the Context of Recreational Boating .....                                   | 58     |
| Testing a Constraints-Coping Model.....  | 60     |
| Methodology.....   | 62     |
| Settings.....  | 62     |
| Sampling .....   | 62     |
| Measures .....   | 66     |
| Statistical Methodology.....   | 69     |
| Results.....   | 71     |
| Descriptive Analyses .....   | 71     |
| Measurement and Structural Models .....  | 75     |
| Summary of Effects .....   | 75     |
| Discussion.....  | 77     |
| Intrapersonal Constraints and Coping Mechanisms .....                                      | 78     |
| Interpersonal Constraints and Coping Mechanisms .....                                      | 79     |
| Structural Constraints and Coping Mechanisms.....  | 81     |

| CHAPTER | Page   |
|---------|--|
| IV      | THE CONSTRUCTION OF A CONSTRAINTS-COPING MODEL<br>WITHIN A RECREATIONAL BOATING CONTEXT.....83 |
|         | Introduction.....83  |
|         | Literature Review .....86  |
|         | Constraints-Coping Research in the Context of Outdoor<br>Recreation .....86                    |
|         | The Expansion of the Constraints-Coping Framework .....90                                      |
|         | How Does Place Attachment Influence Coping with<br>Constraints? .....91                        |
|         | Commitment to Continuing Participation.....93  |
|         | How Does Frequency of Participation Influence Coping<br>Strategies?.....95                     |
|         | The Role of Motivation in the Constraints-Coping Model.....96                                  |
|         | The Development of a Broader Constraints-Coping Model.....98                                   |
|         | Methodology .....101   |
|         | Settings.....101   |
|         | Sampling .....101  |
|         | Measures .....103  |
|         | Procedures of Data Analysis and Model Testing.....108  |
|         | Results.....110  |
|         | Descriptive Analyses .....110  |
|         | Measurement and Structural Models .....111   |
|         | Summary of Effects .....112  |
|         | Summary of Indirect Effects.....114  |
|         | Discussion.....116   |
| V       | CONCLUSIONS AND DISCUSSION.....122   |
|         | Development and Examination of a Constraints-Coping Model.....122                              |
|         | Examination of an Expanded Constraints-Coping Framework .....126                               |
|         | The Role of Commitment in the Constraints-Coping Framework .....127                            |
|         | The Role of Motivation in the Constraints-Coping Framework.....128                             |

|  | Page |
|--|------|
| The Role of Frequency of Participation in the Constraints-Coping Framework ..... | 128  |
| The Role of Demographics in the Constraints-Coping Framework .....               | 129  |
| Management Implications.....   | 132  |
| Management Implications for Texas Parks and Wildlife Department (TPWD).....      | 132  |
| Management Implications for Lower Colorado River Authority (LCRA).....           | 134  |
| REFERENCES .....   | 137  |
| APPENDIX .....   | 160  |
| VITA .....   | 167  |

## LIST OF TABLES

| TABLE  | Page |
|--|------|
| 1 Mean and Standard Deviation of Independent Variables.....  | 30   |
| 2 Results of the Logistic Regression Analysis to Test for Significance, Odds Ratios, and Percent Change of Whether Substitution Occurred ..... | 41   |
| 3 Wald Test for Logistic Model of Resource Substitution Prediction .....   | 42   |
| 4 Sample Demographics.....   | 65   |
| 5 Item Factor Loading and Means of Constraints-Coping Model .....  | 72   |
| 6 Goodness of Fit Indices of Constraints-Coping Model.....   | 75   |
| 7 Structural Model Analysis of Constraints-Coping Model.....   | 77   |
| 8 Item Factor Loading and Means.....   | 106  |
| 9 Goodness of Fit Indices.....   | 112  |
| 10 Structural Model Analysis.....  | 114  |
| 11 Summary of Indirect Effects .....   | 116  |
| 12 Summary of Findings.....  | 130  |

## LIST OF FIGURES

| FIGURE  | Page |
|---|------|
| 1 Conceptual Model .....  | 19   |
| 2 Moderating Effects of Age $\times$ Fishing Frequency and Male $\times$ Fishing Frequency<br>on Resource Substitution by Percent.....  | 42   |
| 3 Moderating Effects of Gender $\times$ Fishing Frequency; Gender $\times$ Place Identity;<br>Gender $\times$ Skill Level; and Gender $\times$ Trophy Seeking on Resource Substitution<br>by Percent..... | 43   |
| 4 Hypothesized Leisure Constraints- Coping Model .....  | 61   |
| 5 Motivation as an Antecedent of Constraints-Coping Model.....  | 99   |
| 6 Motivation as a Mediator of Constraints-Coping Model .....  | 100  |

## CHAPTER I

### INTRODUCTION AND LITERATURE ANALYSIS

Iwasaki and Schneider (2003) and Schneider and Stanis (2007) suggested that the constraints-negotiation model and stress-coping model can be potentially integrated. In my dissertation, I sought to empirically test their propositions. First, I reviewed conceptualizations of constraints-negotiation processes in the leisure literature. Second, I reviewed previous work examining recreationists' coping strategies in response to unwanted situations in outdoor recreation contexts. This review highlights the role played by substitution responses. Third, I discuss the similarities of stress-coping and constraints-negotiation processes. Last, I developed and tested a constraints-coping model with the inclusion of additional social indicators.

Crawford, Jackson, and Godbey's (1991) original leisure constraints model classified the constraints that people face that shape the access and preferences for leisure into three broad classes: intrapersonal (e.g., stress, anxiety, and personality), interpersonal (e.g., different leisure preferences among families), and structural (e.g., financial limitation, accessibility) constraints. Additionally, Crawford et al. also indicated that the three types of constraining factors may directly influence subsequent aspects of leisure engagement for a person who is already participating. In 1993, Jackson, Crawford, and Godbey further modified their leisure constraints model by including processes related to negotiation. They suggested that the leisure constraints should not be

viewed as necessarily insurmountable obstacles. Individuals can negotiate through constraints and maintain at least some form of participation. Thus, research has illustrated that constraints do not always prevent or reduce participation (Scott, 1991; Shaw, Bonen, & McCabe, 1991). People may negotiate constraints by applying an array of coping mechanisms. The distinction between negotiation and coping is that negotiation is something people have engaged in prior to participating in the activity. But, coping are strategies as those that people use more typically during active participation (in response to unwanted or unanticipated situations).

Early work in the 1970s focused on how recreationists respond to negative elements associated with certain activities, such as crowding or other unwanted situations. Recreationists have responded to these constraints by applying an array of cognitive and behavioral coping mechanisms (Kuentzel & Heberlein, 1992), such like substitution or rationalization. In the next section, I will review the evolution of substitution research and its connection to the contemporary coping approach.

Constraint negotiation and coping research have been two distinct, nonrelated streams of research over the past three decades. Recently, their conceptual similarity was highlighted by Iwasaki and Schneider (2003) and Schneider and Stanis (2007). Iwasaki and Schneider (2003) suggested that leisure constraints are considered elements of stress, whereas constraint negotiation appears to share commonalities with ways of coping with stress. The stress-coping model posited by Lazarus and Folkman (1984) hypothesized that stressful situations result in a mediating appraisal process. During the appraisal process, the individual determines which coping options are available and which are

likely to be successful in addressing the situation. Based on this literature, I developed a constraints-coping model by integrating three types of constraints (intrapersonal, interpersonal, and structural) and coping strategies derived from past outdoor recreation research. Last, in order to broaden the scope of a constraints-coping framework as suggested by Walker (2005, 2007), I integrated additional social indicators (e.g., commitment, motivation, place attachment, and frequency of participation) into my hypothesized model. In the following section, I summarize the evolution of substitution research and the transition to a broader concept - coping - within the outdoor recreation literature.

### **From Substitution to Coping: Literature Over 30 Years**

#### *The First Generation of Substitution Research*

In early substitution research, defining substitutable clusters or types of activities was the primary concern. Early research in outdoor recreation and leisure, in general, was primarily descriptive, focusing on the activities and social characteristics of participants. The absence of a strong theoretical foundation, along with an overemphasis on applied problem solving, was a constant concern. In this period, descriptive and simple statistical approaches explored visitor characteristics and use patterns. These early recreation substitution researchers attempted to define substitutable clusters and types of activities by using descriptive analysis, factor analysis, and cluster analysis (Burton, 1971; Chase, 1975; Christensen & Yoesting, 1977; Hendee & Burdge, 1974; Snow, 1980). For example, in Chase's (1975) research, factor analysis was used to



determine specific activities that can tentatively be considered substitutable, such as baseball, football, basketball, and volleyball. An early definition of substitutability was also developed by Hendee and Burdge in 1974. They defined substitutability as “the interchangeability of recreation activities in satisfying participants’ motives, needs, and preferences” (p. 157). These early analyses provided good information in the form of applied research, evaluation, or ways to improve practice but did not necessarily add to the broader body of knowledge concerning theory or conceptual frameworks (Henderson, 1994).

### *The Second Generation of Substitution Research*

Just knowing substitutable alternatives was not sufficient for both researchers and resource managers. Therefore, the second generation of substitution research adopted more direct measures of substitutability (Manning, 1999b). Based on Henderson’s (1994) observation, recreation research in this period involved the development of theoretical or conceptual frameworks. In the context of substitution research, a typology of substitution alternatives was derived from direct-question methods (Shelby & Vaske, 1991), providing another means of describing and examining behavioral choices available to recreationists relating to the resource, timing of participation (temporal substitution), and mode of participation (activity substitution). Based on this past work, researchers now understood that recreationists can respond to unwanted situations by substituting one place for another, by altering their use patterns, and by maintaining satisfaction by enjoying different activities.

In the late 1980s through the mid 1990s, additional theoretical and conceptual development was offered by Iso-Ahola (1986), Brunson and Shelby (1993), and Schneider and Hammitt (1995). For example, Brunson and Shelby proposed that future substitution research should rest on: a) considering a full array of options of substitute strategies in combination; b) testing actual behaviors instead of intended behaviors; c) linking place attachment to resource substitution; d) understanding the relationship between acceptable substitutes and recreationists' specialization in and commitment to an activity; and e) integrating research on substitutability and leisure constraints.

Iso-Ahola (1986) also offered a "substitutability theory" by developing a series of propositions. His theory posited that perceived choice (or freedom) is a crucial mediator of whether certain factors undermine or enhance one's willingness to substitute. In addition, psychological investment (i.e., personal commitment and behavior commitment) and motivations were also suggested to be included in the future substitution research.

Last, Schneider and Hammitt (1995) suggested that Lazarus and Folkman's (1984) stress-coping model can also be used for understanding how recreationists cope with conflicts. The stress-coping model posited by Lazarus and Folkman (1984) hypothesized that stressful situations result in a mediating appraisal process. During the appraisal process, the individual determines which coping options are available and which are likely to be successful in addressing the situation.

With regard to statistical approaches, ANOVA, MANOVA, and chi-square tests were used most often in testing theory and propositions in this stage. For example,

Choi (1989) used ANOVA and MANOVA in the statistical analyses of the substitution research involving Texas saltwater stamp holders. He found that level of specialization was associated with activity substitution and that social groups influenced setting substitution.

### *The Third Generation of Substitution Research*

In more recent substitution research, a coping approach has been used to broaden the scope of substitutability research (Miller & McCool, 2003; Schneider & Hammitt, 1995). Cognitive (e.g., rationalization and product shift) and behavioral (e.g., absolute displacement, temporal substitution, activity substitution, resource substitution, and direct action) coping mechanisms have been identified (Miller & McCool, 2003). However, both Iwasaki and Schneider (2003) and Schneider and Stanis (2007) have suggested that the concept of constraints negotiation is conceptually similar to the concept of stress-coping originally proposed by Lazarus and Folkman (1984). Lazarus and Folkman categorized ways of coping as emotion-focused and problem-focused. The former refers to a cognitive process directed at lessening emotional distress and includes strategies such as avoidance, minimization, distancing, selective attention, positive comparisons, and wresting positive value from negative events (Lazarus & Folkman, 1984, p. 150). The latter coping method focused on objective, analytic processes such as generating alternative solutions and direct action (Lazarus & Folkman, 1984, p. 152). Iwasaki and Schneider (2003) and Schneider and Stanis (2007) stated that leisure constraints are considered elements of stress, whereas constraint negotiation appears to

share commonalities with ways of coping with stress. They suggested that the two distinct, nonrelated streams of research can be potentially integrated.

With regard to the statistical approaches employed in this research stage, structural equation modeling (SEM) has been used extensively in testing various relationships and the validity of conceptual frameworks. For example, Miller and McCool (2003) use SEM in testing recreationists' cognitive and behavioral coping mechanisms to negative setting elements (e.g., restriction of access, noise, intensive encounters, rules, and regulations) in Glacier National Park. They found that higher levels of stress were positively associated with direct actions and absolute displacement but negatively associated with temporal substitution, resource substitution, and cognitive adjustment.

#### *Development of My Research Agenda*

Based on the evolution of substitution research I discussed above, I first explored variables affecting recreationists' willingness to substitute settings and how these factors contribute to recreationists' substitution behaviors in Chapter II (see page 17 for details).

In my first paper I sought to integrate leisure constraints and coping research. In doing so I developed a model based on existing conceptualization to better understand the process of leisure constraints negotiation with the addition of coping mechanisms. Crawford et al. (1991) proposed that leisure participation is heavily dependent on negotiating a hierarchy of intrapersonal, interpersonal, and structural leisure constraints. They further asserted that "the factors that create constraints might continue to have

relevance even after an individual takes up participation in a given activity” (p. 315). That is, the three levels of constraining factors may directly influence subsequent aspects of leisure engagement for a person who is already participating. People may negotiate these intervening constraints by applying an array of coping mechanisms. Therefore, in Chapter III (see page 45 for details), I also examined the continuing operation of leisure constraints among active boaters using Crawford et al.’s model of constraints negotiation.

Walker (2007) has also noted the importance of studying the “broader picture” related to leisure constraints and suggested the inclusion of more social factors such as motivation, commitment, use frequency of participation, and place attachment. He noted that the integration of multidimensional social indicators could greatly add to the understanding of the complex constraints–coping framework. Therefore, in Chapter IV (see page 75 for details), I also used multidimensional measurements of place attachment, commitment, participation frequency, and motivation to help explain the relationships between leisure constraints and coping mechanisms in the context of outdoor recreation.

### **Objectives and Hypotheses**

The objectives of this dissertation are threefold:

Objective 1 of my dissertation was to understand resource substitution based on the suggestions of Iso-Ahola (1986), Brunson and Shelby (1993), and Fedler and Ditton’s (2001). These authors proposed that substitution research should focus on: 1) linking place attachment to resource substitution; 2) understanding the relationship between acceptable substitutes and recreationists’ specialization in and commitment to

an activity; 3) integrating research on substitutability and leisure constraints; 4) including individuals' psychological motives and rewards for leisure; and 5) demographic characteristics (e.g., gender, age, income). Based on their propositions, I used logistic regression to examine the effects of recreational anglers' demographic characteristics, recreation specialization, motivation, and place attachment (four categories of variables) on the resource substitution decisions. In sum, it is hypothesized that:

*Hypothesis 1a: Frequency of participation will be positively associated with resource substitution.*

*Hypothesis 1b: Skill level will be negatively associated with resource substitution.*

*Hypothesis 1c: Knowledge level will be negatively associated with resource substitution.*

*Hypothesis 1d: Personal commitment will be negatively associated with resource substitution.*

*Hypothesis 1e: Behavioral commitment will be negatively associated with resource substitution.*

*Hypothesis 1f: Place identity will be negatively associated with resource substitution.*

*Hypothesis 1g: Place dependence will be negatively associated with resource substitution.*

*Hypothesis 1h: Motivation will be negatively associated with resource substitution.*

*Hypothesis 1i: As age increases, people will be less willing to make a resource substitution decision.*

*Hypothesis 1j: Females will be more likely to make a resource substitution than males.*

*Hypothesis 1k: As income increases, people will be more likely to make a resource substitution than their lower income counterparts.*

In objective 2 of my dissertation, I sought to integrate conceptualizations of coping with constraints negotiation processes within the context of outdoor recreation. Based on the conceptual development of a stress-coping model (Lazarus & Folkman, 1984), coping can be considered in terms of two dimensions: problem-focused coping and emotion-focused coping. In the outdoor recreation literature, problem-focused comprised five coping strategies (Kuentzel & Heberlein, 1992; Miller & McCool, 2003; Schneider & Stanis, 2007). For example, active participants may have learned to cope with constraints by altering the timing of their access to avoid certain conditions (temporal substitution); utilizing the same resource but changing the activity (activity substitution); maintaining their preferred activity but visiting a different location (resource substitution); changing both resource and activity (absolute displacement); and/or engaging in behaviors directed toward changing undesirable conditions (direct action). Emotion-focused coping is comprised of two coping strategies. For example, active participants may have learned to cope with constraints by adjusting their

expectations or lowering their standards for the experience (product shift) and/or reevaluating an undesirable situation in a more favorable light (rationalization).

Based on Crawford et al.'s (1991) research, leisure constraints can be categorized into intrapersonal, interpersonal, and structural constraints. First, intrapersonal constraints are related to individual psychological states that influence leisure preference (e.g., stress, anxiety, and personality). Second, interpersonal constraints involve the interaction between people (e.g., conflicts between canoeists and motorboaters). Finally, structural constraints involve intervening factors between leisure preferences and participation (e.g., financial limitation, accessibility). Constraint negotiation and stress coping research were two distinct, nonrelated streams of research until their similarities were discussed by Iwasaki and Schneider (2003) and Schneider and Stanis (2007). Iwasaki and Schneider (2003) suggested that the stress-coping framework can be potentially integrated with constraint negotiation research. Following Iwasaki, Schneider, and associates' suggestions for the integration of constraints and coping, I hypothesized that two dimensional coping mechanisms will be positively influenced by three types of constraints. They are:

*Hypothesis 2a: There will be a positive and significant association between intrapersonal constraints and problem-focused coping.*

*Hypothesis 2b: There will be a positive and significant association between intrapersonal constraints and emotion-focused coping.*

*Hypothesis 2c: There will be a positive and significant association between interpersonal constraints and problem-focused coping.*



*Hypothesis 2d: There will be a positive and significant association between interpersonal constraints and emotion-focused coping.*

*Hypothesis 2e: There will be a positive and significant association between structural constraints and problem-focused coping.*

*Hypothesis 2f: There will be a positive and significant association between structural constraints and emotion-focused coping.*

Objective 3 of my dissertation was to quantitatively examine the interrelationship between coping and four related concepts: place attachment, commitment, frequency of participation, and motivation. Walker (Walker, 2005; 2007) suggested integrating more social indicators into models of coping responses. These four concepts have been suggested to directly or indirectly influence recreationists' coping responses when encountering constraints. Reasons for selecting these key variables in the constraints-coping framework are:

1. Outdoor recreation is heavily dependent on natural resources. Recreationists may develop a certain level of place bonding to a particular location and be reluctant to use alternative sites when encountering constraints (Hammitt, Backlund, & Bixler, 2004);
2. Understanding how recreationists maintain participation is directly associated with the concept of commitment. By definition, personal and behavioral commitments closely bind individuals to consistent patterns of leisure behavior (Buchanan, 1985);
3. Frequency of participation can affect the coping process in outdoor recreation

(Schuster, Hammitt, & Moore, 2003). Experienced users are more likely to engage in more problem-focused coping strategies than are their less-experienced counterparts (Schreyer & Lime, 1984); and

4. Highly motivated recreationists tend to be less likely to perceive high levels of constraints and subsequently apply an array of coping mechanisms to maintain participation (Carroll & Alexandris, 1997).

By extending previous work between coping and its four related concepts, it is hypothesized that:

*Hypothesis 3a: Levels of place attachment will have a negative effect on constraints.*

*Hypothesis 3b: Levels of commitment will have a negative effect on constraints.*

*Hypothesis 3c: Frequency of participation will have a positive effect on constraints.*

*Hypothesis 3d: Levels of motivation will have a negative effect on constraints.*

*Hypothesis 3e: There will be a positive and significant association between overall constraints and problem-focused coping.*

*Hypothesis 3f: There will be a negative and significant association between overall constraints and emotion-focused coping.*

Last, it is anticipated that the discussion in my dissertation may provide some preliminary insight into how recreationists cope with constraints in the context of outdoor recreation.

### **Purpose and Organization of the Proposal**

The format for the references and citations in my dissertation will conform to *The Publication Manual of the American Psychological Association* (5th ed., 2001) and will follow a three–research paper format. Each paper will be developed as a stand-alone journal-style article to be submitted to *Leisure Sciences*.

Chapter II is titled “*Modeling Anglers’ Willingness to Substitute Using Multiattribute Indicators*.” In this investigation, I explored how multiattribute indicators (place attachment, specialization, and demographic variables) influenced recreationists’ resource substitution behavior. Respondents were asked, “*If you could not go fishing where you fish most often, is there another lake or water body that would provide you with the same fishing enjoyment and satisfaction at a similar cost?*” Logistic regression was used to interpret the strength of these indicators on this binary yes/no recreation substitution question. This study is expected to identify effective predictors of resource substitution.

Chapter III is titled “*Coping With Constraints: An Investigation of Active Recreational Boaters*.” This paper explored the relationship between leisure constraints and coping mechanisms based on Iwasaki and Schneider’s (2003) and Schneider and Stanis’s (2007) propositions. A path model was tested examining how three types of leisure constraints (intrapersonal, interpersonal, and structural) affect seven dimensions of coping mechanisms (activity substitution, resource substitution, temporal substitution, absolute displacement, direction action, rationalization, and product shift) among active boaters.

Finally, Chapter IV is titled “*The Construction of a Constraints–Coping Model Within a Recreational Boating Context.*” The previously developed constraints–coping model was expanded by integrating some key variables (e.g., place attachment, commitment, frequency of participation, and motivation) that may affect an individual’s continuing leisure engagement in recreational boating. The purpose of this research was to understand how selected latent variables affect recreationists’ coping mechanisms (problem-focused and emotion-focused coping) while encountering constraints using structural equation modeling.

## **CHAPTER II**

### **MODELING ANGLERS' WILLINGNESS TO SUBSTITUTE USING MULTIATTRIBUTE INDICATORS**

#### **Introduction**

In this study, I examined recreational anglers' demographic characteristics, recreation specialization, motivation, and place attachment on resource substitution decisions. In early substitution research, defining substitutable clusters or types of activities was the primary concern (1981; Hendee & Burdge, 1974). A second generation of substitution research adopted more direct measures of substitutability (Manning, 1999b) by asking respondents about their acceptable substitutes. A typology of substitution alternatives derived from direct-question methods (Shelby & Vaske, 1991) provided a means for describing and examining behavioral choices available to recreationists. In Shelby and Vaske's research, spatial, temporal, and activity substitutions were potential options for recreationists who had negative leisure experiences in response to a condition encountered. In recent substitution research, a transactional coping approach has been used to broaden the scope of substitutability research (Schneider & Hammitt, 1995; Miller & McCool, 2003). The transactional coping approach defined that the stress is the result of a perceived imbalance between the demands of a person's environment and the available resources the person possesses in response to them (Evans & Cohen, 1987; Lazarus & Folkman, 1984). Cognitive (e.g., rationalization and product shift) and behavioral (e.g., absolute displacement, temporal

substitution, activity substitution, resource substitution, and direct action) coping mechanisms were identified through this approach (e.g., Miller and McCool's transactional stress model in outdoor recreational settings, 2003).

However, several authors have indicated that single measures may not accurately measure the complexity of recreationists' cognitive and behavioral changes in recreational settings (Arnberger & Haider, 2007). In this regard, I built upon the previous work of Brunson and Shelby (1993), who suggested that future substitution research should include multidimensional indicators for understanding recreationists' resource substitution decisions. They proposed that substitution research should focus on: 1) linking place attachment to resource substitution; 2) understanding the relationship between acceptable substitutes and recreationists' specialization in and commitment to an activity; and 3) integrating research on substitutability and leisure constraints. Additionally, Iso-Ahola (1986) promulgated his substitutability theory by including individuals' psychological motives and rewards for leisure. Last, participants' demographic characteristics (e.g., gender, age, income) have also been associated with recreationists' willingness to substitute (e.g., Ditton & Sutton, 2004; Fedler & Ditton, 2001; Godbey, 1985b). Thus, these research propositions illustrate that to understand why and how recreationists make substitution decisions, various factors must be evaluated in combination. In the following sections, I discuss these four categories of variables (i.e., specialization, place attachment, motivation, and demographic) and their effect on recreationists' substitution decisions.

## **Literature Review**

### *Variables Affecting Willingness to Substitute*

Resource substitution has been identified as a coping mechanism used by recreationists when they encounter unwanted situations (e.g., crowding or conflicts with others). Research has also shown that it can be influenced by an array of social indicators. For example, more-specialized recreationists may have fewer substitutable alternatives (Manfredo & Anderson, 1987). Other work has also shown that the greater the attachment to a favored recreation setting, the less likely the individual is to substitute the setting for another to enjoy the same activity (Williams, Patterson, Roggenbuck, & Watson, 1992). As noted by Iso-Ahola (1986), recreationists' motives are also related to substitutability. For example, Ditton and Sutton (2004) found that anglers' motives related to challenge seeking in the context of angling was negatively associated with willingness to substitute. Last, recreationists' coping responses are likely to be related to selected socio-demographic characteristics. Research has shown that people with different social and economic characteristics are affected differently by constraints (Godbey, 1985b; Searle & Jackson, 1985). For example, it has been reported by several authors that caring for children (e.g., women's perceived ethic of care) constrains women from recreational participation (Harrington, Dawson, & Bolla, 1992; Henderson, Bialeschki, Shaw, & Freysinger, 1996). In addition, poor health and the lack of companions (structural constraints) may reduce the frequency of participation (temporal substitution) by the elderly.

With this in mind, my research will inform the literature on substitution research by modeling anglers' willingness to substitute recreation resources as a function of their level of specialization, place attachment, motivation, and demographic characteristics (Figure 1). This research fills a void in the substitution identified by Walker (2005) who proposed the need to integrate multidimensional social factors to better understand how recreationists cope with constraints. Based on Walker's proposition, I tested the model depicted in Figure 1. Each factor is discussed in greater detail in the following paragraphs.

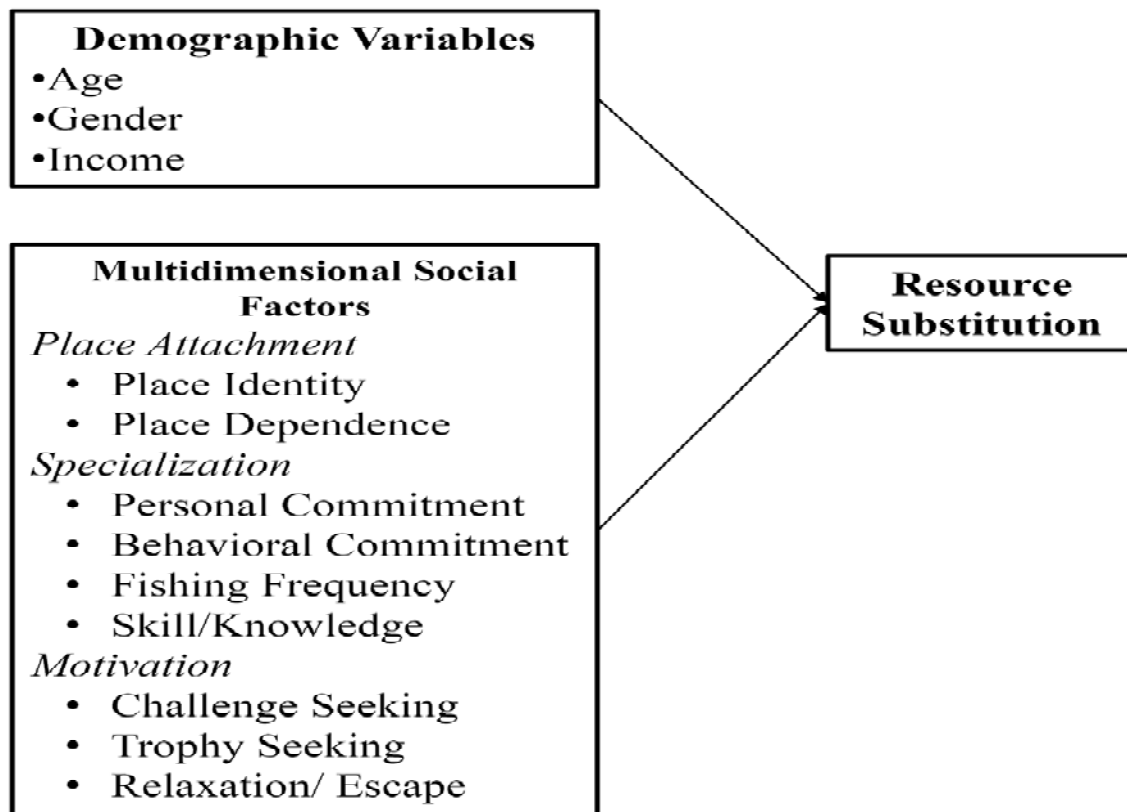


FIGURE 1. Conceptual Model



### *How Does Specialization Affect Resource Substitution?*

*Specialization* has been defined as a continuum of behaviors extending from the general to the particular that reflect differences in personal development and socialization (Bryan, 1977). Both McIntyre and Pigram (1992) and Scott and Shafer (2001) conceptualized specialization in terms of three dimensions: 1) a behavioral component measured by the frequency of participation; 2) a cognitive component measured by recreationists' skill and knowledge; and 3) a psychological component measured by recreationists' commitment to the activity.

With regard to the behavioral dimension, past work has shown that as recreationists' scores on these behavioral indicators increase, typically, so too do their scores on the skill and knowledge and commitment dimension (Scott & Shafer, 2001). In certain types of activities, recreationists may repeatedly use a limited number of specific resources (e.g., high-quality mountain streams) and often become knowledgeable about and bond to these specific places. Consequently, they become reluctant to use alternate settings (Hammitt, et al., 2004). For example, Bricker and Kerstetter (2000) observed that rafters with high levels of activity commitment expressed a greater attachment to the South Fork of the American River in California compared to other sites. This indicates they were less likely to respond to constraints by using resource substitution (i.e., substitute their favorite place for another).

Based on the multidimensional conceptualization of specialization discussed by Scott and Shafer (2002) and McIntyre and Pigram (1992), Oh and Ditton (2006) used the frequency of participation (e.g., total days fished in the past 12 months and total days

fished in saltwater in the past 12 months) to measure the *behavioral dimension* of specialization in their research on red drum anglers in Texas. Frequency of participation has also been reported to increase with level of overall specialization (Salz, Loomis, & Finn, 2001).

For the *commitment dimension*, it has been defined as “the pledging or binding of an individual to behavioral acts which result in some degree of affective attachment to the behavior or to the role associated with the behavior and which produce side bets as a result of that behavior” (Buchanan, 1985, p. 402). Buchanan indicated that as commitment increases, susceptibility to other influences (e.g., participation in a new activity) decreases. He also indicated that commitment may be the glue by which a variety of related research topics can be bound together to provide a more comprehensive understanding of leisure and its influence on human behavior. Personal commitments may include a strong affective attachment and “inner conviction that the activity is worth doing for its own sake” (Scott & Shafer, 2001, p. 329). Personal commitment can also contribute to perceived self-determination owing to the intrinsic rewards people accrue over time. People are more likely to engage in self-determined activities when they perceive them to be personally pleasing and intuitively worthwhile (Lee & Scott, 2006). With regard to behavioral commitment, Scott and Shafer (2001) suggested that it is associated with the “costs” of activity withdrawal as reflected in social ties to the activity (e.g., friends and family) and other costs that bind the participant to the activity (e.g., investment in activity-related equipment). For example, Hunt (2005) indicated that anglers’ choice sets differ according to the constraints they

faced. Hunt and Ditton (2002) also indicated that club membership (behavioral commitment), for example, may be a contributing factor underlying fishing participation. They suggested further that anglers who are more specialized in seeking specific species, using particular tackle and techniques, are more likely to prefer to fish with other specialists. The implication here is that more specialized anglers are more likely to be members of a fishing club than are other specialization subgroups or the entire angler social world.

#### *How Does Place Attachment Affect Resource Substitution?*

Place attachment is conceptualized as the affective bond that binds individuals to the physical environment (Mesch & Manor, 1998; Milligan, 1998). Korpela et al. (2001) indicated that resource users who have strong ties to a place may be reluctant to leave their “favorite” places for other settings. Williams et al. (1992) also found that a willingness to substitute was associated with lower place attachment scores in four wilderness areas.

Previous work has tended to view place attachment as comprising two dimensions, namely, place identity and place dependence (Williams, et al., 1992; Williams & Vaske, 2003). Place identity reflects the emotional aspect of the human–environment relationship (Giuliani & Feldman, 1993; Williams, et al., 1992). Proshansky, Fabian, and Kaminoff (1983) conceptualized *place identity* as representing “memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behavior and experience which relate to the variety and complexity of physical settings that define the

day-to-day existence of every human being” (p. 59). Place dependence reflects recreationists’ perceptions of how well a specific setting satisfies their recreational needs and goals (Stokols & Shumaker, 1981; Williams, et al., 1992). This two-dimensional structure of place attachment was tested by Williams and Vaske (2003), who reported satisfactory model fit, validity, and generalizability. Applying the two components of place attachment within the context of resource substitution, Bricker and Kerstetter (2000) reported that whitewater recreationists were relatively neutral about their dependence on the river, but they were more likely to express identification with the river (i.e., place identity). However, studies of resource substitution that examine how recreationists consider substitutable settings are rare. This paper will explore how an individual’s functional and emotional attachment to a setting influences their resource substitution decisions.

#### *How Does Motivation Affect Resource Substitution?*

Overall motivation was hypothesized to be negatively and significantly associated with substitution by Iso-Ahola (1986). Leisure motives are assumed to be internal psychological factors that impel people to action and that give direction to that action in the form of participation in a specific leisure activity (Hubbard & Mannell, 2001; Mannell & Kleiber, 1997). In the context of outdoor recreation, the most prevalent scales used to measure recreationists’ motivations are the *Recreation Experience Preference* (REP) scales (Driver 1977, 1983). REP scales have provided insight on how motivations affect outdoor recreation preferences (Walker, 2005, p. 203) and have

helped elucidate why people engage in a particular activity (Manfredo, Driver, & Tarrant, 1996). However, multidimensional conceptualizations of motivation using the REP scales often reveal that the salience of the REP scale sub-dimensions vary by activity contexts. Consequently, their effect on recreationists' substitution decisions is also likely to vary by activity. For example, Ditton and Sutton (2004) found that there were no significant associations between activity-general motivation dimensions (e.g., relaxation, escape) and activity substitution. However, challenge seeking (a subdomain of activity-specific motivation) demonstrated significant effects on reducing activity substitution. With a better understanding of angler motivations and how subdimensions of motivation are associated with behavioral choices, resource managers can more easily anticipate anglers' responses to undesired situations (e.g., crowding) when making management decisions and can ensure that the fishing experiences being provided meet the anglers' needs (Fedler & Ditton, 1994).

#### *How Do Demographic Characteristics Affect Resource Substitution?*

Past research has shown that constraint factors associated with income, age, and gender directly affect recreationists' substitution decisions. For example, Fedler and Ditton (2001) observed that anglers with lower incomes might be more sensitive to constraints related to the costs associated with fishing and are less likely to substitute. Research has also shown that age and gender influence how recreationists perceive constraints to their leisure (Fedler & Ditton, 2001; Godbey, 1985a). For example, McGuire, Dottavio, and O'Leary (1987) used nationwide recreation survey data to

identify constraints across the life span. Poor health and lack of companions (e.g., children leaving home, divorce or death of spouse) were the primary barriers for individuals aged 61 to 75 years. Health and safety concerns (e.g., afraid of falling down or of getting lost) were barriers for those aged 75 years or older. Aging populations may adjust or adapt their participation in terms of scheduling, intensity, or even changing activities and/or resources due to their perception of roles (e.g., elderly), poor health, or disabilities. Additionally, the influence of gender on substitution decision making is becoming a salient research topic due to increasing fishing participation rates for females (Ditton & Sutton, 2004; Snepenger & Ditton, 1985). For example, Ditton and Sutton (2004) found that females were less likely to make substitution decisions because they are “relatively new to fishing and are still learning about the constraints they will face” (p. 98). With this in mind, I included three demographic indicators (i.e., age, gender, and income) were included in my hypothesized model.

## **Methods**

The purpose of this paper is to understand the relationships between several factors previously proposed to be related to recreationists’ resource substitution decisions. Data were derived from the 2005 Texas statewide angler survey. Survey procedures followed a slightly modified version of the Total Design Method (TDM) advocated by Dillman in 1978. A stratified random sample of 2004 Texas resident fishing license holders was selected. The samples did not include persons aged 65 and older as they are not required to hold this license. A sample of 10% of the returns was double-checked after data entry

for quality control purposes. The angler survey sample size was 3,554 licensed Texas anglers. Completed surveys were received from 1,205 of the 3,554 license holders. Of this total, 1,136 were usable, for an effective response rate of 40%. A logistic regression (Fisher, 1996) method was used for nonresponse adjustment purposes. The substitution question was asked in the freshwater section only because of specification issues. For example, it is easier to identify a substitutable fishing site (e.g., from Lake Conroe to Lake Livingston) in freshwater than it is in saltwater (from the east of the Gulf of Mexico to the west). Accordingly, only 683 freshwater records were used in the substitution data analysis.

### *Measures*

*Dependent Variable—Resource Substitution.* Substitution behavior was assessed by direct inquiry. A dichotomous YES/NO question was asked of anglers: “*If you could not go fishing where you fish most often, is there another lake or water body that would provide you with the same fishing enjoyment and satisfaction at a similar cost?*” This question was developed based on Shelby and Vaske’s (1991) future substitution suggestions. They indicated that a substitute must provide similar benefit as the original activity or resource; otherwise, it is not a substitute.

*Independent Variables.* Four categories of independent variables (14 measures) were used as predictors of substitution behavior, including recreation specialization,

place attachment, motivation, and demographic characteristics. Table 1 depicts descriptive statistics of all independent variables.

#### 1. Specialization Variables (6 measures)

Variable selection was based on the three-dimensional concept of recreation specialization (Scott & Shafer, 2001). In this study, six measures were used to represent the three dimensions of recreation specialization: a) total fishing days in fresh water for the *behavior dimension* (1 measure); b) self-evaluation skill and knowledge for the *skill and knowledge dimension* (2 measures); and c) whether they owned a boat and whether they were a member of a fishing club or organization for the *behavioral commitment dimension* (2 measures) and two subcommitment questions were averaged for the *personal commitment dimension* (1 measures).

For the *behavioral domain* of specialization, fishing frequency of participation was a sum of the total fishing days of fishing reported in different locations (e.g., farm ponds and stock tanks, lakes or reservoirs from a boat, lakes or reservoirs from shore or piers, rivers and streams from a boat, rivers and streams from shore or piers). For the *skill and knowledge domain*, questions were three-level variables (1= less knowledgeable/skilled; 2= equally knowledgeable/skilled; 3= more knowledgeable/skilled) and respondents were asked as follows: “How do you compare your fishing ability/knowledge to that of other freshwater anglers in general?” For the *commitment domain* of specialization, boat ownership and club membership were dummy coded (scored 1 if Yes and 0 if No). Personal commitment was measured using several items along a 5-point Likert scale



ranging from strongly disagree (1) to strongly agree (5). Scale items were used previously by Kim et al. (1997). Questions were: “*Fishing says a lot about who I am*” and “*I find that a lot of my life is organized around fishing.*” Values for the two variables were averaged to calculate the personal commitment index. Cronbach’s alpha value for this personal commitment scale was .796. Nunnally (1978) suggested that Cronbach’s alpha coefficients equal to or greater than .700 are acceptable.

## 2. Place Attachment Variables (2 measures)

For place attachment, I used Williams and Roggenbuck’s (1989) two-dimensional approach. I used seven items adapted from Williams and Roggenbuck’s original scale. Cronbach’s alpha for these two dimensions were .883 and .803 for place identity and place dependence, respectively.

## 3. Motivation Variables (3 measures)

Motivations for fishing were measured using scale items developed by Driver and Cooksey (Driver, 1977; Driver & Cooksey, 1977) for understanding the major driving force behind anglers’ fishing participation. Anglers were asked to indicate the importance of recreational fishing, ranging from 1 = not at all important to 5 = extremely important, on statements related to the benefits of fishing. Overall motivation was broken down into three specific domains.

In the relaxation/escape domain, Respondents were asked as the following: “*For relaxation*”; “*To get away from the demands of other people*”; and “*To get away from*

*the regular routine*". In the challenge seeking domain, related items were: "*For the experience of the catch*"; "*To develop my skills*"; "*For the challenge or sport*"; and "*To experience adventure and excitement*". Last, in the trophy seeking domain, questions were: "*To test my equipment*"; "*To win a trophy or prize*"; and "*To obtain a trophy fish*". Values for the each domain were averaged to calculate into individual manifest measure. Cronbach's alpha ranged from .710 to .765 among the three independent variables, which indicates an acceptable level of reliability for these three subdimensional indices.

#### 4. Demographic Variables (3 measures)

Demographic variables included in the analysis were age, gender, and household income. Age was measured in years. Gender was dummy coded; scored 1 if Yes (male) and 0 if No (female). Household income was measured by 11 intervals ranging from less than \$10,000 to more than \$100,000.

*TABLE 1*  
*Mean and Standard Deviation of Independent Variables*

| Variable                      | Items   | $\alpha$ | M      | SD     | Min | Max |
|-------------------------------|---|----------|--------|--------|-----|-----|
| <b>SPECIALIZATION</b>         |   |          |        |        |     |     |
| Behavioral Dimension          |   |          |        |        |     |     |
|                               | Total days freshwater fishing in the past 12 months                                       |          | 26.578 | 40.620 | 0   | 280 |
| Skill and Knowledge Dimension |   |          |        |        |     |     |
|                               | How do you compare your fishing knowledge to that of other freshwater anglers in general? |          | 1.857  | .643   | 1   | 3   |
|                               | How do you compare your fishing ability to that of other freshwater anglers in general?   |          | 1.807  | .646   | 1   | 3   |
| Behavioral Commitments        |   |          |        |        |     |     |
|                               | Are you a member of a fishing club or organization?                                       |          | .100   | .300   | 0   | 1   |
|                               | Do you or someone in your household own a powerboat?                                      |          | .567   | .496   | 0   | 1   |
| Personal Commitments          |   | .796     |        |        |     |     |
|                               | I find that a lot of my life is organized around fishing.                                 |          | 2.527  | 1.073  | 1   | 5   |
|                               | Fishing says a lot about who I am.  |          | 3.116  | 1.100  | 1   | 5   |

TABLE 1

*Mean and Standard Deviation of Independent Variables (Cont.)*

| Variable         | Items  | $\alpha$ | M      | SD     | Min | Max |
|------------------|--|----------|--------|--------|-----|-----|
| PLACE ATTACHMENT |  |          |        |        |     |     |
| Place Identity   |  | .883     |        |        |     |     |
|                  | No other waterbody can compare to this one                                       |          | 2.578  | .911   | 1   | 5   |
|                  | I feel this waterbody is a part of me  |          | 2.933  | 1.074  | 1   | 5   |
|                  | This waterbody means a lot to me   |          | 3.645  | .972   | 1   | 5   |
|                  | I am very attached to this waterbody   |          | 3.000  | 1.106  | 1   | 5   |
| Place Dependence |  | .803     |        |        |     |     |
|                  | This is the best place for what I like to do                                     |          | 3.268  | .968   | 1   | 5   |
|                  | I wouldn't substitute any other waterbody for doing the type of things I do here |          | 2.583  | .986   | 1   | 5   |
|                  | Visiting this waterbody says a lot about who I am                                |          | 2.708  | 1.007  | 1   | 5   |
| DEMOGRAPHICS     |  |          |        |        |     |     |
|                  | Age  |          | 46.017 | 12.166 | 18  | 76  |
|                  | Household Income   |          | 6.958  | 3.036  | 1   | 11  |
|                  | Gender   |          | 0.849  | .358   | 0   | 1   |

TABLE 1

*Mean and Standard Deviation of Independent Variables (Cont.)*

| Variable          | Items  | $\alpha$ | M     | SD    | Min | Max |
|-------------------|--|----------|-------|-------|-----|-----|
| MOTIVATION        |  |          |       |       |     |     |
| Challenge seeking |  | .765     |       |       |     |     |
|                   | For the experience of the catch              |          | 4.068 | .914  | 1   | 5   |
|                   | To develop my skills                         |          | 2.911 | 1.175 | 1   | 5   |
|                   | For the challenge or sport                   |          | 3.492 | 1.198 | 1   | 5   |
|                   | To experience adventure and excitement       |          | 3.933 | .960  | 1   | 5   |
| Trophy seeking    |  | .710     |       |       |     |     |
|                   | To test my equipment                         |          | 2.422 | 1.126 | 1   | 5   |
|                   | To win a trophy or prize                     |          | 1.564 | .945  | 1   | 5   |
|                   | To obtain a “trophy” fish                    |          | 2.201 | 1.298 | 1   | 5   |
| Relaxation/Escape |  | .744     |       |       |     |     |
|                   | For relaxation                               |          | 4.312 | .799  | 1   | 5   |
|                   | To get away from the demands of other people |          | 3.778 | 1.217 | 1   | 5   |
|                   | To get away from the regular routine         |          | 4.093 | .927  | 1   | 5   |

### *Data Analysis*

Logistic regression estimates the probability of a certain event occurring. The strength of effects among independent variables can also be compared accordingly. Hamilton (1992) suggested that multivariate analysis builds on bivariate and univariate analyses. Often problems in bivariate analysis can be traced to univariate distributions. Likewise, problems in multivariate analysis often are based on bivariate analysis. I examined the bivariate distributions of all independent variables before conducting multivariate analysis.

First, the normality of distributions was examined using skewness and kurtosis indices. As Yu (2002) suggested, if standardized skewness exceeds 2.0 in either direction or kurtosis is greater than 7.0, this would be a problem in normality of distributions. The total days of freshwater fishing has a larger standard deviation than the mean value. This suggests the variable was probably not normally distributed; it was indeed highly peaked and positively skewed. As suggested in the data transformation literature (Hamilton, 1992), by selecting an appropriate power transformation, it may be able to pull in outliers and make a skewed distribution more symmetrical. Because this variable was substantially positively skewed, natural log transformations were performed (Tabachnick & Fidell, 2001). This procedure improved the analyses by reducing the impact of outliers on the covariance structures. Therefore, the transformation value of total number of fishing days was used instead of the raw values.

Second, after examining every variable with a data diagnostic, logistic regression was used to detect the effects of the independent variables on the odds of an angler

having a substitutable fishing location that would provide the same level of satisfaction and enjoyment with similar cost as the location where they fish most often. The logistic regression model took the following form:

$$\ln \left[ \frac{P}{1-P} \right] = b_0 + b_1 X_1 + \dots + b_p X_p$$

where  $P$  is the probability of having an resource substitution, and  $\ln(P/1 - P)$  is the odds of having a resource substitution. In the above formula,  $b_0$  is the constant of this logistic regression, and  $b_1$  to  $b_p$  indicates the coefficients of 12 independent variables.

Interpretation of the fitted logistic regression model is based on the odds ratio. An odds ratio greater than 1 indicates that the odds of having a substitution possibility is a positive function of the independent variable, whereas an odds ratio less than 1 indicates that the odds of having a substitution possibility is a negative function of the independent variable. Also, percent change in odds ratio is introduced to help better understand the relationship between dependent and independent variables. To test whether the effect of each independent variable was the same for gender and age, all two-way interaction effects involving the other independent variables were included: fishing frequency, skill, knowledge, place identity, place dependence, behavioral commitment, personal commitment, relaxation/escape, challenge seeking, and trophy seeking.

To find the most parsimonious model, the analysis proceeded in a stepwise fashion. First, all nonsignificant main effects were kept in the model irrespective of their level of significance. In addition, all interaction effects were also included. Second, a stepwise

backward selection procedure was followed. Nonsignificant interaction effect was removed one at a time. Third, nonsignificant main effects were then removed followed by the second run. The procedure continued until a model with significant interaction term(s) or only main effects was obtained. Only significant interaction terms and main effect terms not involving in an interaction were discussed in the final discussion.

In logistic regression, odds ratios ( $\Omega$ ) were calculated directly by taking the antilog (i.e.,  $e$  to the power) of the logit coefficients. Odds ratio values are often used comparatively to describe the strength of effects (Hamilton, 1992). They provide another way to interpret coefficients. Percent change in  $\Omega$  is a simpler way to interpret the effect of the 14 independent variables. These “percent” interpretations are based on subtracting the  $\Omega$  from 1 and multiplying the difference by 100, as:

$$\text{Percent change in the odds} = (\Omega - 1) * 100$$

To compare the “effect” of different independent variables on the dependent variable, standardized  $\Omega$  values were used on the  $x$ -variables to detect these effects (Vittinghoff, Glidden, Shiboski, & McCulloch, 2005). Percent change in  $\Omega * (x)$  was derived from subtracting the standardized  $\Omega$  from 1 and multiplying the difference by 100, as:

$$\text{Percent change in } \Omega * (x) = [\Omega * (x) - 1] * 100$$



## Results

### *Descriptive Findings*

Most freshwater anglers (70%) indicated a willingness to substitute another waterbody for that where they currently fish most often. However, about one-third (30%) of freshwater anglers indicated there were no acceptable substitutes for where they now fished most often. The main reason offered for their unwillingness to substitute was that other waterbodies were “too far away” (56%).

### *Model Testing*

Results of the logistic regression model testing both the main and interactive effects among the four categories of independent variables (i.e., place attachment, specialization, motivation and sociodemographic indicators) on respondents’ willingness to substitute freshwater fishing resources in Texas are presented in Table 1. As noted previously, marginalized groups such as low-income individuals, the elderly, and women were more likely than higher-income individuals, younger individuals, and men to perceive leisure constraints. Individuals who perceived greater constraints may have different views on employing a variety of coping mechanisms. Thus, I sought to understand how the selected sociodemographic indicators influenced the effect of other variables on resource substitution. I expected to see that some interactions may weaken (moderate) or strengthen (amplify).

In comparing the effect of different independent variables on the dependent variable, the percent change in standardized odds ratio values indicated that trophy-seeking

motive, gender, level of knowledge, fishing frequency, place identity, level of skill, place dependence, boat ownership, age, and income were the 10 most statistically significant independent variables for resource substitution. In addition, age  $\times$  fishing frequency, age  $\times$  knowledge, male  $\times$  fishing frequency, male  $\times$  place identity, male  $\times$  skill, and male  $\times$  trophy seeking motive were significant interaction terms for resource substitution. The effects of club membership, personal commitment, relaxation/escape, and the challenge-seeking motives did not significantly effect respondents' resource substitution decisions. Only significant two-way interaction terms and main effect terms not involving in an interaction are discussed below.

I also used a specification test to evaluate whether the tested logistic regression model provided an adequate description of the data. Wald test results are represented in Table 2. The statistically significant result for the predictor (label  $\hat{\beta}$ ) indicates that the model provided a reasonable fit to the data. The specification test also includes the square of this substitution prediction (label  $\hat{\beta}^2$ ). The Wald test for inclusion of the later predictor is used to evaluate the hypothesis that the model is adequate—that is, the inclusion of the squared linear predictor should not improve prediction if the original model was adequate (Vittinghoff, et al., 2005). The final results of the Wald test provided strong evidence for the adequacy of the model.

### *Interactive Effects*

I found that six interactions contributed significantly to resource substitution. By checking two-way interactions between selected sociodemographic variables, I observed

the effect of anglers' fishing frequency and level of knowledge on resource substitution decisions was dependent on their age. In addition, I also observed that the effects of fishing frequency, place identity, fishing skill, and trophy seeking on resource substitution differed according by gender (Table 1).

For the specialization dimension related to behavior, I found significant moderating effects of age  $\times$  fishing frequency ( $z = -6.58, p < 0.001$ ) and gender  $\times$  fishing frequency ( $z = -4.35, p < 0.001$ ) on resource substitution. Although the main effect of fishing frequency on resource substitution was positive and significant ( $z = 7.03, p < 0.001$ ), the significant two-way interactions of age and gender both demonstrated decreasing effects on resource substitution. Holding fishing frequency constant, a declining pattern of resource substitution was found with increases in age and gender (Figure 2, 3). This relationship indicates that older people and men were less likely to substitute settings.

With regard to the skill and knowledge dimensions of specialization, the interactions of age  $\times$  knowledge ( $z = -7.71, p < 0.001$ ) and male  $\times$  skill level ( $z = -7.40, p < 0.001$ ) each had a significant effect on resource substitution. For the interaction between age and knowledge on resource substitution, I observed that the moderating effect strengthened angler loyalty to their most visited fishing site; hence, there was less willingness to substitute settings for those most knowledgeable. For the interaction effect between gender and skill on resource substitution, men were less likely to substitute resources compared to women after holding the level of skill constant (Figure 3).

For the dimensions of place attachment, I found a significant two-way interaction effect between gender and place identity ( $z = -8.30, p < 0.000$ ). The interaction indicated

that the latitude of acceptance for men concerning possible substitutes was more narrowly defined than that for women (Figure 3).

For the motivation dimension, I found that gender had a significant moderating effect on the trophy-seeking motive and resource substitution relationship. Holding the trophy-seeking motive constant, a dramatic declining pattern of resource substitution was found in men ( $z = -3.95, p < 0.001$  (Figure 3).

### *Main Effects*

Of the three demographic variables tested, willingness to substitute was negatively related to age, positively related to household income, and greater for females than for males. My findings also illustrated that for freshwater anglers who own a boat (behavior commitment subdimension), other things being equal, and the odds of substitution increase by 10%. The finding illustrate that anglers with boat ownership demonstrated a greater willingness to make a resource substitution decisions.

For the main effects, for every additional increase in knowledge level of freshwater fishing, other things being equal, the odds of substitution decreased by 82%. With regard to anglers' level of skill, for every additional unit increase in their reported fishing ability, other things being equal, the odds of substitution decreased by 33%.

I also found that place identity was a stronger predictor of resource substitution than was place dependence. Furthermore, for every additional increase in the level of place dependence, other things being equal, the odds of resource substitution decreased by 32%. For the place identity dimension, for every additional increase in the level of place

identity, other things being equal, the odds of resource substitution decreased by 51%.

Both place attachment dimensions demonstrated a declining pattern in reducing anglers' willingness to make a resource substitution decision.

### **Discussion**

The purpose of my research is to understand recreationists' resource substitution decisions using multiattribute indicators based on suggestions of future substitution research (e.g., Iso-Ahola, 1986; Brunson & Shelby, 1993; Fedler & Ditton, 2001). In the following sections, I developed several discussion topics for future resource substitution research involving recreation specialization, place attachment, motivation, and anglers' sociodemographic characteristics.

First, my findings revealed that the two subdimensions of specialization (i.e., personal commitment and behavioral commitment) work differently on willingness to make resource substitution decisions. On the one hand, behavioral commitment (i.e., boat ownership) increased respondents' willingness to make resource substitution decisions. Alternately, personal commitment was not a significant predictor of the resource substitution. This result is partially supported by recent research (Sutton & Ditton, 2005) showing that an angler's level of commitment was not a significant predictor of willingness to make a resource substitution decision in terms of species targeted. The finding provided more empirical support for clarifying the effects of personal and behavioral commitment on anglers coping responses at locations where they fished most often.

TABLE 2

*Results of the Logistic Regression Analysis to Test for Significance, Odds Ratios, and Percent Change of Whether Substitution Occurred*

| <b>Substitution<br/>(YES/NO)</b> | <b>Coef.</b> | <b>Std.<br/>Deviation</b> | <b>Std. Error</b> | <b>z</b> | <b><i>p</i> &gt; z</b> | <b>Odds Ratio</b> | <b>Percent<br/>Change in<br/><math>\Omega</math></b> | <b>Percent<br/>Change in<br/><math>\Omega^* (x)</math></b> |
|----------------------------------|--------------|---------------------------|-------------------|----------|------------------------|-------------------|--|--|
| Boat Ownership                   | 0.200        | 0.459                     | 0.056             | 3.55     | 0.000                  | 1.221             | 22%  | 10%  |
| Fishing<br>Frequency             | 0.896        | 0.496                     | 0.128             | 7.03     | 0.000                  | 2.450             | 145%   | 56%  |
| Knowledge                        | -1.444       | 1.173                     | 0.187             | -7.69    | 0.000                  | 0.236             | -76%   | -82%   |
| Skill                            | -0.632       | 0.644                     | 0.141             | -4.48    | 0.000                  | 0.531             | -47%   | -33%   |
| Place Identity                   | -1.100       | 0.647                     | 0.110             | -9.93    | 0.000                  | 0.333             | -67%   | -51%   |
| Place<br>Dependence              | -0.475       | 0.818                     | 0.054             | -8.78    | 0.000                  | 0.622             | -38%   | -32%   |
| Trophy Seeking                   | 0.993        | 0.835                     | 0.118             | 8.39     | 0.000                  | 2.702             | 170%   | 129%   |
| Age                              | -0.041       | 0.939                     | 0.007             | -5.37    | 0.000                  | 0.960             | -4%  | -4%  |
| Male                             | -2.501       | 12.167                    | 0.358             | -6.99    | 0.000                  | 0.082             | -92%   | -100%  |
| Income                           | 0.037        | 0.358                     | 0.010             | 3.93     | 0.000                  | 1.038             | 4%   | 1%   |
| Age ×<br>Frequency               | 0.855        | 3.037                     | 0.129             | 6.58     | 0.000                  | 2.351             | 135%   |  |
| Age ×<br>Knowledge               | -1.486       | 63.670                    | 0.193             | -7.71    | 0.000                  | 0.226             | -77%   |  |
| Male ×<br>Frequency              | -1.605       | 39.159                    | 0.369             | -4.35    | 0.000                  | 0.201             | -80%   |  |
| Male × Identity                  | -3.601       | 1.435                     | 0.434             | -8.3     | 0.000                  | 0.027             | -97%   |  |
| Male × Skill                     | -3.134       | 1.283                     | 0.423             | -7.4     | 0.000                  | 0.043             | -96%   |  |
| Male × Trophy                    | -1.507       | 0.883                     | 0.382             | -3.95    | 0.000                  | 0.221             | -78%   |  |

TABLE 3

*Wald Test for Logistic Model of Resource Substitution Prediction*

| Substitution | Coef. | Std. Err. | z     | P>z   | [95% Conf. Interval] |       |
|--------------|-------|-----------|-------|-------|----------------------|-------|
| _hat         | 1.165 | .064      | 18.08 | 0.000 | 1.038                | 1.291 |
| _hatsq       | -.111 | .028      | -4.02 | 0.000 | -.165                | -.057 |
| _cons        | -.016 | .047      | -0.35 | 0.728 | -.109                | .076  |

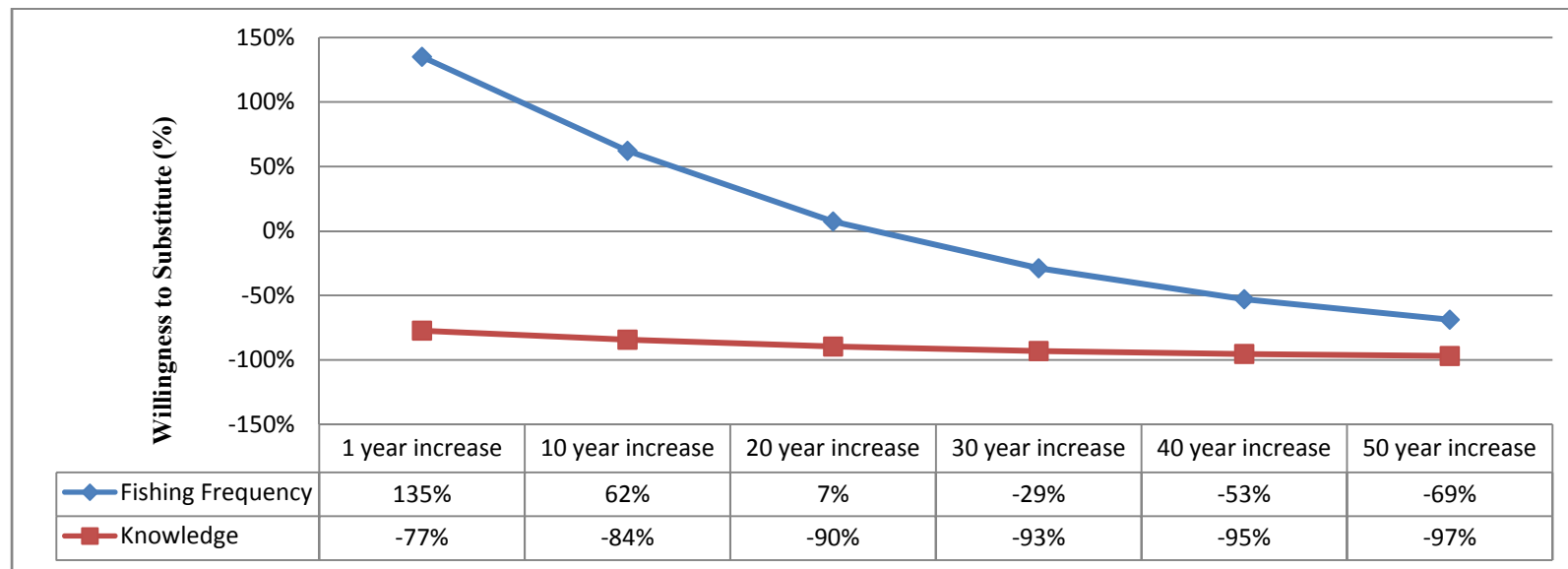
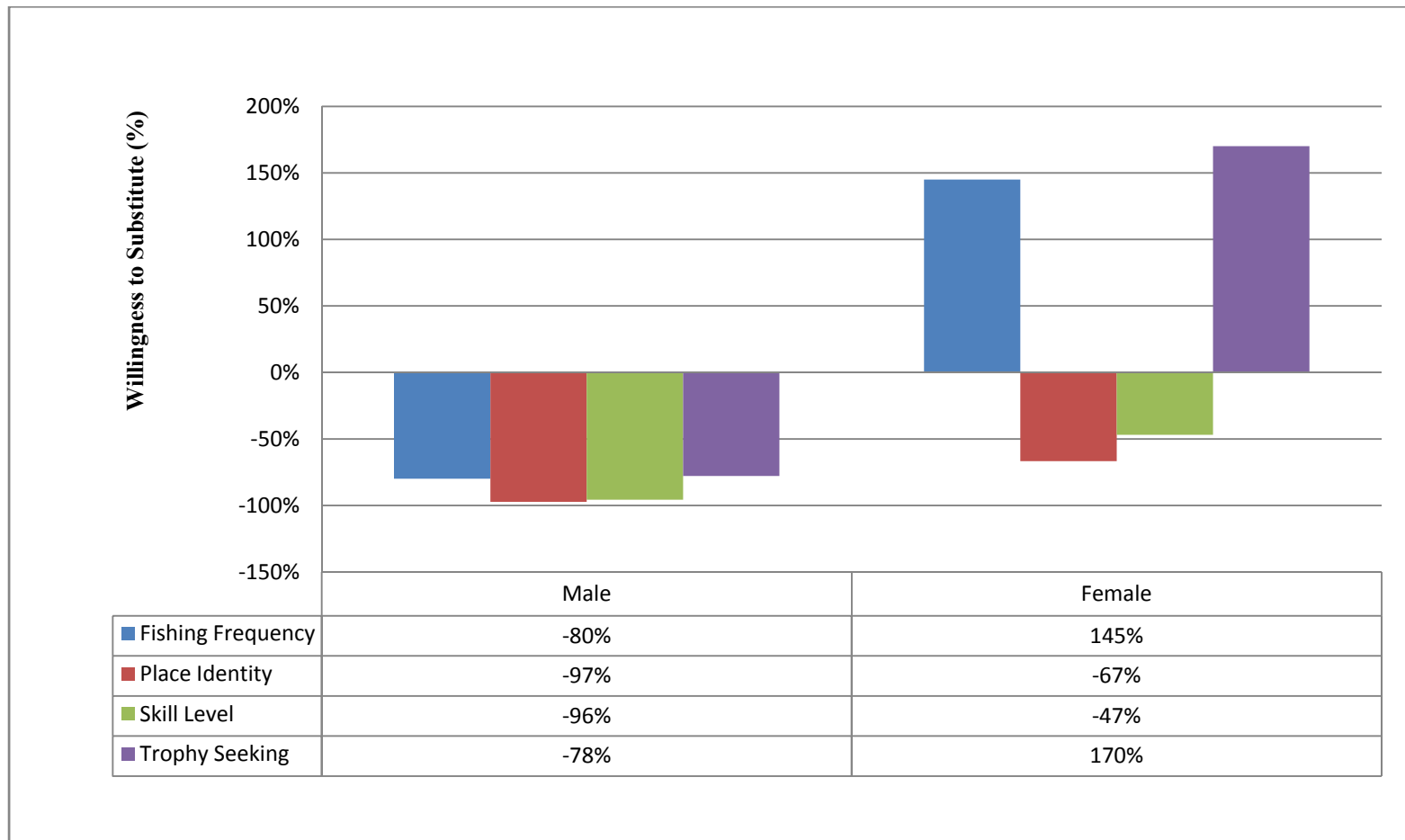


FIGURE 2. Moderating Effects of Age  $\times$  Fishing Frequency and Male  $\times$  Fishing Frequency on Resource Substitution by Percent



*FIGURE 3.* Moderating Effects of Gender  $\times$  Fishing Frequency; Gender  $\times$  Place Identity; Gender  $\times$  Skill Level; and Gender  $\times$  Trophy Seeking on Resource Substitution by Percent



The results also partially affirm suggestions by Buchanan (1985), Shamir (1988), and Lee and Scott (2006) that behavioral commitments, rather than personal commitments, are more likely to contribute to a perception of diminished self-determination. For example, anglers who purchased a powerboat have several “side bets” or investments that contribute to maintaining consistent recreation behavior. These side bet investments indicate financial and emotional commitment. Once they invested significant amounts of money and time, they were likely to fish more often than their counterparts and to take trips to different places with their families or other club members. Boat ownership, for example, not only augments their choice to stay involved in fishing but also increases their ability to fish in different water bodies. In light of previous research, findings from my investigation illustrate that anglers who lived in a household with powerboat ownership have a greater willingness to make resource substitution decisions. Contrarily, those in households without a boat were less willing to make substitution decisions. These findings illustrate that multidimensional conceptualization of commitment provides a more nuanced understanding of the construct and its effect of recreationists’ resource substitution decisions.

With regard to the behavioral dimension of specialization (i.e., fishing frequency), frequency of participation in an activity (e.g., total days fished in the last 12 months) is often used as one the indicators of recreationsist’ experience use history (EUH) (Schreyer, Lime, & William, 1984). My research findings offer support for McFarlane, Boxall, and Watson’s (1998) research of wilderness users’ at Nopiming Provincial Park in Manitoba, Canada. They found that, as individuals gain experience with a specific

setting or activity, experienced constituents were more likely to choose different settings to carry out their activities. These findings are consistent with McFarlane et al.'s observations illustrating that freshwater anglers with high past use were more likely to have built a repertoire of preferred fishing holes and, hence, were more likely to experience a variety of benefits from fishing. Since the behavioral component (fishing frequency) and one of the psychological components (behavioral commitment) of specialization both contributed to a greater willingness to substitute, the simplistic and easy-to-apply statement of “*more-specialized individuals may have fewer substitutable alternatives*” may not reflect the uniqueness specialization construct.

With regard to the skill and knowledge dimension of specialization, my results also offer support for Shelby and Vaske's (1991) resource substitution study of salmon anglers in New Zealand. They found that few salmon anglers were willing to substitute their fishing locations due to the uniqueness of specific species and fishing environments. For skillful and knowledgeable salmon anglers, they had a detailed understanding of species habitat, spawning season, lifecycle, migration pattern, and even specific baits, tackle, lures, and line. This cognitive complexity contributed to their unwillingness to substitute setting. During the process of developing skill and acquiring necessary knowledge of fishing, anglers become psychologically attached to particular fishing locations or species, and are less willingness to accept potential substitute sites.

These findings also illustrated that place dependence and place identity were effective predictors of resource substitution. Furthermore, the results were consistent with Bricker and Kerstetter's (2000) findings illustrating that recreationists' were more

likely to score highest on place identity compared to place dependence. Based on the percent change in standardized odds ratio values for these two dimensions, I observed that place identity had a more important role for predicting respondents' resource substitution decisions. Results in this study also correspond to those reported by Kyle, Graefe, Manning, and Bacon's (2004) who examined hikers' perceptions of setting density along the Appalachian Trail. They found that place identity was a stronger predictor of trail users' perception of setting density than was place dependence. In my results, this strong emotional bond ties freshwater anglers to their most frequently visited fishing site and results in less willingness to substitute. In addition, gender also influenced anglers' place identification with the setting. Men were more likely to identify with their favorite fishing site and less likely to fish in other waterbodies. My research findings further confirmed Virden and Walker's (1999) notion that "*gender does influence at least some affective meanings attached to a forest environment and the environmental settings that are preferred for outdoor recreation*" (p. 232).

With regard to the place dependence, I examined a generic "fishing site" where anglers fished most often in the past 12 months rather than inquiring about a specific recreation setting. The place where they fished most often (e.g., a lake close to home) may not provide the best fishing experience and therefore may not be the respondent's favorite "fishing hole." However, anglers may develop an ongoing relationship (dependent to the place due to frequent visitation) with the location where they fish most often and be less willing to make a resource substitution decision. Thus, both a functional approach to place dependence and an emotional approach to place identity

measurements are strongly suggested in future research in exploring resource users' substitution decision.

Third, my research results were partial in agreement with the results of a study conducted by Ditton and Sutton (2004). In both my work and Ditton and Sutton's, findings illustrated that activity-general motives (e.g., relaxation and escape) did not play a role in substitution decision making. However, results for challenge-seeking and trophy-seeking motives differed between these freshwater and saltwater studies. In my investigation of freshwater anglers, trophy-seeking motives were the only significant indicators. However, these findings should be interpreted with caution. While the results presented herein emerge from an analysis of the general angler population, it is not known how the trophy-seeking motive may differ by specific social demographic variables (e.g., gender, age, ethnicity, or social groups). For example, the effect of trophy-seeking motive on resource substitution differed between men and women. Anderson, Ditton and Hunt (2007) also suggested that the attitude toward "catching large/trophy fish" would be totally different when fishing with friends (for the sake of competition to catch bigger fish) than when fishing with family. In future substitution research, interaction effects between motivation and sociodemographic indicators should be included.

Last, results from my research supported previous substitution research illustrating that sociodemographic indicators play an important role for understanding recreationists' resource substitution decisions. For example, Sutton and Ditton (2005) found that age and education contributed significantly to their sample's willingness to substitute other

species for their most preferred species. In my research results, I found that other demographic variables (gender and income) were highly related to resource substitution. Also, anglers with greater income were less constrained in leisure activities and were expected to be more willing to make a substitution decisions (Fedler & Ditton, 2001). Finally, my result for gender's effect on resource substitution decisions was consistent with Sutton and Ditton's (2005) finding that female anglers were more likely than males to report acceptable substitutes for their most preferred species. Based on previous work that shows females to be more constrained in their leisure than men and an increasing trend toward participation in fishing by women, I was confident with the result that women are more likely to make a resource substitution decision than men.

**CHAPTER III**  
**COPING WITH CONSTRAINTS:**  
**AN INVESTIGATION OF ACTIVE RECREATIONAL BOATERS**

**Introduction**

Leisure constraints research is well established as a recognizable and distinct sub-field within leisure studies (Jackson, 2005). To date, however, there have been few attempts to study constraints within the context of outdoor recreation (Walker, 2005). Past outdoor recreation research has noted several factors negatively impacting recreationists' outdoor recreation experiences but these investigations have not been framed within the context of existing constraints frameworks (e.g., Crawford, Jackson & Godbey, 1991). Data collected from outdoor recreationists has illustrated that many factors noted as negatively impacting recreationists' experiences share some similarity to constraints studied in other leisure contexts. Extant differences illustrate that outdoor recreationists tend to be more constrained by time, trip costs, geographic accessibility, and spatial variations (i.e., how and why leisure constraints vary from place to place) (Jackson, 1994b; Walker, 2005).

However, these global (e.g., time, money, lack of skill) and situational (e.g., crowding, poor facilities, or environmental conditions) constraints only explain how these factors account for nonparticipation. That is, the focus has been on factors that deny access to the experience. Research has illustrated that constraints do not always prevent or reduce participation (Scott, 1991; Shaw, et al., 1991). This work has shown

that recreationists often negotiate constraints and maintain at least some form of participation. For example, Shaw et al. (1991) and Crompton and Kim (2004) observed that an individual with high levels of self-reported constraints often maintain higher levels of participation than those indicating fewer constraints. Thus, leisure constraints should not be viewed as necessarily insurmountable obstacles (Jackson, Crawford, & Godbey, 1993). People may negotiate constraints by applying an array of coping mechanisms.

In 1991, Crawford et al. proposed that leisure participation is heavily dependent on negotiating a hierarchy of intrapersonal, interpersonal, and structural leisure constraints. First, intrapersonal constraints are related to individual psychological states that influence leisure preference (e.g., stress, anxiety, and personality). Second, interpersonal constraints focus on the interaction between people (e.g., conflicts between canoeists and motorboaters). Finally, structural constraints involve intervening factors between leisure preferences and participation (e.g., financial limitation, accessibility). The effects of these constraints are hierarchically aligned such that individual level constraints (intrapersonal) must first be negotiated before people encounter interpersonal constraints and then structural factors. Beyond these three types of constraints, Crawford et al. also indicated that the constraints model is also relevant for active participants. They suggested that “the factors that create constraints might continue to have relevance even after an individual takes up participation in a given activity” (p. 315). That is, the three types of constraining factors may directly influence subsequent aspects of leisure engagement for a person who is already participating. Negotiation of constraints is

seldom absolute. People may negotiate constraints by applying an array of coping mechanisms.

In the context of outdoor recreation, coping is conceptualized as a form of negotiation. Studies have shown that recreationists employ a variety of cognitive and behavioral coping strategies to negotiate constraints and maintain leisure satisfaction (Graefe, Vaske, & Kuss, 1984; Kuentzel & Heberlein, 1992). For example, in the context of recreational fishing, Sutton and Ditton (2005) observed that resource substitution (i.e., substitution of one saltwater fishing location along the coast for another) was commonly used strategy by anglers in response to biologically (e.g., red tides, or water pollution) or managerially (e.g., new rules and regulations, or restrictions of access) imposed constraints. Also, in Hammitt and Patterson's (1991) study of wilderness backpackers, they observed that their respondents utilized displacement (e.g., camp out of sight of other groups or avoid trails with popular vistas) to minimize encounters with other visitors. Finally, in the context of whitewater rafting, Shelby, Bregenzer, and Johnson (1988) observed that some whitewater boaters had refined their expectation ("product shift") for encounters with other boaters to maintain their satisfaction on the Rogue River in Oregon.

In sum, in the context of outdoor recreation, there has been little effort made by researchers to integrate conceptual frameworks such as those developed by Jackson, Crawford and colleagues (1991) with the existing outdoor recreation literature that has examined the factors that impact outdoor recreationists' experiences. Also, contemporary constraints research has tended to focus on issues pre-experience; i.e., not



the factors present within the setting during the experience. These onsite issues have the potential to negatively impact recreationists' experience in ways that may limit engagement both during the event and for future participation. This research attempts to fill this void by adopting a constraints-negotiation framework for understanding the experience of constraints within an outdoor recreation setting.

## **Literature Review**

### *Leisure Constraints and Negotiation*

The history of barriers to leisure or leisure constraints research can be traced back to the early 1960s when the first Outdoor Recreation Resource Review Commission (ORRRC) reports were published (Crawford, et al., 1991). Most formal research began in the 1980s. In early constraints research, understanding recreationists' participation and non-participation was the main concern. Researchers have focused on identifying factors which underlie the preference for an activity and participation (Crawford & Godbey, 1987). Romsa and Hoffman (1980) categorized four sets of factors for nonparticipation within different segments of society (e.g., above average or lower socioeconomic groups). These refer to a lack of interest, time, facilities, and finances. Jackson (1983) also examined fifteen activity-specific barriers to participation in his Alberta Recreation and Parks study. Jackson (1988) later identified more than one hundred constraints in an extensive review of the constraints literature. Work and family commitments, money, time, access to facilities, physical disabilities, and a lack of

partners were identified as the most prevalent reasons that prevent people from participating in a desired activity.

In an effort to provide more benefits to recreation service agencies, researchers have conceptualized constraints in a variety of ways. For example, Francken and Van Raij (1981) differentiated constraints in terms of “*internal*” (e.g., personal capability, knowledge, interests) and “*external*” (e.g., lack of time, money, or geographic distances) dimensions. Boothby, Tungatt, and Townsend (1981) identified “*personal*” (e.g., interest and physical ability) and “*social*” (e.g., social networks, time, cost) constraints. Henderson and Stalnaker (1988) identified “*intervening*” (those barriers which occur related specifically to the recreation opportunities) and “*antecedent*” (attitudes associated with an a priori recreation situation) constraints. Currently, the most prominent typology of leisure constraints was developed by Crawford and Godbey (1987) and Crawford, Jackson, and Godbey (1991) and consists of the hierarchy of three dimensions that discussed previously; intrapersonal, interpersonal and structural constraints.

People often do not react passively to constraints by simply ceasing their participation. The constraints-nonparticipation relationship was criticized in the mid-to-late 1980s for its insufficient explanation of recreation participation. Jackson (1988) argued that it only explains the “negative” aspects of leisure behavior, such as why people do not participate, or why they cease participating. People may negotiate through constraints and, thus, succeed in initiating or continuing leisure participation, albeit in a way that may differ from how they would participate if constraints were absent (Crawford, et al., 1991; Jackson, et al., 1993). Jackson et al. (1993) suggested that the

type of negotiation strategy adopted by an individual would depend partly, if not entirely, on the problem encountered. These negotiation strategies could be either cognitive (a reduction of cognitive dissonance), or behavioral (an observable change in behavior) (Kuentzel & Heberlein, 1992). The cognitive/behavioral dichotomy was also used by Jackson and Rucks (1995) in their exploratory study of 7-12 graders in Edmonton, Canada where they classified 90 constraints negotiation strategies. Henderson, Bedini, Hecht, and Schuler (1995) also developed a constraint negotiation typology consisting of two categories (achievers and attempters) of women with physical disabilities which also corresponded to the above cognitive/behavioral dichotomous distinction.

#### *Coping as a Constraint Negotiation Response*

Several researchers have indicated that concepts related to “coping” reported in the outdoor recreation literature share conceptual similarity with constraints negotiation (Iwasaki & Schneider, 2003; Schneider & Stanis, 2007). In the following section, similarities between these two concepts are discussed.

Lazarus and Folkman (1984) defined coping as a process through which the person manages the demand of the problematic person-environment relationship. They categorized ways of coping as emotion-focused and problem-focused. In general, emotion-focused coping is a cognitive process directed at “lessening emotional distress and includes strategies such as avoidance, minimization, distancing, selective attention, positive comparisons, and wresting positive value from negative events” (Lazarus & Folkman, 1984, p. 150). In the outdoor recreation research, product shift and

rationalization have been identified as emotional coping responses (Heberlein & Shelby, 1977; Johnson & Dawson, 2004; Schneider & Hammitt, 1995; Shelby, et al., 1988).

Product shift involves a “change in the definition of the experience and standards or the importance of characteristics of that experience”. For example, in Shindler and Shelby’s (1995) research, they found that some boaters had redefined their expectations for a river trip to maintain their satisfaction while boating on the Rogue River in Oregon. There is limited evidence documenting product shift due to the inherent difficulty of measuring such a cognitive change that may have been made subconsciously or used in conjunction with other coping mechanisms (Johnson & Dawson, 2004; Shelby, et al., 1988).

Alternately, rationalization is a common psychological concept which is rooted in the theory of cognitive dissonance developed by Festinger (1957) and his associates. The concept of rationalization implies that “people tend to order their thoughts in ways that reduce inconsistencies and associated stress” (Manning, 1999a, p. 98). In Heberlein and Shelby’s (1977) research in Grand Canyon National Park, for example, visitors who voluntarily selected the activity and invested a certain amount of time and money tended to evaluate their boating experience positively and rationalized negative experiences to maintain their enjoyment. Problem-focused forms of coping reflect “objective, analytic processes such as generating alternative solutions, and direct action” (Lazarus & Folkman, 1984, p. 152). In outdoor recreation research, problem-focused strategies are behavioral responses in which individuals take direct action such as managing the environment, substitution (e.g., temporal, resource, and activity) or displacement (Schneider & Stanis, 2007). In past work, researchers have used different terms for

describing similar concepts. Accordingly, place research has been criticized for the proliferation of different terms and the vagueness of their definitions (Devine-Wright & Lyons, 1997). With regard to the substitution literature in outdoor recreation, Shelby and Vaske (1991) developed a typology of substitution alternatives derived from direct-question methods that consisted of temporal, resource, and activity substitutions as potential alternatives used by recreationists who encountered negative experiences. Brunson and Shelby (1993) also defined substitutability as “the interchangeability of recreation experiences such that acceptably equivalent outcomes can be achieved by varying one or more of the following: the timing of the experience, the means of gaining access, the setting, and activity (p.69)”.

In the crowding literature which has focused on recreationists’ negative and subjective evaluation of use level, “displacement” has elements that are similar to the definition of substitution. For example, recreationists may alter their patterns of recreation activity, including spatial or temporal changes, to avoid crowded settings (Anderson & Brown, 1984; Robertson & Regula, 1994). Anderson and Brown (1984) defined displacement as “the outcome of a decision to change behavior caused by adverse changes in the recreation environment (p. 61)”. The distinction between the displacement and substitution is that displacement is the response to perceived negative conditions, both physical and social, whereas substitutability emphasizes the inherently attractive nature of continuing leisure engagement using acceptable substitutes.

For better understand how recreationists cope with constraints, Miller and McCool (2003) developed a coping framework consisting of two dimensions: (a)

problem-focused coping and (b) emotion-focused coping. Problem focused coping was comprised of elements related to temporal substitution, resource substitution, activity substitution, absolute displacement, and direct action. Alternately, emotion-focused coping consisted of rationalization and product shift.

There is considerable literature that has examined how outdoor recreationists deal with negative setting elements during their recreation experience that has drawn from Lazarus and Folkman's (1984) stress-coping framework. The framework hypothesized that stressful situations result in a mediating appraisal process. During the appraisal process, the individual determines which coping options are available and which are likely to be successful in addressing the situation. In the context of outdoor recreation, Schneider and Hammitt's (1995) introduced a stress-response framework for understanding outdoor recreation conflicts; Schuster et al.'s (2003) stress-coping process in the Shining Rock Wilderness Area in North Carolina; Miller and McCool's (2003) coping with stress research in Glacier National Park; and Wang's (2008) crowding coping study at Yungmingshan National Park in Taiwan. Prior to these studies, constraint negotiation and coping research were two distinct, non-related streams of research until their conceptual similarities were discussed by Iwasaki and Schneider (2003) and Schneider and Stanis's (2007). Iwasaki and Schneider (2003) suggested that the stress-coping framework can be potentially integrated with constraint negotiation research. Iwasaki, Schneider and colleagues stated that leisure constraints are considered elements of stress, where constraint negotiation appears to share commonalities with ways of coping with stress. Samdahl (2007) and Walker (2007) also agreed that the

stress-coping approach could shed light on contemporary constraints research and serve as a device to extend our understanding leisure constraints-negotiation relationships.

Samdahl and Walker did not acknowledge that coping conceptualizations offer an alternative model of the “well-established” leisure constraints models but, rather, agreed that the framework helps to explain particular aspects of constraints. Since the coping literature has primarily dealt with particular intervening elements (e.g., crowding and conflicts) for aspects of leisure engagement in outdoor recreation, the proposed research can extend our understanding of constraints negotiation by integrating an understanding of coping mechanisms into leisure constraints-negotiation models.

#### *Constraints in the Context of Recreational Boating*

In the context of recreational boating, “antecedent” constraints (e.g., time, money, physical disability, and family commitments) are not the main reasons constraining participation for those who are already participating. Past research has shown that most constraints influence people’s *subsequent* leisure engagement and are tied to onsite and situational-related factors (Schneider & Stanis, 2007). These situational factors tend to be manageable and their identification and understanding are important to the recreation service agencies. Goodale and Ditton (1973) indicated water quality (unpleasant odor and dead fish) was the most cited troublesome situation encountered by recreational users in Green Bay, Wisconsin. Glover, Lane, and Wang’s (1995) research in Beaufort County, North Carolina, showed that the prevalence and amount of alcohol use while boating were significantly associated with the type of activity participation. Also,

reckless operation of watercraft, use of alcohol or drugs, and issues associated with the safe use of jet skis have been reported as the most common at-risk behaviors which all lead to decreased participation (Responsive Management, 2000). In Shelby et al.'s (1988) study in Rogue River, they found evidence that recreationists moved to new areas (resource substitution), or made cognitive adjustments during the experience (product shift) when the number of people seen on the river exceeded their expectations (perceived crowding).

Thus, using Crawford et al.'s conceptualization of leisure constraints for active recreationists, the above-noted situational constraints can be categorized into intrapersonal, interpersonal, and structural classifications. In this context, *intrapersonal constraints* in recreational boating involve boaters' psychological states and attributes that affect preference such as expectations of use level, perceptions of risk and feelings of safety. *Interpersonal constraints* result from interactions or relationships between individuals. For example, canoeists may perceive motoboaters behaviors (e.g., reckless operations, engine noises, wakes) as problematic (Adelman, Heberlein, & Bonnicksen, 1982). Last, given that *structural constraints* are structural inhibitors of the achievement of leisure goals, issues tied to use density on the lake/ surrounding area (number of boats and/or encounters), or water quality could be considered structural factors.

In sum, previous research has examined leisure constraints, negotiation, and coping mechanisms in a variety of contexts. However, there is still a lack of a clear understanding of how, and to what extent these concepts can be integrated based on constraints negotiation conceptualizations as Iwasaki and Schneider (2003) and



Schneider and Stanis (2007) have suggested. No empirical evidence is currently available illustrating the relationship between constraints and coping strategies. This paper seeks to address this gap in knowledge by examining constraints-coping relationships among active recreational boaters.

#### *Testing a Constraints-Coping Model*

Based on the conceptual framework described previously, my model development was structured on conceptualizations of the leisure constraints-negotiation processes. My constraints-coping model depicted in Figure 4, suggests that each dimension of constraints will positively predict each dimension of coping. Thus, it is hypothesized that there will be a positive and significant association between three types of onsite constraints and two dimensional coping mechanisms.

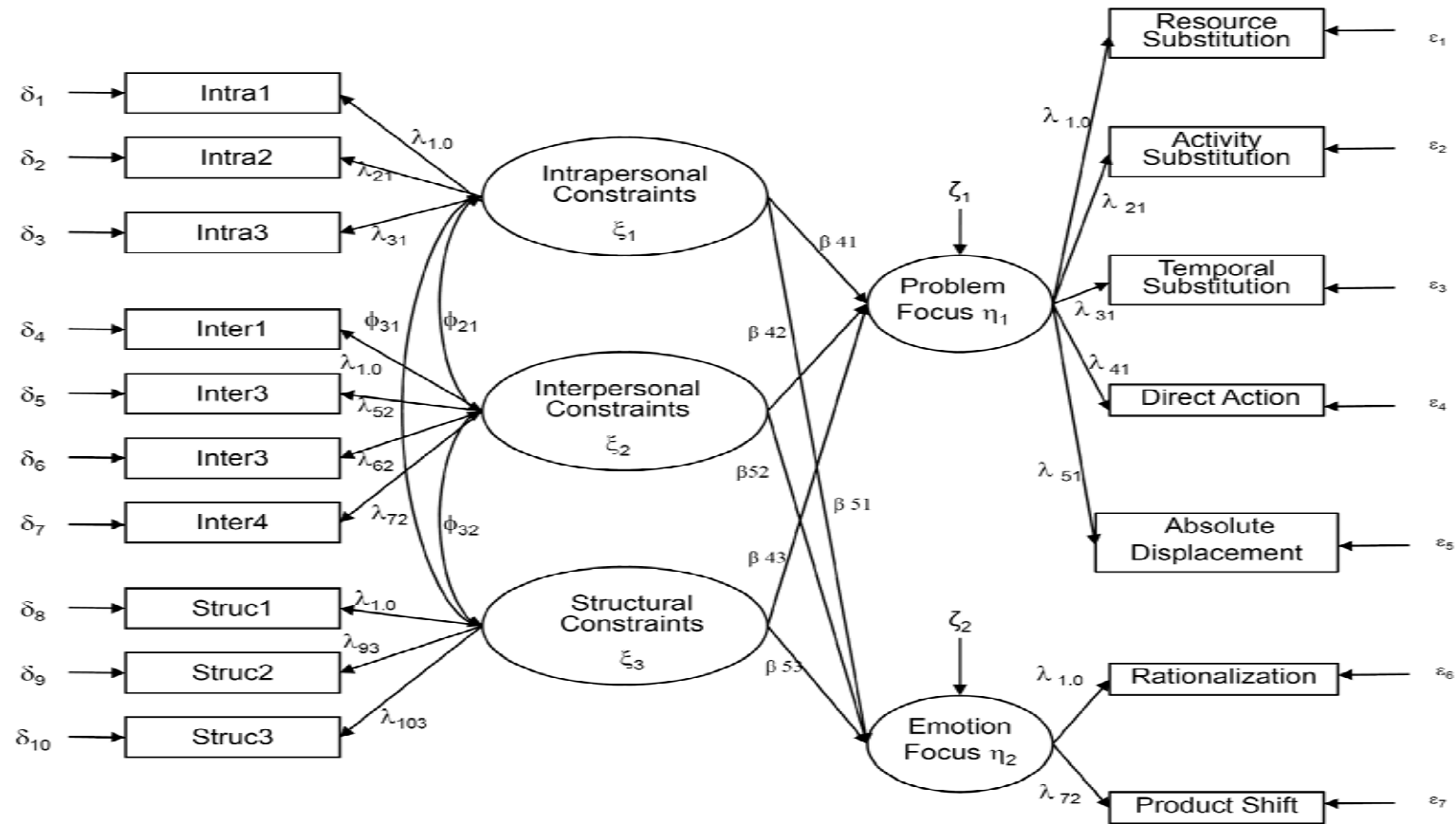


FIGURE 4. Hypothesized Leisure Constraints- Coping Model

## **Methodology**

### *Settings*

With regard to the characteristics of research area, Lake Austin is located downstream of Mansfield Dam on Lake Travis and situated within the Austin metropolitan area. The lake is 1,830 acres at normal pool, is 22 miles long and is used for flood control, electrical power generation, and recreation. Because of its accessibility from the downtown Austin area, Lake Austin attracts a variety of recreationists ranging from kayakers through wakeboarders. Lake Travis (18,929 acres at normal pool) is a reservoir formed by the construction of Mansfield Dam and stretches 64 miles. Because of its size and large parks situated on its shorelines, the lake serves as the primary boating choice in the Austin area.

### *Sampling*

My data were collected from two user groups: shoreline property owners and public boat ramp users, at Lake Austin and Lake Travis. A modified Dillman (2000) mixed-mode survey method was used. I used presurvey letter to contact respondents and invite them to respond to internet survey. Returned usable surveys were received from 1,181 of the 2,625 shoreline property owners and ramp users, resulting in an overall effective response rate of 45.0%. For the shoreline property owners, postal addresses of residents residing around Lake Travis and Lake Austin were extracted from the 2007 Real Estate Property data (Travis and Burnet counties). Arc/Info Geographic Information Systems (GIS) software was used to identify tax assessors' property parcels

that were lots containing single/multiple family dwellings adjacent to the lakes. GIS shape files with attribute tables including property ID, owner names, addresses, city, state, zip, and state property tax board code were derived from the Central Appraisal District of the two counties. A total of 2,478 shoreline property parcels were extracted from the database (1,500 from Lake Travis and 978 from Lake Austin). Selected shoreline property owners were sent a presurvey letter with an access pin code to invite them to respond to the Internet survey. One week later, selected non-respondents were sent a mailback survey instrument, which contained a cover letter explaining the purpose of the study, the paper questionnaire, and a postage-paid self-addressed return envelope. Two weeks following this mailing, a reminder/thank you postcard was sent. Four weeks later, a second survey packet containing another cover letter, questionnaire, and self-addressed return envelope was sent to all non-respondents. A final survey pack was sent in early January 2009 and cutoff date was March 1. Completed surveys were received from 1,043 of the 2,478 lakefront property owners. There were 115 nondeliverable addresses and 42 returned nonusable addresses (blank questionnaires and refusals). Fifty-nine respondents were also screened out from the data analysis process if they did not participate boating in the past 12 months; a total of 984 records (43.5% effective response rate) were used in the analysis.

For the ramp user group, onsite interviews were used to collect the names and addresses of ramp users between May 25, 2009, and September 1, 2009. Twenty-eight sampling days were selected to implement exit interviews of boaters using Lakes Travis and Austin. Sampling occurred at both public and private boat ramps. A total of eight

trained survey research personnel conducted the onsite interviews at the two lakes. Surveys were conducted with groups as they exited the lake. Depending on the use level at the site, every  $n$ th group exiting was approached to participate in a brief onsite interview. For example, for the remote sites with low use, every group exiting the lake was approached. For the busier sites, every third group was approached. The person with the most recent birthday was requested to participate in the study (only respondents over the age of 18 were eligible to participate). A total of 519 boaters were sampled onsite who agreed to provide their name and address and they were sent a mail-back questionnaire using the above protocol outlined by Dillman (2000). There were 125 nondeliverable addresses and five returned unusable addresses (blank questionnaires and refusals). Nineteen respondents were also screened out from the data analysis process if they did not participate boating in the past 12 months; a total of 197 records (53.2% effective response rate) were used in the analysis.

The data presented in Table 3 illustrates that the majority of respondents were somewhat experienced recreational boating participants (average years of boating = 28.8). Overall, the sample was relatively well educated. Most indicated having, at the minimum, some post high school education (94.5%). There was little racial variation across the sample (93.2% white). Overall, the respondents' household income could be considered high with almost three quarters of the sample (76.8%) earning \$100,000 or more.

*TABLE 4*  
*Sample Demographics*

| <b>Characteristics</b>                        | <b>(N=1181)</b> |
|---|-----------------|
| <b>Years Boating (M, S.D.)</b>                | 28.8, 15.7      |
| <b>Education (%)</b>                          |                 |
| 9 <sup>th</sup> to 11 <sup>th</sup> grade     | 0.2             |
| 12 <sup>th</sup> grade (high school graduate) | 3.3             |
| 13-15 years (some college)                    | 18.8            |
| 16 years (college graduate)                   | 31.3            |
| 17+ years (some graduate school)              | 11.3            |
| Masters, Doctoral, or Professional Degree     | 35.1            |
| <b>Household Income (%)</b>                   |                 |
| Less than \$25,000                            | 0.6             |
| \$25,000 - \$49,999                           | 3.7             |
| \$50,000-\$74,999                             | 8.3             |
| \$75,000-\$99,999                             | 10.7            |
| \$100,000-\$149,999                           | 20.3            |
| \$150,000-\$199,999                           | 14.1            |
| \$200,000-\$249,999                           | 9.2             |
| \$250,000-\$299,999                           | 8.6             |
| \$300,000 or more                             | 24.6            |
| <b>Race/Ethnicity (%)</b>                     |                 |
| Native American or Alaskan Native             | 1.8             |
| Asian or Pacific Islander                     | 0.5             |
| African American                              | 0.0             |
| Hispanic                                      | 1.9             |
| White, not Hispanic                           | 93.2            |
| Other   | 2.3             |

### *Measures*

The questionnaire used for data collection was intended to measure two major constructs: leisure constraints and coping mechanisms (see Table 4). For constraints, respondents were first asked to respond to 10 items used to operationalize constraints to the continuing participation in boating and were based on an preliminary onsite interviews in 2007 (Kyle, et al., 2008) and previous constraints and boating-related studies (Nyaupane & Andereck, 2008; Tseng, et al., 2009). Detail item descriptions are presented in Table 4. The measures included three items for intrapersonal constraints (perception of risk, feelings of safety, and expectations to use level), four items for interpersonal constraints (engine noise, massive wakes, reckless operations, and loud music made by other boaters), and three items for structural constraints (setting density). The items representing all three subdimensions were measured by a five-point Likert scale ranging from 1=*strongly disagree*; 3= *neutral*; 5=*strongly agree*.

For the coping construct, respondents' coping mechanisms were measured using 16 items modified from the battery of the coping list, which were drawn from an analysis of social indicators for the Glacier National Park, Montana (Miller & Freimund, 1996; Miller & McCool, 2003), and exiting hikers survey in the Great Gulf Wilderness, New Hampshire (Schuster, Cole, Hall, Baker, & Oreskes, 2007). Based on Larzarus and Folkman's (1984) conceptualization of coping, these 16 items fall into two domains: problem-focused and emotion-focused coping according to Miller and McCool's (2003) conceptual framework. There are five dimensions of problem-focused coping: temporal substitution, activity substitution, resource substitution, absolute displacement, and

direct action. Two dimensions are under the domain of emotion-focused coping, they are: product shift and rationalization. To reduce the number of variables and hence keep the model's degree of freedom reasonable, coping items were parceled (Bandalos & Finney, 2001) by averaging to represent five dimensions for problem-focused coping and two dimensions for emotion-focused coping.

Respondents were asked the extent to which each statement describes their coping responses to continue, or increase their participation in recreational boating on Lake Austin and Lake Travis. A response of "1" indicated *does not describe at all*, "3" indicated *describes moderately*, and "5" indicated *describes very well*.

First, three items were averaged to calculate the *temporal substitution* index. Respondents were asked: "*Decided that if I boated on Lake X in the future, I would boat at earlier and/or later times of the day*"; "*Decided that if I boated on Lake X in the future, I would boat on the weekdays rather than weekends*"; and "*Realized that I could avoid the condition or situation in the future by boating on Lake X at a different time*".

Second, two items were averaged to calculate the *activity substitution* index. Related questions were: "*Planned to do other things besides boating*", and "*Realized that doing some other activity other than boating would allow me to avoid this obstacle*".

Third, two items were averaged to calculate the *resource substitution* index. Questions were: "*Decided I would come back at the same time, but would boat at another area of Lake X*", and "*Boated on nearby lakes (e.g., Lake LBJ, Austin, Buchanan)*".



Fourth, two items were averaged to calculate the *absolute displacement* index. Boaters were asked as follows: “*Planned not to return to Lake X*”; and “*Felt frustrated and decided boating is no longer important to me*”.

Finally, three items were averaged to calculate the *direct action* index. Related items were: “*Talked to someone who could do something concrete about the problem*”; “*Decided to talk with lake authorities*”; and “*Talked with other members of my group or someone about how I was feeling*”.

The second coping domain, emotion-focused coping, included the sub-dimensions of rationalization and product shift.

First, two items were averaged to calculate the *product shift* index. Respondents were asked: “*Realized that the condition or situation I experienced was really suitable after all*”; and “*Decided that the problem was one-time occurrence*”.

Second, two items were averaged to calculate the *rationalization* index. Related questions were: “*Decided that, for this location, the condition or situation was what it should be*”; and “*Tried to view this condition or situation in a positive way*”.

The item descriptives, means, standard deviations, factor loadings, and internal consistency are reported in Table 4. Construct reliability estimates were calculated for all scales. The Cronbach’s alphas of problem-focused coping, emotion-focused coping, intrapersonal constraint, interpersonal constraint, and structural constraint ranged between .857 and .674, indicating an acceptable level of reliability (.60 was considered acceptable with scales possessing a reduced number of items, e.g., six or less, Cortina, 1993). However, Bollen (1989) indicated that Cronbach’s alpha has several limitations.

For example, coefficient alpha wrongly assumes that all items contribute equally to reliability. Thus, calculations of composite reliability, which draw on the standardized loadings and measurement error for each item are considered superior (Fornell & Larcker, 1981). The composite reliability of all items were greater than .70, which indicated a good reliability (Hair, Black, Babin, Anderson, & Tatham, 2006).

### *Statistical Methodology*

Multiple-imputation features in LISREL 8.7 were utilized to address missing data (11.98% missing). A majority of CFA and SEM models reported in the applied research used the maximum likelihood (ML) or generalized least squares (GLS). However, in my investigation, due to the marked skewness and kurtosis (resource substitution and absolute displacement), a robust ML (Bentler, 1995; Satorra & Bentler, 1994) was used to deal with the non-normal data. Research has also shown that robust ML is a “very well-behaved estimator across different levels of non-normality, model complexity, and sample size” (Brown, 2006, p. 379). A mean-adjusted  $\chi^2$  (also called Satorra-Bentler scaled  $\chi^2$  or SB  $\chi^2$ ) was also used instead of  $\chi^2$  statistic in the ML estimator. To facilitate model identification while obtaining the first indicator’s loading, the variance of each latent construct was fixed to 1 and the first indicator freely estimated (Weston & Gore, 2006).

A two-step process for model testing in structural equation modeling suggested by Anderson and Gerbing (1988) was followed. The first step involved an examination of the measurement model (Confirmatory Factor Analysis [CFA]) in LISREL 8.7

(Jöreskog & Sörbom, 2004). This tested the suitability of my hypothesized factor structure for the data. In the second step, a structural model was tested to examine the relationships among latent constructs.

Selected goodness-of-fit indices were also used in reporting the results of my model testing. These indices provide an indication of the degree to which my model fit the data. These included Steiger and Lind's (1980) Root Mean Square Error of Approximation (RMSEA), Bentler's Comparative Fit Index (CFI), and Bentler and Bonett's (1980) Non-Normed Fit Index (NNFI). Browne & Cudeck (1993, p. 144) proposed, as a rule of thumb, that RMSEA values less than 0.08 suggested adequate model fit (i.e., a "reasonable error of approximation"). The NNFI measures relative fit by comparing noncentrality per degree of freedom. It is relatively stable across sample size (Bollen, 1990). The CFI assesses the difference in noncentrality by comparing the specified model with the null model and is also relatively stable across sample size (Bentler, 1990). Both values of NNFI and the CFI range from 0 to 1, and values greater than .95 indicate an acceptable model fit. Last, the goodness-of-fit index (GFI) is "analogous to a squared multiple correlation ( $R^2$ ) except that GFI is a kind of matrix proportion of explained variance" (Kline, 2005, p. 145). The value of GFI equal to 1 indicates perfect model fit, GFI greater than .90 may indicates good fit, and values close to 0 indicate very poor fit. I used the above statistical indexes to assess the model fit in this constraints-coping model.

## Results

### *Descriptive Analyses*

At the dimensional level (see Table 4), respondents' use of strategies to minimize the impact of negative situations on their boating experience reflected a combination of behavioral change (e.g. *temporal substitution*,  $M=3.1$ ; *activity substitution*,  $M=2.3$ ) and cognitive adaptation (e.g., *rationalization*,  $M=2.7$ , and *product shift*,  $M=2.1$ ). As evidenced in the lower means, respondents tended not to adopt more extreme actions in response to adverse elements that involved choosing alternate lakes or areas (e.g., *resource substitution*,  $M=1.5$ ) or to completely stop boating in response to undesired conditions (e.g., *absolute displacement*,  $M=1.4$ ).

For intrapersonal constraints, boaters' perception risk in high use areas ranked the highest ( $M=3.5$ ), followed by past experiences with unsafe boating condition ( $M=3.2$ ). For the interpersonal constraint items, respondents indicated that conflicts with other boaters were more pervasive. These conflicts center on issues related to other boats' wakes ( $M=3.6$ ), reckless behavior ( $M=3.4$ ), loud music ( $M=3.4$ ), and engine noise ( $M=3.1$ ). For structural constraints, most boaters agreed that the number of boats on the lake is an intervening factor impacting their enjoyment ( $M=3.1$ ), as was the unsafe number of boats on the water ( $M=2.9$ ).

TABLE 5

*Item Factor Loading and Means of Constraints-Coping Model*

| Items                         | $\alpha$ | CR   | $\lambda$ | SE   | <i>t</i> | <i>M</i> | <i>SD</i> |
|-------------------------------|----------|------|-----------|------|----------|----------|-----------|
| <b>Problem-Focused Coping</b> | .674     | .716 |           |      |          | 2.063    | .632      |
| Resource Substitution         |          |      | .599      | --   | --       | 1.497    | .702      |
| Activity Substitution         |          |      | .650      | .071 | 12.967   | 2.277    | 1.105     |
| Temporal Substitution         |          |      | .666      | .083 | 11.606   | 3.106    | 1.216     |
| Absolute Displacement         |          |      | .556      | .057 | 16.301   | 1.380    | .703      |
| Direct Action                 |          |      | .414      | .066 | 10.321   | 2.052    | .955      |
| <b>Emotion-focused Coping</b> | .689     | .707 |           |      |          | 2.414    | .829      |
| Product Shift                 |          |      | .829      | --   | --       | 2.140    | .861      |
| Rationalization               |          |      | .644      | .094 | 9.915    | 2.688    | 1.031     |

TABLE 5

*Item Factor Loading and Means of Constraints-Coping Model (Cont.)*

|                                  | Items   | $\alpha$ | CR   | $\lambda$ | SE   | <i>t</i> | <i>M</i> | <i>SD</i> |
|----------------------------------|---|----------|------|-----------|------|----------|----------|-----------|
| <b>Intrapersonal Constraints</b> |   | .759     | .758 |           |      |          | 3.304    | .939      |
| Intra1                           | Boating in high use areas involved too much risk  |          |      | .759      | --   | --       | 3.547    | 1.158     |
| Intra2                           | I saw more boats than I expected to see   |          |      | .778      | .028 | 35.460   | 3.169    | 1.074     |
| Intra3                           | I avoided some areas of the lake because of unsafe conditions I had previously experienced                |          |      | .601      | .030 | 34.419   | 3.196    | 1.192     |
| <b>Interpersonal Constraints</b> |   | .799     | .795 |           |      |          | 3.383    | .942      |
| Inter1                           | Engine noise from other boaters was too loud  |          |      | .704      | --   | --       | 3.171    | 1.259     |
| Inter2                           | Other boaters threw massive wakes   |          |      | .757      | .039 | 24.640   | 3.584    | 1.133     |
| Inter3                           | I witnessed reckless boating operations by other boaters (i.e., unsafe speeds, dangerous behaviors, etc.) |          |      | .716      | .041 | 22.750   | 3.405    | 1.155     |
| Inter4                           | Other boaters delivered overly loud amplified music   |          |      | .625      | .041 | 21.070   | 3.373    | 1.218     |

TABLE 5

*Item Factor Loading and Means of Constraints-Coping Model (Cont.)*

| Items                         |  | $\alpha$ | CR   | $\lambda$ | SE   | <i>t</i> | <i>M</i> | <i>SD</i> |
|-------------------------------|--|----------|------|-----------|------|----------|----------|-----------|
| <b>Structural Constraints</b> |  | .857     | .878 |           |      |          | 2.969    | 1.090     |
| Struc1                        | There was an unsafe number of boats on the water   |          |      | .879      | --   | --       | 2.894    | 1.161     |
| Struc2                        | The number of boats on the lake reduced my enjoyment                                       |          |      | .839      | .034 | 28.359   | 3.082    | 1.216     |
| Struc3                        | I did not participate in some boating activities because of crowded conditions at the lake |          |      | .803      | .037 | 21.872   | 2.930    | 1.326     |

### *Measurement and Structural Models*

In the first step of model testing, the measurement model was assessed via a confirmatory factor analysis. The good-of-fit indices (SB  $\chi^2=633.419$ , d.f.=107, RMSEA= .065, CFI= .976, NNFI= .970, GFI= .935) for the measurement model and the tests of internal consistency indicated that the model satisfactorily fit the data (see Table 5). All indicators loaded significantly on their specified latent construct (e.g.,  $\lambda > .40$ ) at the 0.01 level, providing further psychometric support for the measures used. Following the establishment of a valid measurement model, I then tested the structural model using covariance structure analysis. All of the parameters were statistically significant at the .05 level. The final model satisfactorily fit the data (SB  $\chi^2=736.609$ , d.f.=108, RMSEA=.065, CFI=.975, NNFI=.969, GFI=.935).

*TABLE 6*

#### *Goodness of Fit Indices of Constraints-Coping Model*

| <b>Model</b>      | <b><math>\chi^2</math></b> | <b>SB <math>\chi^2</math></b> | <b>d.f.</b> | <b>RMSEA</b> | <b>NNFI</b> | <b>CFI</b> | <b>GFI</b> |
|-------------------|----------------------------|-------------------------------|-------------|--------------|-------------|------------|------------|
| Measurement Model | 709.507                    | 633.419                       | 107         | .0646        | .970        | .976       | .935       |
| Structural Model  | 736.609                    | 652.376                       | 108         | .0654        | .969        | .975       | .934       |

### *Summary of Effects*

Table 6 depicts the statistically significant direct effects among the three types of onsite constraints and two dimensions of coping mechanisms. The discussion that follows describes the nature of these relationships:



1. *Predictors of Problem-Focused Coping:* Problem-focused coping was negatively influenced by interpersonal constraints ( $\beta = -.557$ ,  $t\text{-value} = -3.371$ ), but positively influenced by structural constraints ( $\beta = .502$ ,  $t\text{-value} = 5.768$ ) and intrapersonal constraints ( $\beta = .833$ ,  $t\text{-value} = 4.088$ ). That is, as the interpersonal constraints increased, boaters were less likely to employ problem-focused coping strategies in resolving conflicts with others. However, respondents employed problem-focused coping strategies in response to structural constraints (e.g., number of boats and encounters) and intrapersonal constraints (e.g., risk perception to high-use areas, previous experience about safety). This positive relationship indicated that boaters were more likely to employ problem-focused coping strategies when their perceived risk and crowding levels were high. The three dimensions of constraints accounted for 67.8% of the variance in problem-focused coping.
2. *Predictors of Emotion-focused Coping:* Emotion-focused coping was negatively influenced by interpersonal constraints ( $\beta = -.665$ ,  $t\text{-value} = -3.642$ ), structural constraints ( $\beta = -.283$ ,  $t\text{-value} = -3.041$ ), and positively influenced by intrapersonal constraints ( $\beta = .480$ ,  $t\text{-value} = 2.199$ ). The variance accounted in emotion-focused coping was 22.5%. Product shift and rationalization coping mechanisms showed a declining pattern with increasing interpersonal and structural constraints. As boaters' conflicts or the number of boats they had seen on the lake increased, they were less likely to lessen their emotional distress by applying any cognitive process. However, intrapersonal constraints were

positively associated with emotion-focused coping strategies. That is, respondents were more likely to change their definition of the boating experience in response to their perceptions of risk or viewed the crowding situation in a positive way to maintain cognitive consistency.

*TABLE 7*  
*Structural Model Analysis of Constraints-Coping Model*

| Direct Effect                                    | $\beta$ | t-value | $R^2$ (Total Coefficient of Determination) |
|--|---------|---------|--|
| Structural Constraints→Problem-Focused Coping    | .502    | 5.768*  | .678                                       |
| Interpersonal Constraints→Problem-Focused Coping | -.557   | -3.371* |  |
| Intrapersonal Constraints→Problem-Focused Coping | .833    | 4.088*  |  |
| Structural Constraints→Emotion-focused Coping    | -.283   | -3.041* | .225                                       |
| Interpersonal Constraints→Emotion-focused Coping | -.665   | -3.642* |  |
| Intrapersonal Constraints→Emotion-focused Coping | .480    | 2.199*  |  |

\*  $p < .05$ .

### Discussion

This study contributes to the existing constraints literature as well as to our understanding of coping as a constraint negotiation response. First, my research of a constraints-coping model further empirically supports Iwasaki and Schneider's (2003) and Schneider and Stanis's (2007) suggestion that Lazarus and Folkman's coping strategies can be potentially integrated with constraints-negotiation processes. On the

basis of these findings, I observed that three types of onsite constraints have mixed effects on recreationists' coping strategies. As respondents' scores on the dimensions of constraints increased, their coping responses varied in response to the different types of constraints they encountered while boating. The experience of constraints did not universally result in the use of increased coping. Second, my results offered support for the Crawford, Jackson, and Godbey's (1991) model of constraints among active participants. I observed that three types of onsite constraints continued to have relevance for active boaters.

#### *Intrapersonal Constraints and Coping Mechanisms*

The positive effect of the intrapersonal constraints on the two dimensions of coping is consistent with stress-coping literature illustrating that recreationists employ both behavioral changes and cognitive adjustments in response to undesired conditions. These studies have shown that active participants with higher levels of stress are more likely to apply behavioral and cognitive adjustments in combination (Miller & McCool, 2003; Wang, 2008). In the context of this investigation, intrapersonal effects were consistent with Mitchell, Davies, Moutinho, and Vassos's (1999) research illustrating that heightened perceptions of undesired risk was a key factor determining risk reduction coping mechanisms. My results were also consistent with Schuster, Hammitt, and Moore's (2006) research in Shining Rock Wilderness areas, North Carolina, where they found that hikers created coping schemes by combining problem and emotion focused coping strategies. That is, recreationists' combined coping decisions (e.g., come to the

lake earlier, boat in another area in the public holidays, view the crowding conditions in a positive way) may be strongly driven by their perceptions of risk, safety, and past experience relating to use levels. My research also demonstrated that active participants tried to mitigate above psychological inhibitors (e.g., risk perception) using both cognitive and behavioral coping strategies in maintaining their continuing participation. As Crawford et al (1991) advocated, onsite intrapersonal constraints are “the most powerful” intervening factors on triggering a variety of coping mechanisms.

#### *Interpersonal Constraints and Coping Mechanisms*

The negative effect of interpersonal constraints on both problem-focused and emotion-focused coping was not I anticipated. Given that other boaters’ deviant behavior and recklessness typically detract from the quality of boating experiences; I anticipated a positive association between interpersonal constraints and coping mechanisms. In the stress-coping literature, however, Lee-Baggley, Preece, and DeLongis (2005) explained that people are less likely to use emotion-focused and problem-focused coping strategies in response to an interpersonal stressor (e.g., conflicts with others). It is possible that it is difficult to use either problem- or emotion-focused coping strategies in response to others’ behavior given the difficulty associated with controlling the behavior. Although Schuster, Hammitt, Moore, and Schneider (2006) concluded individuals may cope with out-of-control situations by increasing emotion-focused coping, their data demonstrated a weak support for this statement. The negative relationships may also be due to the limitations of the two-dimensional coping construct. O’Brien and DeLongis (1996) and

Lee-Baggley et al. (2005) have each suggested that there are important distinctions among interpersonal stressors that may need to be examined separately to understand coping. They proposed an expanded conceptualization of coping schemes by adding a third coping domain referred to as “relationship-focused coping”. They suggested that the third dimension provides a better understanding of how individuals cope with interpersonal stressors (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Lee-Baggley, et al., 2005; O'Brien & DeLongis, 1996). Relationship-focused coping refers to modes of coping aimed at managing, regulating, or avoiding confrontations with others (O'Brien & DeLongis, 1996). In the outdoor recreation literature, congruence in terms of recreationists' perceptions of conflict varies considerably. For example, Watson, Niccolucci, and Williams (1994) observed that an asymmetrical antipathy existed between hikers and stock users where hikers disliked stock users and reported that encounters with stock users were undesirable. In my study, there are different types of water craft (e.g., jet skis, cabin cruisers) and different associated activities (pulling skiers or inner tubes, swimming) that can generate a similar asymmetrical antipathy. The conflict is asymmetrical because one group perceives the other's behavior as a problem, but the perception is often not reciprocated. Thus, for future research, the inclusion of the relationship-focused coping (e.g., compromise, empathic response) dimension could be included to better understand interpersonal conflicts.

### *Structural Constraints and Coping Mechanisms*

My results indicated that active participants were more likely to employ problem-focused coping in response to structural constraints (number of boats on the lake) instead of using cognitive adjustments. It would seem logical that individuals cope with structural constraints by applying an array of direct actions such as altering the timing of their boat outing, enjoying another activity, or changing the location of the boating experience. My results were consistent with past coping studies in outdoor recreation (e.g., Hammitt and Patterson, 1991; Shelby and Vaske, 1991; Sutton and Ditton, 2005) illustrating that recreationists utilize problem-focused coping strategies (e.g., camp out of sight of other groups, avoiding trails with popular vistas, or fishing in a substitute waterbody) to accommodate undesired structural constraints.

Last, there is little published literature on onsite constraints. For people who are already participating, past constraint scales (e.g., lack of time, money, or accompany; family obligations, shyness) have not performed well in capturing these onsite constraints. In Shores and Scott's (2005) research, they indicated that military wives in Texas experienced different leisure constraints that were not included in the a priori researcher-determined list of constraints. Thus, specific constraint items were used in providing a fuller picture of the leisure constraints experienced by this particular population (Hubbard & Mannell, 2001).

As Crawford et al. (1991) indicated, onsite constraints (e.g., crowding) have become a salient issue for those who have successfully negotiated other constraints (active participants) at an earlier stage, and the three types of constraining factors might

continue to influence individuals' subsequent aspects of engagement. Researchers (e.g., Shinew, Floyd, & Parry, 2004) have developed some useful constraints scales for understanding onsite constraining factors to park use (e.g., fear of physical assault, gang activities in the park, alcohol/drugs in park, and fear of crime). However, past work does not exhibit a clear understanding of the complex nature of onsite constraints to specific settings or activities. My research sought to address this gap in knowledge by examining the relationships between onsite constraints and active participants' subsequent coping strategies.

## **CHAPTER IV**

### **THE CONSTRUCTION OF A CONSTRAINTS-COPING MODEL WITHIN A RECREATIONAL BOATING CONTEXT**

#### **Introduction**

Early work on constraints to leisure limited its focus to explanations of how factors inhibit and present barriers to participation (e.g., commitments and time, lack of skill, poor health, financial issues, etc.). Crawford, Jackson and Godbey (1991) extended our understanding of constraints by suggesting that “the factors that create constraints might continue to have relevance even after an individual takes up participation in a given activity” (p.315). They proposed that three types of constraints may directly influence subsequent aspects of leisure engagement for people who continue their involvement: a) structural – refers to those factors that intervene between leisure preference and participation (e.g., stage in family cycle, season, climate, opportunities), b) interpersonal – results from social interaction with friends, family, and others (e.g., different leisure preferences among families), and c) intrapersonal – refers to individuals’ psychological states and attributes (e.g., perceived self skill, subjective evaluation of the appropriateness and availability of various leisure activities). With regard to the experience of leisure constraints for those who maintain participation, empirical verification of the three types of constraints is limited and its relevance for people who are already participating is poorly understood.



Crawford et al. (1991) indicated that people may also negotiate through constraints and thus succeed in initiating or continuing leisure participation, albeit in a way that may differ from how they would participate if constraints were absent. Jackson, Crawford, and Godbey (1993) further modified their model of the constraints-negotiation processes by stating that leisure participation is dependent not on the absence of constraints but on negotiation through them. For example, Scott (1991) first suggested that bridge players individually or jointly develop negotiation strategies (e.g., developing partnerships with others, or developing a regular schedule of games by filling slots) to overcome the constraints they encountered. Jackson and Rucks (1995) also illustrated that leisure constraints should not be viewed as necessarily insurmountable obstacles. They observed that their respondents adapted when encountering constraints by utilizing cognitive (e.g., reduction of cognitive dissonance) and/or behavioral (e.g., an observable change in behavior) strategies. Moreover, Henderson, Bedini, Hecht, and Schuler (1995) developed a constraint negotiation typology for women with physical disabilities consisting of three groups; i.e., passive responders, achievers, and attempters. Passive responders simply respond constraints by non-participation. Achievers maintain their leisure participation by learning new skills despite perceiving constraints (i.e., behavioral dimension). Attempters modify their leisure experiences related to scheduling and frequency of participation (i.e., cognitive dimension). Henderson et al.'s typology (e.g., attempter and achiever) aligns with Jackson and Rucks' dichotomous distinction of constraints negotiation.

Iwasaki and Schneider (2003) and Schneider and Stanis (2007) have also suggested that constraints negotiation shares similar characteristics with stress-coping strategies, which was originally proposed by Lazarus and Folkman (1984), who categorized ways of coping as emotion-focused and problem-focused. The former referred to a cognitive process directed at lessening emotional distress that includes strategies such as avoidance, minimization, distancing, selective attention, positive comparisons, and wresting positive value from negative events (Lazarus & Folkman, 1984, p. 150). The latter coping method focused on objective, analytic processes such as generating alternative solutions, and direct action (Lazarus & Folkman, 1984, p. 152). Evidence for negotiation's conceptual similarity to coping can be observed in work conducted within the context of outdoor recreation. For example, in a study by Hammitt and Patterson (1991), backpackers applied displacement coping strategies (e.g., camp out of sight of other groups or avoid trails with popular vistas) to accommodate the number of encounters with other visitors within their zone of comfort or tolerance in the Great Smoky Mountains National Park. Sutton and Ditton (2005) also suggested that resource substitution (i.e., substitution of one saltwater fishing location along the coast for another) is a strategy used by anglers in response to biologically (e.g., red tide) or managerially (e.g., slot limit) imposed constraints. More recent research has shown that additional concepts could potentially help researchers better understand how recreationists determine which type of strategy they will specifically employ in outdoor recreation. For example, Walker (2005), Hinch, Jackson, Hudson, and Walker (2005), and Walker (2007) suggested the importance of studying a broader picture of leisure

constraints for future research by including more additional social indicators (e.g., motivation, commitments, frequency of participation, and place attachment). Furthermore, integrating multidimensional social indicators could add to the understanding of a complex constraints-coping framework.

Thus, the purpose of this research was to understand how selected latent variables (e.g., place attachment, commitment, frequency of participation, and motivation) affect recreationists' coping mechanisms (problem-focused and emotion-focused coping) while encountering constraints. In the following literature review, I begin with an overview of the evolution of leisure constraints research. I then present my conceptualization of coping and discuss its utility as an alternative framework for understanding leisure constraint negotiation. Last, in order to broaden the scope of a constraints-coping framework, I integrate more social indicators into my hypothesized model.

## **Literature Review**

### *Constraints-Coping Research in the Context of Outdoor Recreation*

Crawford et al. (1991) first proposed that leisure participation is heavily dependent on negotiating a hierarchy of intrapersonal, interpersonal, and structural leisure constraints. Intrapersonal constraints are related to individual psychological states or attributes that influence leisure preference (e.g., stress, anxiety, and personality). Interpersonal constraints involve interactions between people or result from social interaction among individuals (e.g., lack of friends or family members with whom to

participate). Finally, structural constraints involve intervening factors from non-interpersonal external environmental factors (e.g., time constraints, financial limitation, accessibility). Crawford et al. (1991) also suggested that “the factors that create constraints might continue to have relevance even after an individual takes up participation in a given activity” (p. 315). That is, the three types of constraining factors may directly influence subsequent aspects of leisure engagement for people who are already participating. People may negotiate the three types of constraints by adopting an array of coping mechanisms. However, the relationships between the three types of constraints and maintaining participation has received little attention and more empirical verification need to be implemented.

Past outdoor recreation research on leisure constraints in North America has identified the following factors as being most salient: crowding, distance to the recreation area, a lack of information, family commitments, family members in poor health, and companions preferring other things (Alberta Community Development, 2000; Holland, Pennington-Gray, & Thapa, 2001; Scott & Kim, 1998; Virden & Yoshioka, 1992). However, these constraints only explain how these factors account for nonparticipation. Research findings have illustrated that constraints do not always prevent or reduce participation (Scott, 1991; Shaw, et al., 1991). This work has shown that recreationists often negotiate these constraints and maintain at least some form of participation.

Early work also focused on how recreationists respond to negative elements associated with certain activities, such as crowding, or unwanted situations back in the

1970's. Recreationists may respond to these constraints by applying an array of coping mechanisms, such as substitution. The concept of substitution has been defined as "the interchangeability of recreation experiences such that acceptably equivalent outcomes can be achieved by varying one or more of the following: the timing of the experience, the means of gaining access, the setting, and activity (Brunson& Shelby, 1993, p.69)". Heberlein and Shelby (1977) found that visitors to Grand Canyon National Park who voluntarily selected the activity and invested a certain amount of time and money tended to evaluate their boating experience positively and rationalize (cognitive coping) negative experiences to maintain their enjoyment. Brunson and Shelby (1993) also suggested that substitution is the interchangeability of recreation experiences such that acceptably equivalent outcomes can be achieved by varying the timing, means of access, setting, or activity. Shelby and Vaske (1991) observed that their respondents (i.e., salmon anglers on New Zealand's South Island) utilized three different types of coping strategies to avoid obstacles and maintain participation: spatial, temporal, and activity substitution. Study findings suggest that some anglers may be able to choose a different location/activity that offers the same benefits, or change their participation to a more auspicious time.

Miller and McCool (2003) adapted Lazarus and Folkman's (1984) stress-coping model to reframe a variety of coping mechanisms using dichotomous problem-focused and emotion-focused coping distinctions. In Lazarus and Folkman's conceptualization, emotion-focused coping is a cognitive process directed toward lessening emotional distress that includes strategies such as avoidance, minimization, distancing, selective

attention, positive comparisons, and wresting positive value from negative events. Alternately, problem-focused forms of coping imply an objective, analytic process that focuses primarily on the environment, such as generating alternative solutions and direct action (Lazarus & Folkman, 1984, p. 152). In their study of visitors to Glacier National Park, Miller and McCool's (2003) further categorized temporal substitution (e.g., boating in the same setting but at a different time), resource substitution (e.g., substitute one boating location along the river for another), activity substitution (e.g., substitute boating for swimming in a designated area), absolute displacement (e.g., changing both resource and activity), and direct action (e.g., complaint to authorities, letter writing) within the dimension of problem-focused coping. Rationalization (i.e., reevaluate an undesirable situation in a more favorable light) and product shift (i.e., change or lower the standards of the experience) were categorized as dimensions of emotion-focused coping. The problem and emotion-focused coping mechanisms correspond with Jackson and Rucks (1995) dichotomous distinction of behavioral and cognitive strategies in constraints negotiation.

Iwasaki and Schneider (2003) and Schneider and Stanis (2007) also revealed similarities between constraints negotiation and stress coping strategies. Iwasaki and Schneider (2003) suggested that the stress-coping framework can be potentially integrated within constraint negotiation frameworks. They stated that leisure constraints are considered elements of stress, whereas constraint negotiation appears to share commonalities with ways of coping with stress, as noted previously.. The integration of coping strategies is more applicable for understanding leisure constraints and continuing

leisure participation within the context of outdoor recreation. Also, there is evidence to suggest that existing models of the constraints-negotiation processes can be improved by integrating multidimensional social indicators.

### *The Expansion of the Constraints-Coping Framework*

Walker (2005; 2007) proposed a more complex leisure constraints model by including both meso-level (e.g., personality traits, human needs, attitude and beliefs, commitment, experience use history, and self-construal) and macro-level (e.g., ethnicity/race, gender, cultural/natural forces, socioeconomic forces) factors. Walker's conceptual model of leisure constraints consists of 22 latent variables, making it difficult to empirically examine within the context of a single study. However, each component links are testable using existing measurement scales and statistical approaches (George & Mallery, 2003). In order to provide empirical examination of the constraints-coping framework, I focused on certain key variables that may specifically affect individuals' continuing leisure engagement in outdoor recreation. They were: people's leisure *commitment*, *attachment* to particular outdoor settings, *frequency of participation*, and the role of *motivation* in constraints-coping relationships. Reasons for selecting these key variables in the constraints-coping framework are: 1) Outdoor recreation is heavily dependent on natural resources. Recreationists may develop a certain level of place bonding to a particular location and be reluctant to use alternative sites when encountering constraints (Hammitt, et al., 2004); 2) Understanding how recreationists maintain participation is directly associated with the concept of commitment. By

definition, personal and behavioral commitments closely bind individuals to consistent patterns of leisure behavior (Buchanan, 1985); 3) Frequency of participation can affect the coping process in outdoor recreation (Schuster, Hammitt & Moore, 2003).

Experienced users are more likely to engage in more problem-focused coping strategies than their less experienced counterparts (Schreyer & Lime, 1984); and 4) highly motivated recreationists tend to be less likely to perceive high levels of constraints, subsequently applying an array of coping mechanisms to maintain participation.

#### *How Does Place Attachment Influence Coping with Constraints?*

Recreating in outdoor settings can be of particular concern with resource-specific activities because resource users may be experienced individuals who have developed a strong bond with resource settings and may be reluctant to leave an “attached” place for another (Korpela, et al., 2001). Jackson’s (1994a) research using Alberta General Recreation Surveys showed that constraints to participation were tied to recreation preferences. Research has shown that “place interaction plays an important role in shaping the personal meanings that an individual ascribes to place and preferences for these settings” (Kyle & Johnson, 2008, p. 116). From environmental preference perspective, Knopf (1987) indicated that human preferences for natural environments are a product of socialization processes. This suggests that the meanings individuals ascribe to specific environments are associated with the broader social world (Eisenhauer, Krannich, & Blahna, 2000). For example, Mesch and Manor’s (1998) research in Israel revealed that respondents’ social investments in their neighborhood



(more friends living close by) affected their sentiments toward the neighborhood. Stewart, Liebert, and Larkin's (2004) research on community identity also stated that community identity "is centered on individual residents' felt senses of 'we' that connect them with one another by means of vision for collective future" (p. 316). In Greider, Krannich, and Berry's (1991) research, they found that lake community residents' identities attached to their favorite place are connected to tangible environments, events, and/or material history through a series of socialization processes.

My conceptualization of place attachment was based on Jorgensen and Stedman's (2001) and Kyle, Mowen, and Tarrant's (2004) research. This conceptualization consists of four dimensions: place identity, place dependence, affective attachment, and social bonding. Jorgensen and Stedman (2001) suggested that "*place identity* is a substructure of a more global self-identification in the same way that one might consider gender identity and role identity" (p. 234). This is consistent with Proshansky's (1978) suggestion that place identity reflects the cognitive connection between the self and the setting. Proshansky et al. (1983) conceptualized place identity as representing "memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behavior and experience which relate to the variety and complexity of physical settings that define the day-to-day existence of every human being" (p. 59). *Place dependence* was defined in terms of "how well a setting serves goal achievement given an existing range of alternatives" (Jorgensen & Stedman, 2001, p. 234). It was treated as a psychological construct describing the willingness and ability to substitute one place for another (Stokols & Shumaker, 1981; Williams, et al., 1992). *Affective*

*attachment* refers to humans' emotional bond with the setting (Jorgensen & Stedman, 2001). Kyle et al.'s (2004) research in Cleveland Metroparks, Ohio, confirmed that "an affective appreciation of natural environments translates into an affective attachment to the setting" (p. 451). Last, Mesch and Manor (1998) considered *social bonds* to be instrumental for the development of emotional ties to place. They stated that these social bonds are important because they provide economic, social, and emotional support for the individual. Kyle, Graefe, and Manning (2005) further suggested including social bonding as one dimension of place attachment. They indicated that recreational settings offer opportunities for place meaning through social bonding with family, friends and other recreationists. Based on previous work on place attachment, I may expect that the greater the attachment, the less likely an individual is to make a substitution decision.

#### *Commitment to Continuing Participation*

Commitment has been defined as the fact that people engage in consistent patterns of leisure behavior (Becker, 1960). Drawing upon sociological and outdoor recreation research (e.g., Buchanan, 1985; Shamir, 1988; Scott & Shafer, 2001; Lee & Scott, 2004), commitment can be conceptualized in terms of two dimensions: personal and behavioral commitment. The former refers to an individual's internal state, or self-identity; and the latter refers to the materials and social circumstances of the individual. Personal commitments may include a strong affective attachment and "inner conviction that the activity is worth doing for its own sake" (Scott & Shafer, 2001, p. 329). Personal commitment can also contribute to perceived self-determination owing to the intrinsic

rewards people accrue over time. People are more likely to engage in self-determined activities when they perceive them to be personally pleasing and intuitively worthwhile (Lee & Scott, 2006). With regard to behavioral commitment, Scott and Shafer (2001) suggested that it is associated with the "costs" of activity withdrawal, as reflected in social ties to the activity (e.g., friends and family) and other sunk costs that bind (e.g., investment in activity-related equipment).

Buchanan (1985) suggested that commitment may be the glue by which a variety of related research topics can be bound together to provide a more comprehensive understanding of leisure and its influence on human behavior. He also indicated that as commitment increases, susceptibility to other influences (e.g., participation in a new activity) decreases. Bricker and Kerstetter's (2000) research confirmed Buchanan's observation and found that rafters with high levels of activity commitment expressed greater attachment to the South Fork of the American River in California. This implies that they are less likely to respond to constraints that threaten their participation. Shamir (1988) also suggested the nature of the connection between personal and behavioral commitment. He asserted that "the individual develops appropriate internal attitudes to support his or her external commitment and becomes internally committed as well" (p.245). For example, purchasing a "cigarette boat" (behavioral commitment) is expected to require a cognitive adjustment and to encourage the development of personal commitment. Therefore, the efficacy of including both personal and behavioral commitment as part of a constraints-coping model appears to reside primarily in the ways it might enhance the rigor of existing forms of leisure constraints research.

*How Does Frequency of Participation Influence Coping Strategies?*

Past experience can be defined as the “sum of accumulated life experience a recreationist has within a particular recreation activity or style of participation” (Virden, 1992, p. 6). It has usually been measured in terms of total visits, frequency of use or participation with an activity and/or resource at a specific setting (Hammit & McDonald, 1983; Schreyer, et al., 1984). Schreyer et al. indicated that recreationists past behavioral and experience can be identified by the frequency of participation, which is one of important indicators of Experience Use History (Williams & Schreyer, 1990). For example, they first developed an EUH index based on total river trips, total rivers, and number of river trips in their study of river behaviors. Oh and Ditton (2006) also used the frequency of participation (e.g., total days fished in the last 12 months and total days fished in saltwater in the last 12 months) in measuring the behavioral dimension of specialization in their red drum anglers research in Texas. Regarding the relationship between frequency of participation and individuals’ behavioral choices, the empirical results are mixed. Schreyer and Lime (1984) found that experienced float trip recreationists tend to engage in more problem-focused coping mechanisms. In McFarlane, Boxall, and Watson’s (1998) wilderness users’ research at Nopiming Provincial Park in Manitoba, Canada, they found that, as individuals gain experience with a specific setting or activity, experienced constituents were more likely to choose different settings to carry out their activities. Bricker and Kerstetter’s (2000) research results also corresponded with McFarlane et al.’s findings. Furthermore, Hammit, Backlund, and Bixler (2006) indicated that anglers with high degrees of participation

were more likely to have built a “place repertoire” of substitutes and were less attached to any specific place. Conversely, other research did not find significant support for the above statements (e.g., Budruk, Wilhem Stanis, Schneider, & Heisey, 2008; Schuster, et al., 2007; Tseng & Ditton, 2007). Thus, more empirical studies are needed to specifically shed light on why individuals’ behavioral choices do not always link to past experience in other outdoor recreation activities/settings.

### *The Role of Motivation in the Constraints-Coping Model*

Leisure motives are assumed to be internal psychological factors that impel people to action and that give direction to that action in the form of participation in a specific leisure activity (Hubbard & Mannell, 2001; Mannell & Kleiber, 1997). In the context of outdoor recreation, the most prevalent scales in measuring recreationists’ motivations, *Recreation Experience Preference* (REP) scales, were developed by Driver (Driver, 1977, 1983). REP scales have provided great insight on how motivations affect outdoor recreation preferences (Walker, 2005) and have helped with the understanding of why people engage in a particular activity (Manfredo, et al., 1996). In leisure constraints research, however, relationships among constraints, motivation, and continuing participation are still controversial. On one hand, Crawford and Godbey (1987) have stated that “if preference is significantly greater than perceived constraints, the leisure activity in question may be undertaken despite the presence of such barriers” (p.124). Hence, people’s outdoor participation may be viewed as a function of the interaction between constraints and motivations (Jackson, et al., 1993). The above

proposition points out the indispensable role of motivation in constraints research, but their proposition does not clarify whether motivation is an antecedent or consequence of perceived constraints (Alexandris, 2002). Carroll and Alexandris's (1997) research on Greeks' sport participation suggested that "highly motivated individuals are less likely to perceive high levels of constraints, and are more likely to participate in sports" (p. 296). This indicates that the role of motivation is an antecedent of constraints. On the other hand, Hubbard and Mannel's (2001) constraint-effects-mitigation model confirmed Jackson et al.'s proposition by stating that "people who are more highly motivated to participate expend greater effort on negotiating and are more successful at starting, maintaining, or increasing their level of participation" (p.158, 159). However, an insignificant relationship between motivation and constraints was found. Clearly, there is room for clarification in studying the role of motivation between constraints and maintaining participation. In particular, I see a need for studies that explicitly compare alternative models using multivariate statistical procedures and that encourage researchers to attempt this task in a variety of research domains.

In order to better understand a broader scope of the constraints-coping framework within the context of active participation as, research on the relationships among the above-noted key variables (place attachment, commitment, frequency of participation, and motivation) is needed. The use of more sophisticated analytical techniques (e.g., structural equation modeling) is also suggested by Hinch, et al. (2005).

*The Development of a Broader Constraints-Coping Model*

The objective of this research was to understand how selected latent variables (e.g., place attachment, commitment, frequency of participation, and motivation) affect recreationists' coping mechanisms (problem-focused and emotion-focused coping) while encountering constraints (Figure 5). Based on previous work, first, I hypothesized that four selected social indicators will have a negative effect on two-dimensional coping mechanisms when constraints were encountered. Second, I hypothesized that place attachment, commitment, and motivation will have negative effects on constraints. Third, I hypothesized frequency of participation will have a positive effects on constraints. Last, motivation was constructed as an immediate antecedent and is hypothesized to play a strong direct role in countering the effects of constraints. For clarifying the role of motivation in my constraints-coping model, a competing model was also developed based on Carroll and Alexandris' (1997) research (Figure 6). The purpose for constructing this model is to understand whether or not motivation is a mediator between constraints and coping mechanisms. The objective of using a competing model approach was not only to select the most appropriate constraints-coping model but also to investigate the relationships among predictor variables between the two models.

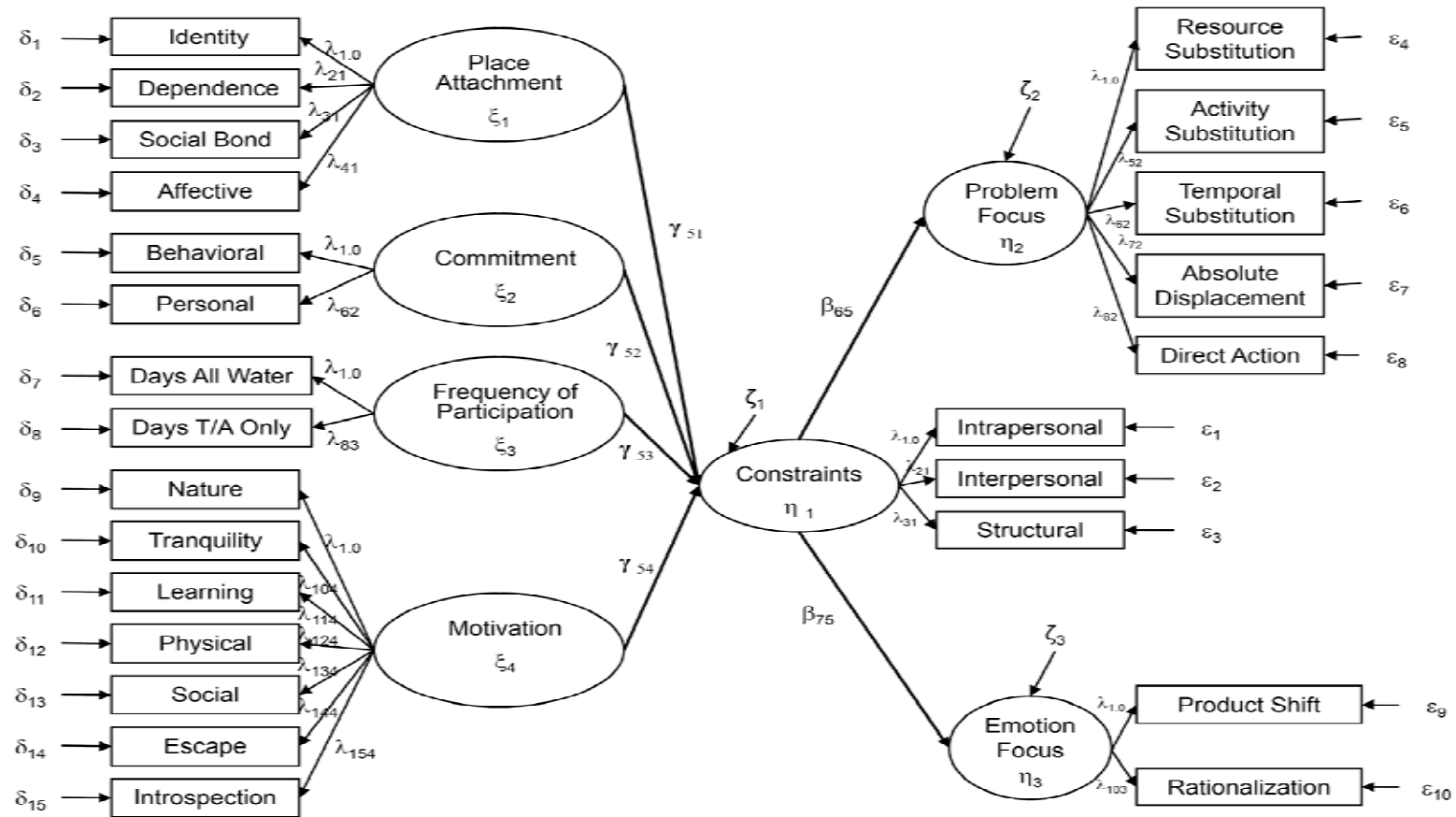


FIGURE 5. Motivation as an Antecedent of Constraints-Coping Model



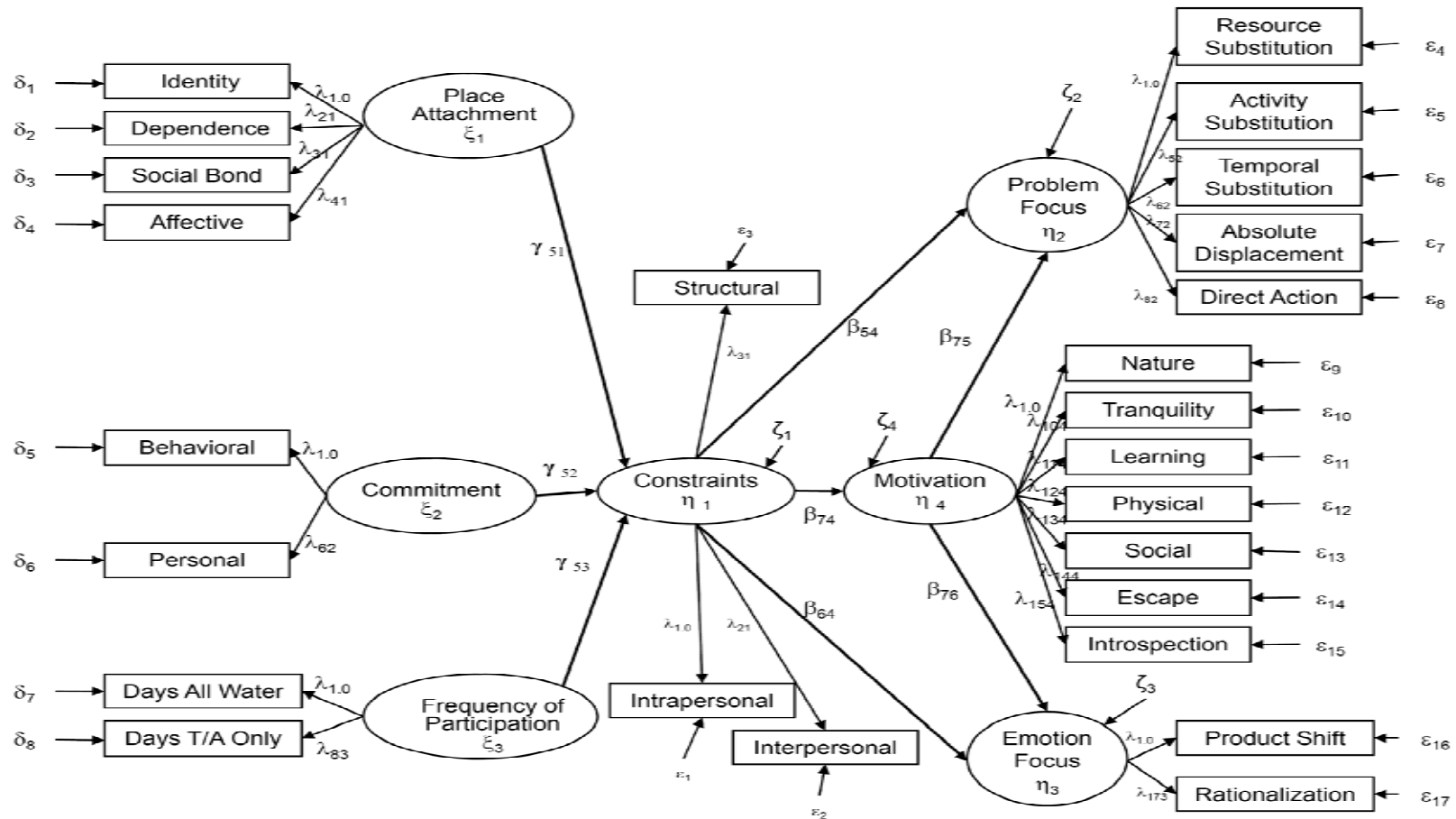


FIGURE 6. Motivation as a Mediator of Constraints-Coping Model

## **Methodology**

### *Settings*

With regard to the characteristics of research area, Lake Austin is located downstream of Mansfield Dam on Lake Travis and is situated within the Austin metropolitan area. The lake is 1,830 acres at normal pool, is 22 miles long, and is used for flood control, electrical power generation, and recreation. Because of its accessibility from the downtown Austin area, Lake Austin attracts a variety of recreationists ranging from kayakers to wakeboarders. Lake Travis (18,929 acres at normal pool) is a reservoir formed by the construction of Mansfield Dam and stretches 64 miles. Because of its size and the large parks situated on its shorelines, the lake serves as the primary boating choice in the Austin area.

### *Sampling*

My data were collected from two user groups: shoreline property owners and public boat ramp users, at Lake Austin and Lake Travis along the lower Colorado River basin west of Austin in Texas. For the shoreline property owners, postal addresses of residents residing around Lake Travis and Lake Austin were extracted from the 2007 Real Estate Property data (Travis and Burnet counties). Arc/Info Geographic Information Systems (GIS) software was used to identify property parcels listed with the tax assessor as lots containing single/multiple family dwellings adjacent to the lakes. GIS files with attribute tables including property ID, owner names, addresses, city, state, zip, and state property tax board code were derived from the Central Appraisal District

of the two counties. A total of 2,478 shoreline property parcels were extracted from the database (1,500 from Lake Travis and 978 from Lake Austin). Selected shoreline property owners were sent a presurvey letter with an access pin code to invite them to respond to the Internet survey. One week later, selected nonrespondents were sent a mail-back survey instrument, which contained a cover letter explaining the purpose of the study, the paper questionnaire, and a postage-paid self-addressed return envelope. Two weeks following this mailing, a reminder/thank you postcard was sent. Four weeks later, a second survey packet containing another cover letter, questionnaire, and self-addressed return envelope was sent to all nonrespondents. Completed surveys were received from 1,043 of the 2,478 lakefront property owners. There were 115 nondeliverable addresses and 42 returned nonusable addresses (blank questionnaires and refusals). Fifty-nine respondents were also screened out from the data analysis process if they did not participate boating in the past 12 months; a total of 984 records (43.5% effective response rate) were used in the analysis.

For the ramp user group, onsite interviews were used to collect the names and addresses of ramp users between May 25, 2009, and September 1, 2009. Twenty-eight sampling days were selected to implement exit interviews of boaters using Lake Travis and Lake Austin. Sampling occurred at both public and private boat ramps. A total of eight trained survey research personnel conducted the onsite interviews at the two lakes. Surveys were conducted with groups as they exited the lake. Depending on the use level at the site, every  $n$ th group exiting was approached to participate in a brief onsite interview. For example, for the remote sites with low use, every group exiting the lake

was approached. For the busier sites, every third group was approached. The person with the most recent birthday was requested to participate in the study (only respondents over the age of 18 were eligible to participate). A total of 519 boaters were sampled onsite who agreed to provide their name and address and they were sent a mail-back questionnaire using the above protocol outlined by Dillman (2000). There were 125 nondeliverable addresses and five returned nonusable addresses (blank questionnaires and refusals). Nineteen respondents were also screened out from the data analysis process if they did not participate boating in the past 12 months; a total of 197 records (53.2% effective response rate) were used in the analysis.

The total returned usable surveys received were 1,181 resulting in an overall effective response rate of 45.0%.

With regard to the sample demographics, overall, the sample was relatively well educated. Most indicated having, at the minimum, some post high school education (94.5%). There was little racial variation across the sample (93.2% white). Overall, the respondents' household income could be considered high with almost three quarters of the sample (76.8%) earning \$100,000 or more. The majority of respondents were somewhat experienced recreational boating participants (average years of boating = 28.8).

### *Measures*

In my hypothesized model, a partial disaggregation parceling technique was used. This method is used to sum or average subsets of items from a measure to form

indicators for a latent variable, which these indicators refer to as parcels. Williams and O'Boyle (2008) have suggested that, if the goal is to understand relations among latent variables, a partial disaggregation model (the use of parceling) is preferred. Since the objective of my research was to understand how selected latent variables impact two-dimensional latent construct of coping responses when encountering constraints, I used the parceling techniques for examining the relationships among the latent variables instead of relationships among individual items.

For the survey utilized in my research, I created six batteries of questions to construct seven latent variables in the hypothesized model. These measures included four dimensions (place identity, place dependence, social bonding, and affective attachment) for place attachment based on Jorgensen and Stedman's (2001) and Kyle, Mowen, and Tarrant's (2004) research. Commitment scales were derived from Kim, Scott, and Crompton (1997) and Moore, Scott, and Moore's (2008) two dimensions (personal and behavioral commitment) of commitment scales. For the frequency of participation, two manifest items (total days participation in a particular activity and total days of participation in a particular place) were used based on Schreyer et al.'s (1984) and Oh and Ditton's research. Seven dimensions (nature, tranquility, learning, physical fitness, social, escape, and retrospection) for motivation were derived from Driver's (1977, 1983) Recreation Experience Preferences (REP) scales. For the constraints items, three dimensions (intrapersonal, interpersonal, and structural) were developed based on an preliminary onsite interview in 2007 (Kyle, et al., 2008) and previous constraints and boating-related studies (Nyaupane & Andereck, 2008; Tseng, et al., 2009). Last, five

dimensions (resource substitution, activity substitution, temporal substitution, absolute displacement, and direct action) for problem-focused coping and two dimensions (rationalization and product shift) for emotion-focused coping were all drawn from studies conducted by Miller and Freimund (1996) Miller and McCool (2003) and Schuster et al. (2007).

The item descriptives, means, standard deviations, factor loadings, and internal consistency are reported in Table 7. Construct reliability estimates were calculated for all scales. The Cronbach's alphas of problem-focused coping, emotion-focused coping, constraints, place attachment, commitment, frequency of participation, and motivation ranged between .922 and .674, indicating an acceptable level of reliability (.60 was considered acceptable with scales possessing a reduced number of items, e.g., six or less, Cortina, 1993). However, Bollen (1989) indicated that Cronbach's alpha has several limitations. For example, coefficient alpha wrongly assumes that all items contribute equally to reliability. Thus, calculations of composite reliability, which draw on the standardized loadings and measurement error for each item are considered superior (Fornell & Larcker, 1981). The composite reliability of all items were greater than .70, which indicated a good reliability (Hair, Black, Babin, Anderson & Tatham, 2006).

TABLE 8

*Item Factor Loading and Means*

| Items                         | $\alpha$ | CR   | $\lambda$ | SE   | <i>t</i> | <i>M</i> | <i>SD</i> |
|-------------------------------|----------|------|-----------|------|----------|----------|-----------|
| <b>Problem-Focused Coping</b> | .674     | .699 |           |      |          | 2.063    | .632      |
| Resource Substitution         |          |      | .519      | --   | --       | 1.497    | .702      |
| Activity Substitution         |          |      | .675      | .085 | 12.289   | 2.277    | 1.105     |
| Temporal Substitution         |          |      | .605      | .097 | 10.478   | 3.106    | 1.216     |
| Absolute Displacement         |          |      | .561      | .060 | 15.275   | 1.380    | .703      |
| Direct Action                 |          |      | .447      | .079 | 10.014   | 2.052    | .955      |
| <b>Emotion-focused Coping</b> | .689     | .717 |           |      |          | 2.414    | .829      |
| Product Shift                 |          |      | .869      | --   | --       | 2.140    | .861      |
| Rationalization               |          |      | .615      | .095 | 8.910    | 2.688    | 1.031     |
| <b>Constraints</b>            | .862     | .865 |           |      |          | 3.210    | .878      |
| Intrapersonal Constraints     |          |      | .834      | --   | --       | 3.304    | .938      |
| Interpersonal Constraints     |          |      | .793      | .029 | 32.510   | 3.383    | .941      |
| Structural Constraints        |          |      | .850      | .035 | 33.713   | 2.968    | 1.090     |
| <b>Commitment</b>             | .864     | .870 |           |      |          | 2.832    | .881      |
| Behavioral Commitment         |          |      | .807      | --   | --       | 2.471    | .974      |
| Personal Commitment           |          |      | .944      | .051 | 20.960   | 3.193    | .9035     |

TABLE 8

*Item Factor Loading and Means (Cont.)*

| Items                                    | $\alpha$ | CR   | $\lambda$ | SE   | <i>t</i> | <i>M</i> | <i>SD</i> |
|--|----------|------|-----------|------|----------|----------|-----------|
| <b>Place Attachment</b>                  | .905     | .915 |           |      |          | 3.804    | .711      |
| Place Identity                           |          |      | .901      | --   | --       | 3.538    | 1.020     |
| Place Dependence                         |          |      | .740      | .019 | 29.484   | 3.668    | .708      |
| Social Bonding                           |          |      | .941      | .016 | 46.744   | 3.972    | .745      |
| Affective Attachment                     |          |      | .825      | .020 | 31.717   | 4.039    | .708      |
| <b>Frequency of Participation</b>        | .922     | .927 |           |      |          | 32.67    | 35.225    |
| Total Boating Days in the Past 12 Months |          |      | .992      | --   | --       | 34.75    | 36.857    |
| Boating Days on Lake Austin/Travis       |          |      | .863      | .039 | 21.759   | 30.60    | 36.289    |
| <b>Motivation</b>                        | .867     | .857 |           |      |          | 2.833    | .553      |
| Enjoy Nature                             |          |      | .579      | --   | --       | 3.227    | .655      |
| Tranquility                              |          |      | .544      | .052 | 23.758   | 2.790    | .876      |
| Learning                                 |          |      | .788      | .066 | 22.476   | 2.560    | .715      |
| Physical Fitness                         |          |      | .821      | .065 | 22.974   | 3.044    | .689      |
| Social Bonding                           |          |      | .573      | .053 | 16.746   | 2.940    | .590      |
| Escape                                   |          |      | .546      | .054 | 17.616   | 2.956    | .665      |
| Introspection                            |          |      | .864      | .095 | 22.398   | 2.304    | .940      |



*Procedures of Data Analysis and Model Testing*

Multiple-imputation features in LISREL 8.7 were addressed in the data-based missing data procedures (11.98% missing). A majority of CFA and SEM models reported in the applied research literature used the maximum likelihood (ML) or generalized least squares (GLS). However, in my investigation, due to the marked skewness and kurtosis (resource substitution and absolute displacement, frequency of participation), a robust ML (Bentler, 1995; Satorra & Bentler, 1994) was recommended to deal with the non-normal data. Research has also shown that robust ML is a “very well-behaved estimator across different levels of non-normality, model complexity, and sample size” (Brown, 2006, p. 379). A mean-adjusted  $\chi^2$  (also called Satorra-Bentler scaled  $\chi^2$  or SB  $\chi^2$ ) was used instead of  $\chi^2$  statistic in the ML estimator. To facilitate model identification while obtaining the first indicator’s loading, the variance of each latent construct was fixed to 1 and the first indicator freely estimated (Weston & Gore, 2006).

A two-step process for model testing in structural equation modeling suggested by Anderson and Gerbing (1988) was followed. The first step involved an examination of the measurement model (Confirmatory Factor Analysis [CFA]) in LISREL 8.7 (Jöreskog & Sörbom, 2004). This tested the suitability of my hypothesized factor structure for the data. In the second step, a structural model (motivation as an antecedent model) was then tested to examine the relationships among latent constructs (Figure 5).

Next, a competing model approach was used to test the role of motivation (Figure 6). Distinguishing the two models tested is the role of motivation as an

antecedent or mediating factor in the constraints-coping model. Based on the work reviewed earlier, Carroll and Alexandris (1997) observed that highly motivated individuals perceive fewer constraints and participate more often, whereas others (e.g., Jackson, et al., 1993; Hubbard & Mannell, 2001) have found that perceived constraints can be lessened due to heightened motivation, resulting in continued participation. Therefore, clarifying the role of motivation in a broader perspective of the constraints-coping model is another goal of this research. There were two steps employed for comparing the competing models (Hair, et al., 2006) First, multiple model fit indices are assessed to check the appropriateness of each competing model. For example, the Akaike Information Criterion (AIC) was used to select among the competing models. A smaller AIC indicates a superior model (Akaike 1987). Second, path coefficients and predictive power or variance explained ( $R^2$ ) of models were then compared. Model fit indices and explanatory power being equivalent, the best model is the most parsimonious one (Bagozzi, 1992).

Last, further goodness-of-fit indices were also used in reporting the results of my model testing. These indices provide an indication of the degree to which my model fit the data. These included Steiger and Lind's (1980) Root Mean Square Error of Approximation (RMSEA), Bentler's Comparative Fit Index (CFI), and Bentler and Bonett's (1980) Non-Normed Fit Index (NNFI). Browne & Cudeck (1993, p. 144) proposed, as a rule of thumb, that RMSEA values less than 0.08 suggested adequate model fit (i.e., a "reasonable error of approximation"). The NNFI measures relative fit by comparing noncentrality per degree of freedom. It is relatively stable across sample

size (Bollen, 1990). The CFI assesses the difference in noncentrality by comparing the specified model with the null model and is also relatively stable across sample size (Bentler, 1990). Both values of NNFI and the CFI range from 0 to 1, and values greater than .95 indicate an acceptable model fit.

## Results

### *Descriptive Analyses*

At the dimensional level (see Table 7), respondents' use of strategies to minimize the impact of negative situations on their boating experience reflected a combination of behavioral change (e.g., *temporal substitution*,  $M=3.1$ ; *activity substitution*,  $M=2.3$ ); and cognitive adaptation (e.g., *rationalization*,  $M=2.7$ , and *product shift*,  $M=2.1$ ). As evidenced by the lower mean values, respondents tended not to adopt more extreme actions in response to adverse elements that involved choosing alternate lakes or areas (e.g., *resource substitution*,  $M=1.5$ ) or to completely stop boating in response to undesired conditions (e.g., *absolute displacement*,  $M=1.4$ ).

For the constraints dimensions, interpersonal constraints (i.e., conflicts with other boaters, such as other boats' wakes, reckless behavior, loud music, and engine noise) ranked the highest ( $M=3.4$ ), followed by intrapersonal constraints (e.g., boaters' perception risk in high-use areas, past experiences with unsafe boating condition;  $M=3.3$ ). Structural constraints (e.g., undesirable number of boats on the lake) were ranked the last ( $M=3.0$ ) among all types of constraints.

With regard to the place attachment dimensions, respondents were generally attached to Lake Austin and Lake Travis. Boaters ranked the affective attachment to their favorite site the highest ( $M=4.0$ ), followed by boaters' ties to their favorite site and were grounded in social bonding (e.g., families or friends;  $M=3.9$ ).

For the commitment dimensions, personal commitment was much stronger than behavioral commitment with overall means of 3.2 and 2.5, respectively. Overall, respondents' commitment to boating was modest.

There were seven items in the dimensions of motivation. Enjoyment of nature ( $M=3.2$ ), physical fitness ( $M=3.0$ ), and escape from the usual demands of life or other people ( $M=3.0$ ) were ranked as the top three motives. Based on the item items wording in each of the subdimensions, it appears that boaters visited the lake due to its naturalness, enjoyment of less-used areas of the lake, and for physical relaxation.

### *Measurement and Structural Models*

In the first step of model testing, the measurement model was assessed via a confirmatory factor analysis. The good-of-fit indices (SB  $\chi^2=1426.321$ , d.f.=254, RMSEA=.063, CFI=.943, NNFI=.952) for the measurement model and the tests of internal consistency indicated that the model satisfactorily fit the data (see Table 8). All indicators loaded significantly on their specified latent construct (e.g.,  $\lambda>.40$ ) at the .01 level, providing further psychometric support for the measures used. Following the establishment of a valid measurement model, I then tested the structural model (Motivation as an Antecedent-Model A) using covariance structure analysis. All of the

parameters were statistically significant at the .05 level. The final model satisfactorily fit the data ( $SB \chi^2=1678.762$ , d.f.=263, RMSEA=.067, CFI=.942, NNFI=.934, AIC=1802.762). For the competing model (Motivation as a Mediator- Model B), it also demonstrated a satisfactory fit to the data ( $SB \chi^2=2003.025$ , d.f.=264, RMSEA=.075, CFI=.929, NNFI=.919, AIC=2125.025). However, multiple model fit indices (e.g., AIC for Model A is better than Model B) all demonstrated that Model A was a better fit compared to model B. Given Model A's superiority, my discussion of the findings is based on this model.

*TABLE 9*  
*Goodness of Fit Indices*

| <b>Model</b>                                     | <b><math>\chi^2</math></b> | <b>SB <math>\chi^2</math></b> | <b>d.f.</b> | <b>RMSEA</b> | <b>NNFI</b> | <b>CFI</b> | <b>AIC</b> |
|--|----------------------------|-------------------------------|-------------|--------------|-------------|------------|------------|
| Measurement Model                                | 2384.692                   | 1426.321                      | 254         | .063         | .943        | .952       | 1568.321   |
| Structural Model A (Motivation as an Antecedent) | 2497.255                   | 1678.762                      | 263         | .067         | .934        | .942       | 1802.762   |
| Structural Model B (Motivation as a Mediator)    | 2758.047                   | 2003.025                      | 264         | .075         | .919        | .929       | 2125.025   |

### *Summary of Effects*

Table 9 depicts the statistically significant direct effects among seven latent variables. The discussion that follows describes the nature of these relationships:

1. *The direct effects between four social indicators (place attachment, commitment, frequency of participation, and motivation) and constraints:* Only commitment

and motivation had significant direct effects on constraints. There was a negative relationship between commitment and constraints ( $\beta = -.189$ ,  $t\text{-value} = -4.482$ ).

That is, highly committed participants perceived fewer constraints than their less-committed counterparts. However, a positive relationship was found between motivation and constraints ( $\beta = .147$ ,  $t\text{-value} = 3.770$ ). That is, active participants who enjoyed the lake due to its unique settings, natural environment, and physical relaxation were more sensitive to the negative situations (e.g., crowding, other boaters' deviant behaviors) and perceived more constraints than their less-motivated counterparts. The four latent variables accounted for 3.6% of the variance in constraints.

2. *Direct effects between constraints and problem-focused coping:* Problem-focused coping was positively influenced by constraints ( $\beta = .797$ ,  $t\text{-value} = 12.396$ ). That is, as the levels of constraints increased, boaters were more likely to employ problem-focused coping strategies in response to unwanted situations. These constraints accounted for 63.5% of the variance in problem-focused coping.
3. *Direct effects between constraints and emotion-focused coping:* Emotion-focused coping was negatively influenced by constraints ( $\beta = -.416$ ,  $t\text{-value} = -11.240$ ). That is, as the levels of constraints increased, boaters were less likely to employ emotion-focused coping strategies in response to unwanted situations. Constraints accounted for 17.3% of the variance in emotion-focused coping.

TABLE 10  
*Structural Model Analysis*

| Direct Effect                            | $\beta$ | t-value  | $R^2$ (Total Coefficient of Determination) |
|--|---------|----------|--|
| Place Attachment → Constraints           | .034    | .919     | .036                                       |
| Commitment → Constraints                 | -.189   | -4.482*  |  |
| Frequency of Participation → Constraints | .057    | 1.625    |  |
| Motivation → Constraints                 | .147    | 3.770*   |  |
| Constraints → Problem-Focused Coping     | .797    | 12.396*  | .635                                       |
| Constraints → Emotion-focused Coping     | -.416   | -11.240* | .173                                       |

\*  $p < .05$ .

#### *Summary of Indirect Effects*

All the indirect effects are reported in Table 10. These analyses provided the major understanding of how selected social indicators influenced active participants' coping strategies when encountering constraints. The purpose of these analyses is to examine the mediating role of constraints in a path from the independent variables to a dependent variable (i.e., coping strategies). All significant indirect effects are discussed below:

1. For the *Commitment–Problem-focused coping* relationship, the indirect effect suggests that constraint is a partial mediator ( $\beta = -.070$ ,  $t\text{-value} = -4.298$ ). I observed a direct association between commitment and problem-focused coping, but this association was partially explained by the effect of respondents feeling constrained. More committed boaters were less likely to employ problem-focused coping strategies in response to the problematic person–environment

relationship when encountering constraints. That is, active boaters with a greater level of commitment perceived that crowding and conflict were less constraining and were less willing to alter their timing of participation (temporal substitution), or the mode of participation (activity substitution).

2. Constraints were also a significant mediator of the *Commitment–Emotion-focused coping* relationship ( $\beta=.075$ ,  $t\text{-value}=4.337$ ). The positive relationship between commitment and emotion-focused coping indicated that active participants were more inclined to adjust their expectations or lower their standards for the experience (product shift) and/or reevaluate an undesirable situation in a more favorable light (rationalization) when encountering constraints.
3. The total indirect effect of the *Motivation–Problem-focused coping* relationship was examined ( $\beta=.113$ ,  $t\text{-value}=3.690$ ). When the perception of constraints encountered was high, those active participants whose motives for being in a natural environment, enjoying less-crowded areas, and escaping from others were more likely to avoid these negative situations by applying problem-focused coping, such as varying the timing of the experience, the means of gaining access, the setting, and activity.
4. Constraints were also a significant mediator of the *Motivation–Emotion-focused coping* relationship ( $\beta=-.121$ ,  $t\text{-value}=-3.71$ ). The relationship illustrated that when boaters had conflicts with others or were in crowded situations, highly motivated participants tended to use less emotion-focused coping strategies in



response to undesirable conditions.

*TABLE 11*  
*Summary of Indirect Effects*

| <b>PATH</b>   | <b>Indirect</b> | <b>SE</b> | <b>t</b> |
|---|-----------------|-----------|----------|
| Place Attachment → Constraints → Problem-Focused Coping           | .011            | .012      | .915     |
| Commitment → Constraints → Problem-Focused Coping                 | -.070           | .016      | -4.298*  |
| Frequency of Participation → Constraints → Problem-Focused Coping | .001            | .001      | 1.626    |
| Motivation → Constraints → Problem-Focused Coping                 | .113            | .031      | 3.690*   |
| Place Attachment → Constraints → Emotion-focused Coping           | -.012           | .013      | -.911    |
| Commitment → Constraints → Emotion-focused Coping                 | .075            | .017      | 4.337*   |
| Frequency of Participation → Constraints → Emotion-focused Coping | -.001           | .001      | -1.619   |
| Motivation → Constraints → Emotion-focused Coping                 | -.121           | .033      | -3.710*  |

\*  $p < .05$ .

## Discussion

The primary purpose of this research was to explore the effect of several social indicators (i.e., place attachment, commitment, frequency of participation, and motivations) on their coping strategies when encountering factors that may potentially constrain their participation. My research findings illustrated that commitment and motivation had important roles in influencing active participants' perceived constraints and subsequent coping strategies. In addition, I found that constraints demonstrated opposite effects on two dimensional coping mechanisms. In the past, empirical evidence has only illustrated the role of motivation based on the constraint negotiation model. However, there is no evidence confirming the role of motivation in the constraints-

copied relationship. My results confirmed that motivation is an immediate antecedent of constraints as well as a potential trigger for encouraging more problem-focused coping strategies. In the following sections, I discuss significant direct and indirect effects in the constraints-coping model, evaluate the role of motivation based on constraint negotiation literature, and provide explanations for insignificant relationships.

First, my results were consistent with past coping studies in outdoor recreation (e.g., Hammitt and Patterson, 1991; Shelby and Vaske, 1991; Sutton and Ditton, 2005) illustrating that recreationists utilize problem-focused coping strategies (e.g., camp out of sight of other groups, avoiding trails with popular vistas, or fishing in a substitute waterbody) to accommodate undesired constraints. A positive association between overall constraints and problem-focused coping was confirmed in my investigation. With regard to the overall constraints-emotion focused coping relationship, active participants were less likely to cope with overall constraints by the strategies of cognitive adjustments.

My results indicated that commitment and motivation had opposite effects in triggering active participants' coping strategies. For those individuals who have a high level of commitment in boating, they perceived less constrained and tended to rationalize or lower their standard for the experience and maintained participation. These findings were consistent with Buchanan's (1985) research showing that as commitment increases, susceptibility to other influences (e.g., participation in a new activity) decreases. In the context of boating, active participants with a high level of activity commitment expressed less willingness to apply extreme actions (e.g., changing locations or activities)

in response to crowding related situations or interpersonal conflicts. These boaters were less likely to perceive high levels of constraints and more likely to apply cognitive adjustment strategies in maintaining their participation in boating. These results also corresponded to Sutton's (2007) research on recreational fishing participation in Queensland in which he found that "more committed fishers do indeed have fewer activities that compete with fishing" (p. 82).

The role of motivation was confirmed as an immediate antecedent rather than a mediator in the constraints-coping relationship. My results were consistent with Jackson et al.'s (1993) "balance" proposition that people's participation in outdoor recreation activities may be viewed as a function of the interaction between constraints and motivations. Carrol and Alexandris (1997) found that more committed Greek sport participants perceived fewer constraints and participated more in sport activities. However, I found that the role of motivation differed by activity (sport vs. boating) and setting type (urban vs. natural environment) and demonstrated different effects on constraints. In my investigation of recreational boating in natural setting, active participants were more likely motivated by the prospect for enjoying nature, experiencing physical relaxation, or escaping from others and then perceived crowding or conflicts with others as problematic. These contemplative motives imply a potential problem resulting from increased use level for the lakes. In particular, contemplative activities are more likely to be disrupted by heavy concentrated use. Thus, for those individuals who were motivated by contemplative reasons, they may be more sensitive to the negative situations; hence, they are more likely to cope with these constraints with

problem-focused coping strategies (e.g., setting substitution or talking to the lake authorities) for maintaining their participation. In addition, my results offered support for White's (2008) findings that "motivation exerts influence as an immediate antecedent of participation as well as a potential trigger for encouraging the constraint negotiation processes" (p. 356).

Contrary to what I anticipated, place attachment did not affect boaters' coping mechanisms. Given that the crowded situations or others' deviant operations detract from the quality of boating experiences, I anticipated that place attachment would have a similar valence as commitment. In other words, I anticipated that more attached individuals would perceive fewer constraints and would be more likely to apply emotion-focused coping strategies for maintaining their boating participation instead of extreme actions (e.g., choose alternate lakes, quit boating). However, this unexpected result may be due to the sampling issue of shoreline property owners (residential proximity) in my investigation. In previous place attachment literature related to resource proximity, Kaltenborn and Williams (2002) reported local residents, compared to tourists, expressed a higher level of attachment to a Norwegian World Heritage site. In a study on distance from U.S. National Forests, Nyaupane, Graefe, and Burns (2003) indicated that people who lived within 50 miles of the Gifford Pinchot National Forest had significantly higher place attachment scores than those who traveled more than 100 miles to visit the forests. Although I observed that the shoreline property owners' scores on place attachment remained high, it does not necessary directly link to the use of coping mechanisms for these specific resource users. Due to their residential proximity

to the lakes (more than two thirds of boaters reported that they resided within 3 miles of the lakes), these property owners may launch their boat anytime without encountering the kind of constraints reflected in our items. Another possible explanation for the non-existent relationship may be due to the extent of constraints that boaters perceived. In Vaske, Carothers, Donnelly, and Baird's (2000) research on skiers' conflicts in Colorado resorts, they also found a nonsignificant relationship between place attachment and interpersonal constraints for their skier group. They explained that the different place attachment effects on skiers and snowboarders may be due to the relatively few Colorado ski areas that permit snowboarders. Individuals who have been constrained from participating in their activity may place greater importance on the resource once such restrictions have been lifted. For the residents in my investigation, they may not be constrained as much as those distant visitors and seldom apply coping mechanisms in maintaining their continuing participation in boating.

Last, insignificant effects of frequency of participation on both problem-focused and emotion-focused coping were also detected. Based on McFarlane et al.'s (1998) research on wilderness users, I anticipated that individuals with a high frequency of participation were more likely to choose different settings to carry out their activities. These experienced constituents were expecting to be more likely to have built a "place repertoire" of substitute settings and were more likely to make a substitution decision when encountering constraints. In the context of boating, Kuentzel and Heberlein (1992) also found similar results that the more experienced boaters avoided crowded islands and instead anchored at remote sites. However, my results showed little support for the

above statements. Due to insignificant place attachment effects on two dimensional coping mechanisms, this may not be an unexpected result. In the place attachment literature, frequency of participation was strongly tied to individuals' place identity and dependence (Hammit, et al., 2004; Williams & Vaske, 2003). Especially with place dependence, recreationists may be strongly dependent on a specific place due to frequent visitations (Vaske & Kobrin, 2001). Thus, frequency of participation may have a similar pattern as place attachment, resulting in an insignificant effect on coping. In sum, I suggest that future investigations of coping strategies consider maintaining the four crucial indicators in this research and explore how these active participants cope with constraints based on constraints-coping model in different settings.

## **CHAPTER V**

### **CONCLUSIONS AND DISCUSSION**

The goal of my dissertation was to develop and test a constraints-coping model building on previous work by Schneider (2003) and Schneider and Stanis (2007). In addition, I examined how certain key variables (i.e., place attachment, commitment, frequency of participation, and motivation) affect individuals' continuing leisure engagement in outdoor recreation. For the dissertation, the first paper examined variables affecting anglers' willingness to make a resource substitution (one of problem-focused copings) decisions in the context of recreational fishing. The second and third papers broadened the scope by developing and testing a more comprehensive model of constraints-coping processes in the context of recreational boating. Results derived from the two study contexts were discussed in light of past work on constraints, constraint negotiation, coping within outdoor recreation contexts. In the following sections, I synthesized the potential integration of constraints and coping research and discussed the benefits of using constraints-coping model in future outdoor recreation research. To organize the results, a condensed summary of the study's major findings is displayed in Table 11.

#### **Development and Examination of a Constraints-Coping Model**

Since Crawford et al. (1991) proposed that leisure participation is heavily dependent on negotiating a hierarchy of intrapersonal, interpersonal, and structural leisure constraints, leisure constraints research has become a recognizable and distinct

subfield within leisure studies (Jackson, 2005). Crawford and his colleagues further indicated that the three types of constraining factors may directly influence subsequent aspects of leisure engagement for a person who is already participating. In 1993, Jackson, Crawford, and Godbey modified their leisure constraints model by including the processes of negotiation. They suggested that the leisure constraints should not be viewed as necessarily insurmountable obstacles. Individuals can negotiate with constraints and maintain at least some form of participation. Thus, research has illustrated that constraints do not always prevent or reduce participation (Scott, 1991; Shaw, et al., 1991). People may negotiate constraints by applying an array of coping mechanisms.

In outdoor recreation, researchers have found that recreationists applied behavioral coping and cognitive coping strategies in response to unwanted or unanticipated situations (Kuentzel & Heberlein, 1992). For example, Sutton and Ditton (2005) observed that resource substitution was a strategy commonly used by anglers in response to biologically or managerially imposed constraints. Also, in Hammitt and Patterson's (1991) study, they observed that their respondents utilized displacement (e.g., camp out of sight of other groups or avoidance of trails with popular vistas) to minimize encounters with other visitors. Shelby, Bregenzer, and Johnson (1988) observed that some whitewater boaters had refined their expectation ("product shift") for encounters with other boaters to maintain their satisfaction. However, these investigations have not been framed within the context of existing constraints frameworks.



Recently, Iwasaki and Schneider (2003) and Schneider and Stanis (2007) proposed the possible integration of constraints-negotiation processes and a stress-coping model. The stress-coping model posited by Lazarus and Folkman (1984) hypothesized that stressful situations result in a mediating appraisal process. During the appraisal process, the individual determines which coping options are available and which are likely to be successful in addressing the situation. There are two dimensions of coping in their stress-coping model, problem-focused and emotion-focused coping. Iwasaki and Schneider (2003) further suggested that the leisure constraints are considered elements of stress, whereas constraint negotiation appears to share commonalities with ways of coping with stress. Based on Iwasaki and his colleagues' propositions, I constructed a constraints-coping model to extend our understanding of constraints negotiation by integrating an understanding of coping mechanisms into leisure constraints-negotiation models. This model sought to address the gap between constraints and coping strategies by examining its relationships among active recreational participants. All the hypotheses are summarized in Table 12.

By using a two-step process for model testing (Anderson & Gerbing, 1988) in structural equation modeling, my constraints-coping model demonstrated a satisfactory fit of the data. My research on a constraints-coping model empirically supported Iwasaki and Schneider's (2003) and Schneider and Stanis's (2007) suggestion that Lazarus and Folkman's coping strategies can be potentially integrated into constraints-negotiation processes. I also confirmed that the three types of onsite constraints continue to have relevance for active participants (*H2a–H2f*). My research results provided empirical

support for Crawford et al.'s (1991) notion that the three types of constraining factors directly influenced subsequent aspects of leisure engagement for persons who are already participating.

In general, recreationists are more likely to cope with overall constraints by employing an array of problem-focused coping strategies (*H3e*), rather than to simply adjust cognitively (*H3f*). More specifically, when the overall constraints are broken down into three dimensions (intrapersonal, interpersonal, and structural), recreationists' coping responses varied in response to the different types of constraints they encountered. The experience of constraints did not universally result in the use of increased coping. First, for the intrapersonal dimension, I found that recreationists employed both behavioral changes (problem-focused coping) and cognitive adjustments (emotion-focused coping) in response to undesired conditions (*H2a–H2b*). I found that active participants with higher levels of intrapersonal constraints (e.g., risk perception for high-use areas, previous experience with safety issues) were more likely to apply behavioral and cognitive adjustments in combination. My results were consistent with those of Schuster, Hammitt, and Moore (2006) in Shining Rock Wilderness areas, North Carolina, where they found that hikers created coping schemes by combining problem and emotion focused coping strategies. For the interpersonal dimensions, unexpected negative effects of interpersonal constraints on both problem-focused and emotion-focused coping were found (*H2c–H2d*). It is possible that it is difficult to use either problem- or emotion-focused coping strategies in response to others' behavior given the difficulty associated with controlling the behavior. For the structural dimensions, my

results indicated that active participants were more likely to employ problem-focused coping in response to structural constraints (*H2e*) instead of using cognitive adjustments (*H2f*).

### **Examination of an Expanded Constraints-Coping Framework**

In order to broaden the scope of the constraints-coping framework, I integrated more social indicators (e.g., commitment, motivation, place attachment, and frequency of participation) into my hypothesized model based on Walker's (2005, 2007) suggestions. To better understand my hypothesized constraints-coping framework, I focused on how these variables affect individuals' continuing leisure engagement in outdoor recreation in spite of encountering less than desirable conditions.

First, my findings illustrated that place attachment did not influence boaters' perceived constraints (*H3a*). This insignificant effect subsequently influenced the place attachment–coping relationship. Based on Korpela et al.'s (2001) research, I anticipated that active participants who have strong ties to a place may be reluctant to leave their “favorite” places for other settings. Individuals who have a greater attachment to the setting are less likely to make a substitution decision (problem-focused coping). This unexpected result may be due to the sampling issue of shoreline property owners (residential proximity) in my investigation. Due to their residential proximity, boaters who resided on the sampled lakes may launch their boat anytime without encountering the kind of constraints reflected in my measures of constraints.

However, in my first paper, I observed strong associations between two-dimensions of place attachment (i.e., place identity and place dependence) and setting-specific substitution (*H1f-H1g*). I found that place dependence and place identity were effective predictors in decreasing anglers' willingness to make a resource substitution decision, which has been consistently reported in previous place-related literature. Thus, in future constraints-coping investigations, place attachment still should be considered an important potential element in influencing active participants' coping mechanisms.

### **The Role of Commitment in the Constraints-Coping Framework**

Commitment played an important role in influencing active participants' coping strategies when they encountering constraints (*H3b*). I found that those individuals who have a high level of commitment were less likely to perceive high levels of constraints and more likely to apply cognitive adjustment strategies in maintaining their participation. However, in the angler investigation, I found further evidence that the two sub-dimensions (personal and behavioral) of commitment demonstrated different effects on resource substitution. Anglers' behavioral commitment (i.e., boat ownership) increased respondents' willingness to make resource substitution decisions (*H1e*). Alternately, personal commitment was not a significant predictor of the resource substitution (*H1d*). These findings illustrate that multidimensional conceptualization of commitment provides a more nuanced understanding of the construct and its effect on recreationists' coping decisions.

### **The Role of Motivation in the Constraints-Coping Framework**

My results confirmed that motivation is an immediate antecedent of constraints as well as a potential trigger for encouraging more problem-focused coping strategies (*H3d*). In my investigation of recreational boating in suburban areas, for those individuals who were motivated by the prospect of enjoying nature, experiencing physical relaxation, or escaping from others, they may be more sensitive to negative situations; hence, they are more likely to cope with these constraints with problem-focused coping strategies (e.g., setting a substitution or talking to the lake authorities) for maintaining their participation. In my investigation of anglers, trophy-seeking motives demonstrated a similar pattern in predicting resource substitution (*H1h*). However, a significant interaction between gender and motives was detected. The effect of trophy-seeking motive on resource substitution differed between men and women. For men who were motivated by seeking a trophy fish, or obtaining a prize, they were less likely to make a resource substitution. In future coping investigations, interaction effects between motivation and sociodemographic indicators should also be included.

### **The Role of Frequency of Participation in the Constraints-Coping Framework**

Insignificant effects of frequency of participation on both problem-focused and emotion-focused coping were also observed (*H3c*). Based on McFarlane et al.'s (1998) research on wilderness users, I anticipated that individuals with a high frequency of participation would more likely choose different settings to carry out their activities. However, in my investigation of anglers, I found that freshwater anglers with high past

use were more likely to have built a repertoire of preferred fishing holes and, hence, were more likely to experience a variety of benefits from fishing (*H1a*). Thus, in the future constraints-coping investigation, frequency of participation remained as an important potential element in influencing active participants' coping mechanisms.

### **The Role of Demographics in the Constraints-Coping Framework**

My results indicated that sociodemographic indicators play an important role in moderating recreationists' resource substitution decisions. Although I did not include the socio-demographics in my analyses of the constraints-coping model, the results of logistic regression analysis in the anglers' investigation demonstrated that gender, age, and income were related to recreationists' coping strategies (*H1i–H1k*). For example, anglers with a greater income were less constrained in leisure activities and were expected to be more willing to make a substitution decision. Also, women were more likely to make a resource substitution decision than men. In the future constraints-coping studies, not only should the socio-demographic indicators be included, but also the moderating effects of these indicators should be considered.

TABLE 12  
Summary of Findings

| <b><i>Relationship</i></b>   | <b><i>Result</i></b> |
|--|----------------------|
| <b><i>Hypothesis 1a: Frequency of participation will be positively associated with resource substitution.</i></b>                                | Supported            |
| <b><i>Hypothesis 1b: Skill level will be negatively associated with resource substitution.</i></b>   | Supported            |
| <b><i>Hypothesis 1c: Knowledge level will be negatively associated with resource substitution.</i></b>   | Supported            |
| <b><i>Hypothesis 1d: Personal commitment will be negatively associated with resource substitution.</i></b>                                       | Not Supported        |
| <b><i>Hypothesis 1e: Behavioral commitment will be negatively associated with resource substitution.</i></b>                                     | Not Supported        |
| <b><i>Hypothesis 1f: Place identity will be negatively associated with resource substitution.</i></b>  | Supported            |
| <b><i>Hypothesis 1g: Place dependence will be negatively associated with resource substitution.</i></b>  | Supported            |
| <b><i>Hypothesis 1h: Motivation will be negatively associated with resource substitution.</i></b>  | Partially Supported  |
| <b><i>Hypothesis 1i: The elderly will be less willing to make a resource substitution decision.</i></b>  | Supported            |
| <b><i>Hypothesis 1j: Females will be more likely to make a resource substitution than males.</i></b>   | Supported            |
| <b><i>Hypothesis 1k: People with higher income will be more likely to make a resource substitution than their lower-income counterparts.</i></b> | Supported            |
| <b><i>Hypothesis 2a: There will be a positive and significant association between intrapersonal constraints and problem-focused coping.</i></b>  | Supported            |

TABLE 12  
Summary of Findings (Cont.)

| <i>Relationship</i>  | <i>Result</i> |
|--|---------------|
| <i>Hypothesis 2b: There will be a positive and significant association between intrapersonal constraints and emotion-focused coping.</i> | Supported     |
| <i>Hypothesis 2c: There will be a positive and significant association between interpersonal constraints and problem-focused coping.</i> | Not Supported |
| <i>Hypothesis 2d: There will be a positive and significant association between interpersonal constraints and emotion-focused coping.</i> | Not Supported |
| <i>Hypothesis 2e: There will be a positive and significant association between structural constraints and problem-focused coping.</i>    | Supported     |
| <i>Hypothesis 2f: There will be a positive and significant association between structural constraints and emotion-focused coping.</i>    | Not Supported |
| <i>Hypothesis 3a: Levels of place attachment will have a negative effect on constraints.</i>   | Not Supported |
| <i>Hypothesis 3b: Levels of commitment will have a negative effect on constraints.</i>   | Supported     |
| <i>Hypothesis 3c: Frequency of participation will have a positive effect on constraints.</i>   | Not Supported |
| <i>Hypothesis 3d: Levels of motivation will have a negative effect on constraints.</i>   | Not Supported |
| <i>Hypothesis 3e: There will be a positive and significant association between overall constraints and problem-focused coping.</i>       | Supported     |
| <i>Hypothesis 3f: There will be a negative and significant association between overall constraints and emotion-focused coping.</i>       | Supported     |



## **Management Implications**

### *Management Implications for Texas Parks and Wildlife Department (TPWD)*

My first research paper sought to understand and determine the extent of resource substitution behavior among Texas anglers. Knowing anglers' willingness to substitute will not only aid in our understanding of how people react to constraints on the recreation behavior but also aid in the measurement of recreation demand, consumer surplus, and the value of recreation. Substitution research can be used to determine marketing strategies for promoting fishing among the Texas population with the goal of increasing license sales for TPWD. Understanding anglers' willingness to substitute will contribute to the TPWD's knowledge of how anglers react to constraints on their recreation behaviors. In my research, I found that both gender differences and increases in age played important roles in mediating the relationships between selected sociodemographic variables and resource substitution behaviors.

First, a targeted effort needs to be offered to maintain and/or recruit participation by women in fishing because women tend to be more constrained and are more likely to stop participating in fishing than are men. In addition, resource managers need to know more about women who fish and their motives regarding angling and work to reduce the various constraints on female participation.

In Texas, TPWD initiated a "Becoming an Outdoors-Woman" (BOW) program in 1991 to supply women over the age of 18 with a opportunity to become involved in a range of outdoor recreational activities such as kayaking, angling, and skeet shooting (Lueck & Thomas, 1997). This program is particularly interested in increasing the rate of

fishing among women in Texas. In the 1990s, however, the number of female anglers in the United States declined 10%, whereas the total number of anglers decreased by 5% (USFWS, 2004). Not only was there an overall decline in the fishing population, but a variety of factors likely contributed to reduced female participation in fishing. In my research, I found that women seek different social and psychological benefits, have different preferences and experience use history, and evaluate the success of their angling experiences differently as do men. The BOW program provided great opportunities for women to take classes over the weekend associated with angling, hunting, and nonconsumptive activities to which they might not have been previously exposed or felt comfortable pursuing. However, this program could be improved by encouraging continued involvement and collaboration with other outdoor programs. On the one hand, Fedler and Ditton (2001) indicated that women composed a larger percentage of recent dropouts and inactive anglers in Texas due to “lack of interest” and “family and work commitments.” Continuation of the advanced BOW activities and strengthening social networks to past BOW participants may maintain female anglers’ participation. On the other hand, fishing is more of an opportunity for relaxed social interaction with family than are more utilitarian concerns for women. There is a need for the BOW program to collaborate with other outdoor family program (i.e., family, youth fishing) in developing a more expanded market segment.

Second, along with increases in age, anglers are less likely to substitute where they fish most often. In the past decade, the total fishing population has been declining, but the percent share of aging population has been increasing in the angling market

according to the National Survey of Fishing, Hunting, and Wildlife-Associated Outdoor Recreation (U.S. Fish and Wildlife Service, 1992, 1997, 2002, 2007). TPWD officials felt a need to retain as many anglers and their license revenue as possible. In addition, they realize that they have to make every effort to retain continued participation of those aging population because of their long and continuous participation in recreational fishing.

The goal of increasing the numbers of aging anglers will be helped by the strong age cohort of anglers aged 40 to 59 years who will be moving into the senior angler license category in the coming years. Working against this demographic opportunity are the numerous constraints that have acted to encourage anglers, including senior anglers, to drop out of recreational fishing (Fedler & Ditton, 2001; Ritter, Ditton, & Riechers, 1992). Many of these constraints (e.g., family commitments) are exogenous to TPWD and its management efforts, but others, such as the fishing license cost for seniors, the encouragement of senior fishing clubs that encourage seniors to meet each other and fish together, and special programs that target seniors. The TPWD may develop effective programs much like those that have previously targeted women and youth. These efforts should be modest in size and community based and encourages the development of personal relationships that simulate the socialization process.

#### *Management Implications for Lower Colorado River Authority (LCRA)*

For LCRA, targeted issues are tied to how active participants cope with crowding-related onsite constraints by applying an array of coping mechanisms.

Schneider (2007) indicated that recreationists' responses ultimately influenced not only their own experience but also the experiences of others, the resource itself, and the political and financial support to an area. Thus, to maintain participation and reduce coping behavior, a better understanding is needed of major driving forces of a variety of coping strategies and the extent to which these factors result in recreationists' coping behaviors.

In my research, I found that recreationists are more likely to cope with overall constraints by employing an array of problem-focused coping strategies (e.g., boat in another area of the lake), rather than to simply adjust cognitively. As boaters shift their use from high-density sites (e.g., Mansfield Dam) to previously low-use locations (e.g., Big Sandy Creek or Cow Creek), Manning and Valliere (2001) reminded us that "changes in recreation use patterns and experiences can ripple through the societal spectrum of recreation opportunities, systematically reducing opportunities for selected types of recreation experiences" (p. 423). If boaters cope with crowding by shifting settings or changing the timing of their access, monitoring efforts and staffing levels may need to be reevaluated for those previously lightly used areas.

In addition, recreationists have been identified using two major coping mechanisms to avoid certain conditions (e.g., crowding) or to maintain a high level of satisfaction (Johnson & Dawson, 2004; Manning & Ciali, 1980). For example, when people feel crowded due to an unexpected amount of use, they may not enjoy the higher density of use. However, they may interpret this situation as a one-time occurrence (rationalization coping mechanism) to reduce any internal conflict created by this

condition. Consequently, their level of satisfaction may remain high when using this form of rationalization to mediate feelings arising from the situation. Resource managers may need to realize that overall satisfaction may be a superficial and misleading measure of quality in outdoor recreation if mediating variables (e.g., coping strategies) are not included. In the long run, resource managers must be more prepared to respond to changes in use patterns as an indicator of changing relationships between settings and resource users.

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## APPENDIX

### SUMMARY OF SUBSTITUTION MEASURES AND FINDINGS

| Author information            | Classifications | Sample frame/Subject theme   | Measurements   | Research approaches/Important findings  |
|-------------------------------|-----------------|--|--|---|
| Burton (1971)                 | Empirical       | 1,056 Outdoor recreationists   | Activity-based <i>cluster analysis</i> (McQuitty's elementary linkage method) and <i>factor analysis</i> | 14 Mutually exclusive groupings were defined in this research by cluster analysis. Then, 4 relatively stable recreation groups were defined by factor analysis.   |
| Hendee & Burdge (1974)        | Conceptual      | N/A  | Define substitutability and explore potential substitutability of activities                             | 1. The substitutability was defined "the interchangeability of recreation activities in satisfying participants' motives, needs and preferences."<br>2. The potential substitutability of activities was categorized within and between a) cultural hobbies; b) organizes competition; c) domestic maintenance; d) social leisure; e) outdoor activities.                                       |
| Chase (1975)                  | Empirical       | 15,000 Interviews of outdoor recreation participants from Texas households ( <i>Texas outdoor recreation plan study, 1967-1968</i> ) | Activity-based <i>factor analysis</i>  | This study focused on activity types of substitution research. Three activity modes were reported in this study. It was argued that activities of the same activity type are substitutable. ( <i>Factor 1</i> : baseball, football, basketball, volleyball, ride bike; <i>Factor 2</i> : camping, fishing, hunting, <i>Factor 3</i> : golf, tennis, swim, pleasure boat, water ski, horse ride) |
| Christensen & Yoesting (1977) | Empirical       | 292 Interviews in an 8-county area of northeastern Iowa outdoor activity participants  | <i>Factor analysis</i> and <i>discriminant analysis</i>  | 1. The elderly were less willing, or able, to "substitute" the relatively few activities they did participate in for other outdoor recreation activities.<br>2. Many recreationists could not "substitute" provided activities for activities not provided from an "activity type" and still gain the same satisfaction.  |
| Snow (1980)                   | Empirical       | Interviews of 54 graduate students at the University of Utah   | Activity-based <i>factor analysis</i>  | Three groups of activity were found in this study.  |

| Author information               | Classifications        | Sample frame/Subject theme                                       | Measurements  | Research approaches/Important findings  |
|----------------------------------|------------------------|--|---|---|
| Baumgartner & Heberlein (1981)   | Empirical              | 755 Horicon Zone goose hunters and 230 deer hunters in Wisconsin | One-tailed <i>t-test</i> for difference between two group of hunters  | <ol style="list-style-type: none"> <li>1. The activity with the fewest perceived substitutes, deer hunting, showed higher rating on some recreation experience items (e.g., process of participation, the goal of the activity, and social interaction).</li> <li>2. If an individual rates a variety of elements of the experience as important reasons for participation in the activity, that activity will be likely to have fewer adequate perceived substitutes.</li> </ol>   |
| Vaske, Donnelly, & Tweed (1983)  | Empirical              | 4,066 hunters in Maryland  | Activity- based <i>ANOVA</i> type model ( <i>Logit model</i> )  | Research found that researcher-defined similarity was not statistically related to the hunter's evaluation of substitutability.   |
| Iso-Ahola (1986)                 | Conceptual             | N/A  | Focused on an individual's willingness and tendency to substitute leisure behavior.   | <ol style="list-style-type: none"> <li>1. When faced with the possible substitution, a person's feeling of choice or freedom mediates his or her willingness to substitute.</li> <li>2. If the psychological qualities of the available alternative activity(ies) are comparable to those of the substitutable activity, the individual experiences less reduction in perceived choice (due to the need for substitution) than when those qualities are not comparable; therefore, the individual's willingness to substitute is greater when the qualities are comparable than when they are not.</li> </ol> |
| Choi (1989)                      | Conceptual & Empirical | 244 Texas saltwater stamp holders                                | <i>ANOVA</i> and <i>MANOVA</i> were used to test substitutability among social groups, level of specialization, activities, and settings. | <ol style="list-style-type: none"> <li>1. A Stimulus-Organism-Response (S-O-R) paradigm was constructed.</li> <li>2. Level of specialization influenced activity substitution.</li> <li>3. Social group influenced setting substitution.</li> <li>4. The relationship between level of specialization and perceived setting substitution is not significant.</li> </ol>   |
| Vaske, Donnelly, & Shelby (1990) | Empirical              | 452 Maryland turkey hunters                                      | Activity based <i>Direct-Question method</i>  | <ol style="list-style-type: none"> <li>1. A typology of substitutable activity was constructed.</li> <li>2. Direct-question method was used for asking individuals to specify their substitutes for a particular activity.</li> </ol>   |

| Author information                     | Classifications        | Sample frame/Subject theme  | Measurements  | Research approaches/Important findings   |
|--|------------------------|---|---|--|
| <b>Hammitt &amp; Patterson (1991)</b>  | Empirical              | 252 Backcountry campers in the Great Smoky Mountains National Park  | <i>ANOVA</i> and <i>chi-square test</i>   | <ol style="list-style-type: none"> <li>1. Physical coping behaviors were used more commonly than the social behaviors as mechanisms for controlling visitor interactions and maintaining wildland privacy.</li> <li>2. Level of past experience had little influence on use of coping behaviors.</li> </ol>  |
| <b>Shelby &amp; Vaske (1991)</b>       | Conceptual & Empirical | 267 New Zealand salmon anglers  | Descriptive data analysis   | <ol style="list-style-type: none"> <li>1. A typology of substitution alternatives was developed to clarify the relationship between resource and activity substitutes.</li> <li>2. Results of authors' analyses indicated that some recreation experiences are fairly unique, with few other resources or activities offering substitutes that provide the same benefits from the user's point of view.</li> </ol>   |
| <b>Shelby &amp; Vaske (1991)</b>       | Conceptual & Empirical | 263 Recreational salmon anglers in New Zealand  | Activity and resource focused Direct-Question method                                  | <ol style="list-style-type: none"> <li>1. A topology of substitution alternatives was developed to clarify the relationship between resource and activity substitutes.</li> <li>2. Some recreation experiences are fairly unique, with few other resources or activities offering substitutes that provide the same benefits from the user's point of view.</li> </ol>   |
| <b>Kuentzel &amp; Heberlein (1992)</b> | Conceptual & Empirical | Panel data of Apostle Island users in 1975 and 1985. One thousand forty-four boaters were included in this study. | <i>ANOVA</i> was used to test the tendency of changes in different coping approaches. | <ol style="list-style-type: none"> <li>1. Coping approach with crowding was used.</li> <li>2. Cognitive and behavioral coping strategies were tested in the hierarchical coping model. However, the data did not support the hypothesis.</li> <li>3. Cognitive coping is not a discrete strategy, but that all users make some degree of cognitive adjustment.</li> <li>4. This research was a beginning to focus on multi-dimensional coping responses, not only substitution.</li> </ol> |

| Author information            | Classifications        | Sample frame/Subject theme  | Measurements  | Research approaches/Important findings   |
|-------------------------------|------------------------|---|---|--|
| Brunson & Shelby (1993)       | Conceptual             | N/A   | Redefined recreation substitutability and pointed out the directions for future research        | <ol style="list-style-type: none"> <li>1. Defined substitution as “the interchangeability of recreation experiences such that acceptably equivalent outcomes can be achieved by varying one or more of the following: the timing of the experience, the means of gaining access, the setting, and activity”</li> <li>2. Authors developed a research agenda by a) testing the resource-activity typology; b) testing actual behaviors instead of intended behaviors; c) linking place attachment to resource substitution; d) understanding the relationship between acceptable substitutes and recreationists’ specialization in and commitment to an activity; e) integrating research on substitutability and leisure constraints.</li> </ol> |
| Choi, Loomis, & Ditton (1994) | Conceptual & Empirical | 231 Texas saltwater anglers   | Activity based scenario analysis using <i>ANOVA</i>   | <ol style="list-style-type: none"> <li>1. Examined activity substitutability in terms of differences in activity choice options, social group, and level of specialization.</li> <li>2. Significant interaction effects were found between <i>social group and alternative activity</i>, between <i>social group and specialization</i>, and between <i>alternative activity and specialization level</i>.</li> </ol>  |
| Smith & Palmquist (1994)      | Empirical              | Weekly rentals of vacation properties along the Outer Banks of North Carolina during peak, pre-peak and post-peak seasons | Temporal substitution based willing to pay ( <i>WTP</i> ) research using <i>hedonic model</i> . | <ol style="list-style-type: none"> <li>1. Temporal substitution was tested in different seasons.</li> <li>2. Proximity to the ocean was found to be a significant determinant of temporal substitution between the peak and pre-peak seasons.</li> </ol>   |
| Schneider & Hammitt (1995)    | Conceptual             | N/A   | Visitors’ response to conflict was the main focus of this study.                                | <ol style="list-style-type: none"> <li>1. A recreation conflict <i>appraisal and response model</i> was adapted from Lazarus and Folkman (1984).</li> <li>2. Personal and situational factors influenced a series of appraisal process that lead to a response to conflict.</li> </ol>   |



| Author information                   | Classifications        | Sample frame/Subject theme   | Measurements  | Research approaches/Important findings   |
|--------------------------------------|------------------------|--|---|--|
| <b>Shafer &amp; Hammitt (1995)</b>   | Empirical              | 606 Cohutta (northern Georgia) and Okefenokee Wilderness (southern Georgia) visitors                       | <i>MANOVA</i> and <i>Canonical analysis</i> were used in experience, condition, and coping behavior dimensions. | Natural and solitude aspects of the recreational experience were most significant in the relationship among experience, condition, and coping behavior constructs.   |
| <b>Manning &amp; Valliere (2001)</b> | Empirical              | 377 Community residents around Acadia National Park  | <i>Linear</i> and <i>logistic regression</i>  | <ol style="list-style-type: none"> <li>1. Coping mechanisms are pervasive in outdoor recreation.</li> <li>2. Coping is related to perceived changes in both the amount and type of outdoor recreation.</li> <li>3. Overall satisfaction may be “superficial” and misleading measures of quality in outdoor recreation.</li> <li>4. Only displacement, product shift and rationalization were discussed in this study.</li> </ol> |
| <b>Iwasaki (2003)</b>                | Conceptual & Empirical | 132 Selected employees in the Police and Emergency Response Services Department in a western Canadian city | <i>Structural Equation Modeling (CFA)</i>   | <ol style="list-style-type: none"> <li>1. Stressors and leisure coping appear to independently influence adaptational outcomes.</li> <li>2. Leisure coping facilitated positive immediate adaptational outcomes that subsequently had a positive impact on health, irrespective of the level of stress experienced.</li> </ol>   |

| Author information                 | Classifications | Sample frame/Subject theme   | Measurements                                       | Research approaches/Important findings   |
|------------------------------------|-----------------|--|--|--|
| Miller & McCool (2003)             | Empirical       | 1,161 Recreationists in Glacier National Park  | <i>Structural Equation Modeling (CFA)</i>          | <ol style="list-style-type: none"> <li>1. A transactional model of stress and coping was used to understand how outdoor recreationists deal with negative setting elements.</li> <li>2. Behavioral and cognitive coping responses to stress are associated with different levels of reported stress.</li> <li>3. Cognitive (product shift, rationalization) and behavioral (absolute displacement, temporal substitution, activity substitution, resource substitution, and direct action)coping mechanisms were defined in this study.</li> </ol> |
| Schuster, Hammitt, & Moore (2003)  | Empirical       | 388 Visitors to the Shining Rock Wilderness Area and surrounding buffer zone, North Carolina | <i>Structural Equation Modeling (CFA)</i>          | Three separate measurement models were evaluated: (1) experience use history and social support, (2) secondary appraisal, and (3) ways of coping scales.   |
| Ditton & Sutton (2004)             | Empirical       | 1,362 Licensed anglers in Texas and Florida  | Activity-based <i>Logistic regression</i> analysis | <ol style="list-style-type: none"> <li>1. Several explanatory variables for substitution decisions were identified.</li> <li>2. Age, education, and gender are significant variables on willingness to substitute.</li> <li>3. Willingness to substitute was negatively related to the importance placed on fishing and the importance placed on challenge-oriented experiences and positively related to overall satisfaction with the activity.</li> </ol>   |
| Hammitt, Backlund, & Bixler (2004) | Empirical       | 203 Trout anglers of Chattanooga River and Rabun Chapters of Trout Unlimited.                | <i>ANOVA</i>                                       | <ol style="list-style-type: none"> <li>1. Place bonding is linked to resource substitution, because a strong bond to a particular place may be associated with low use of alternative places.</li> <li>2. EUH (Experience Use History) is somewhat related to resource substitution. Locals had the highest degree of place bonding, indicating perhaps they had more experience opportunities and related affective bonds with place. They had less experience with other streams and perhaps fewer substitutes.</li> </ol>                       |

| Author information                                      | Classifications | Sample frame/Subject theme   | Measurements   | Research approaches/Important findings   |
|---|-----------------|--|--|--|
| <b>Sutton &amp; Ditton (2005)</b>                       | Empirical       | 1,362 Licensed anglers in Texas and Florida  | Fishing type-based <i>Logistic regression</i> analysis | <ol style="list-style-type: none"> <li>1. Willingness to substitute was positively related to years of education and negatively related to age and the importance placed on trophy seeking experiences.</li> <li>2. Females were more willing to substitute than males.</li> <li>3. Commitments, skill, importance of fishing, fishing equipment investment, and frequency of fishing were not significant on willing to substitute.</li> </ol>                          |
| <b>Schuster &amp; Hammitt (2006)</b>                    | Empirical       | 388 Visitors to the Shining Rock Wilderness Area and surrounding buffer zone, North Carolina | <i>Structural Equation Modeling (CFA)</i>              | <ol style="list-style-type: none"> <li>1. Focused on coping response on stress.</li> <li>2. Intensity of stress moderately predicted coping response and frequency of stress weakly predicted coping.</li> <li>3. The use of coping had a moderately positive relationship with negative impacts to the recreation experience resulting from the hassle situation.</li> </ol>  |
| <b>Schuster, Hammitt, Moore, &amp; Schneider (2006)</b> | Empirical       | 388 Visitors to the Shining Rock Wilderness Area and surrounding buffer zone, North Carolina | <i>Structural Equation Modeling (CFA)</i>              | <ol style="list-style-type: none"> <li>1. Problem-focused and emotion-focused coping mechanisms were discussed in this study.</li> <li>2. Situations appraised as controllable will result in increased use of problem-focused coping mechanisms.</li> <li>3. Situations appraised as out of the control of the individual or inappropriate to address will result in increased emotion-focused coping.</li> </ol>   |
| <b>Schneider &amp; Stanis (2007)</b>                    | Conceptual      | N/A  | Potential integration of constraint and coping model   | <ol style="list-style-type: none"> <li>1. Coping as an alternative conceptualization for constraint negotiation and accommodation.</li> <li>2. Lazarus and Folkman's (1984) stress coping model has the potential of theoretical frame for constraint negotiation research.</li> <li>3. Integrating "ways-of-coping" questionnaire (WOCQ) in the constraint research is a good start toward a comprehensive leisure constraint negotiation and accommodation.</li> </ol> |

## VITA

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