Predicting Pro-environmental Behavioural Intentions of Front-Country Campers

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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ABSTRACT

The aim of this dissertation was to predict people's pro-environmental behaviour during outdoor recreation activities, specifically front-country camping. Based on the literature of social psychology, environmental psychology, and leisure studies, major predictors of human behaviour were identified. Different associations among these variables were hypothesized and tested by data obtained from a sample of 1,009 front-country campers in Alberta, Canada. Structural equation modeling was the main data analysis technique in this dissertation. These variables and associations among them framed three separate studies:

The first study in this dissertation (Chapter 2) extended the theory of planned behaviour by adding pro-environmental behaviour constraints to the theory. The influence of cognitive and behavioural strategies people utilize to negotiate their constraints were also explored in this study. Results of structural equation modeling confirmed a strong, negative indirect association between constraints and pro-environmental behavioural intention. Negotiation was positively and indirectly associated with intention. The proposed extension to the TPB explained a considerable amount of the variation in intention.

The second study (Chapter 3) examined different structural models of associations among constraints to pro-environmental behaviour, negotiation through these constraints, motivations to engage in pro-environmental behaviour, and knowledge of pro-environmental camping. A three dimensions approach to the study of constraints was employed to obtain a more detailed understanding of constraints to pro-environmental behaviour. Three different structural models were developed and tested. Two of the proposed models were supported by the data. Results showed that constraints negatively and directly influence intention. Negotiation through constraints and knowledge of pro-environmental camping positively and directly influenced

intention. Motivation and knowledge directly and negatively influenced constraints and directly and positively influenced negotiation. Hypothesized associations between constraints and negotiation (i.e., from constraints to negotiation and vice versa) in the structural models were supported by the data. The theoretical and practical implications relating specifically to constraints to engaging in pro-environmental behaviour were emphasized.

The third study in this dissertation (Chapter 4) proposed a comprehensive theory to predict pro-environmental behaviour during camping. Important human behaviour predictors identified in the pro-environmental behaviour literature were employed to develop this theory. The theory of planned behaviour, self-determination theory, leisure constraints theory, and constraint negotiation theory guided the development of the measurement scales and hypothesized associations among the predictors of behaviour. Structural equation modeling supported the proposed associations and the data found to be a good fit with the model. The theory of planned behaviour's predictors of intention mediated the associations between all the predictors in the model and intention. Antecedent to these variables, constraints, negotiation, knowledge, motivation, and past behaviour indirectly influenced pro-environmental intentions. Overall, the proposed theory explained a substantial portion of variance in intention. The associations among the predictors of pro-environmental behaviour and our findings' implications were discussed. The overall findings, theoretical and practical implications, limitations of these studies, and future research avenues are summarized in the Chapter 5.

PREFACE

This dissertation is an original work by Farhad Moghimehfar. The research project, of which this dissertation is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "Predicting Campers' Pro-environmental Behaviour", No. Pro00049792, August 14, 2015.

This dissertation is formatted in three publishable papers (Chapter Two, Three, and Four). I was the lead author and solely responsible for data collection, data analysis, and manuscript composition for all the three studies in this dissertation. Dr. Elizabeth A. Halpenny, Dr. Gordon J. Walker, and Dr. Howard W. Harshaw were involved in the conceptualization of the theories and contributed to manuscript edits. Papers 1 and 2 have been submitted to peer reviewed journals for publication consideration. Financial assistance for this dissertation was provided by the Alberta Parks Research Enhancement Fund.

ACKNOWLEDGEMENTS

First and foremost, I am forever grateful of my lovely wife Monir for all the support she has given in every single step of my research. Much of the work toward my doctoral project happened on weekends, nights, and while on vacations that was inconvenient for you, but you always looked at me with a beautiful smile on your face; thank you. Also, the data collection for this dissertation was not possible without your help. Your patience, perseverance, and love have made it possible for me to reach my goals.

I would like to express my heartfelt thanks to my supervisor Dr. Elizabeth Halpenny. Liz has been nothing short of amazing from the moment she agreed to be my PhD supervisor. Your patience, knowledge, and rigorous guidance made this journey possible. Thank you for your friendship, support, and deeply wise mentorship. Also, I would like to thank Dr. Gordon Walker for sharing his vast knowledge of leisure and social psychology with me and answering my endless questions over the last 4.5 years. I would like to thank Dr. Howard Harshaw for supporting my doctoral research from the first step and also for opening my eyes to broader aspects of outdoor recreation research related to biology and human dimensions of natural resources management. Special thanks to Dr. Glen Hvenegaard and Dr. Ingrid Schneider for serving on my Examining Committee. Also, I am thankful of Dr. Karen Fox, Dr. Tom Hinch, Dr. PearlAnn Reichwein, Dr. Zac Robinson and Jason Lafferty for their support, guidance, and friendship.

I would like to thank Alberta Parks for providing financial support for my dissertation research. Also, I am grateful of all the Alberta Parks managers and staff for their advice and for facilitating my research in their parks. I am also grateful of all the campers who openly accepted to participate in my research.

Studying in a new country with a different language and a different culture far from family is not easy. Thank you to Aisulu, Angie, Baiku, Bob, Brad, Chen, CJ, Cory, Eiji, Elaine, Farshid, Fei, Hanhan, Jingjing, Lara, Maria, Mat, Mick, Nike, Pat, Paulina, Stacy, Therese, Young, and all the friends I've made in Canada that made this journey pleasant. Special thanks to Haidong for kindly sharing his experience as a PhD student with me, Jay for helping me learn about Aboriginal and Canadian cultures, and Shin for all the research discussions we had over the last few years.

I am deeply grateful of my caring brother Alireza for his excellent support in research and life from afar. My heartfelt appreciation goes to my mother-in-law Pari who has loved me like her own son. Finally, I am extremely grateful to my wonderful parents Vali and Masoumeh for always believing in me and for teaching me the most important lessons of my life. Thank you for your unconditional love.

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INTRODUCTION

According to Alberta Parks' statistics (Alberta Parks "Our Visitors," n.d.) more than 8 million visits occur in Alberta's provincial parks every year; of which 1.3 million individuals stay overnight in campgrounds in Alberta Parks' system (Alberta Parks, 2015). This considerable number of campers in Alberta's parks and potential for high levels of human-nature interactions during camping emphasizes the importance of studying how to minimize negative impacts of camping on natural environments (Buckley, 2004; Cole, 2004). Park mangers utilize different tools and techniques to control visitors' impacts (e.g., zoning, and environmental impact assessment). However, humans play an important role in the sustainability of outdoor recreation activities and their behaviour may not be manageable by such tools and techniques. Shaping people's behaviour during outdoor recreation activities is an important component of the sustainable management of parks and protected areas; to achieve this, it is important to understand factors that influence park visitors' behaviour. Exploring the social psychological determinants of people's behaviour may enable park managers to shape individuals' activities by formulating policies, procedures, and operational practices that effectively target factors that encourage individuals' decision to engage in pro-environmental behaviours.

Among different outdoor recreation activities, camping has the potential to impart considerable negative impacts on the nature. Camping is popular in North America; statistics show a considerable growth in the number of campers during the last few decades (Eliss, 2010; Van Heerden, 2008; Winter, 2005). Previous research on the impact of camping activities demonstrated noticeable negative impact on the natural environments caused by

visitors' lack of knowledge as well as mismanagement of parks and campgrounds (Schmiechen, 2004).

Individuals' engage in camping for different reasons ranging from economic considerations to a desire to make a spiritual connection with wilderness. Front-country campers include tent campers and recreational vehicle (RV) users. In addition to camping, these people normally participate in a variety of outdoor activities ranging from hiking, photography, and wildlife watching to boating and off-roading (Gretzel, Hardy, Simic, & Wright, 2008). . In addition to the unavoidable interactions between humans and the natural elements found in campgrounds, consumptive behaviour of campers is an important source of negative impact on nature. The use of campground green spaces, energy consumption, production of garbage and recyclable materials, recreational vehicles' waste disposal, and campfire use are examples of camper activities that have the potential for negative environmental impact (Gracan & Birin, 2013). Cumulatively, these behaviours, when engaged in irresponsibly, can result in irreparable damage to the wilderness (Cole, 2004; Leung & Marion, 1999; Marion & Farrell, 2002; Pickering & Hill, 2007).

Another factor that influences the potential impact of campers is their length of stay. Campers are overnight visitors to parks and protected areas who typically spend more time in natural environment than day-use visitors do. Compared to same-day visitors the amount of time campers spent in natural environments is considerably higher. Moreover, the geographical distribution of campgrounds increases the likelihood of environmental impacts. In addition, campers are more likely to participate in backcountry activities such as hiking. This also increases their potential for disturbing wildlife and natural processes in wilderness areas (Wight, 1997).

Due to the scattered geographical locations, variety of activities, and diverse demographical characteristics, a sample of front-country campers includes a variety of park users with diverse skill levels, specialization and recreation goals. This dissertation research focused on front-country campers in Alberta provincial parks with the aim of examining factors that influence these park visitors' engagement in pro-environmental behaviours. After consulting with Alberta Parks managers, Cypress Hills, Kananaskis Country, Long Lake, Cross Lake, and Gregoire Lake Provincial Parks were selected for the purpose of this dissertation. Several criteria were considered in the selection of these parks. The most important criteria were: location of the park to obtain a geographically diverse sample; diversity of outdoor recreation activities; size of the park; and, popularity of the park among visitors. Also, some provincial parks were excluded to avoid multiple concurrent surveys.

In terms of the importance of front-country camping activities in these parks it is worth mentioning that Long Lake, Cross Lake, and Gregoire Lake Provincial Parks only accommodate campers and day users. Also, there are very limited back-country campsites available in these parks; therefore, front-country camping is the major accommodation inside these provincial parks. Regarding Cypress Hills and Kananskis Country Provincial Parks, although different types of accommodation such as back-country campgrounds, lodges, and hotels are available, the majority of visitors stay in from-campgrounds. According to Alberta Parks statistics more than 97% of overnight visitors to Alberta's provincial parks are campers (Alberta Community Development, 2000; 2006; Alberta Parks, 2015). Therefore, a sample of front-country campers is an important representation of the majority of overnight park users.

Theoretical Approach

Employing leisure and social psychology theories, this dissertation makes a contribution to our understanding of people's pro-environmental behaviours during outdoor recreation activities, specifically camping. For this reason three studies were developed. Each study investigated associations among psychological determinants of pro-environmental behaviour, and their combined impact on engagement in pro-environment behavioural intentions. The theories were then empirically tested using data obtained from a sample of front-country campers (n = 1009) visiting Alberta's provincial parks system.

To date, numerous social psychological theories have been developed to study pro-environmental behaviour including: the model of ecological behaviour (Fietkau & Kessel, 1981 in Kollmus & Agyeman, 2002); the model of responsible environmental behaviour (Hines, Hungerford, & Tomera, 1986/87); norm-activation theory (Black, Stern, & Elworth, 1985; Guagnano, Stern, & Dietz, 1995); the structural model of environmental attitude and behaviour(Grob, 1995); the cognitive hierarchy model of human behaviour (Fulton, Manfredo, & Lipscomb, 1996); value-belief-norm theory (Stern, 2000); the model of pro-environmental behaviour (Kollmuss & Agyeman, 2002); the framework of environmental behaviour (Barr & Gilg, 2007); and the comprehensive model of the psychology of environmental behaviour (Klöckner, 2013). Based on the findings of these studies and others in fields of environmental psychology and social psychology, the theory of planned behaviour (Ajzen, 1991), self-determination theory (Deci & Ryan, 1985), hierarchical model of leisure constraints (Crawford, Jackson, & Godbey, 1991), and constraints negotiation theory (Jackson, Crawford, & Godbey, 1993) were selected to provide the theoretical foundation of

this dissertation. Focused on the associations among the predictors of pro-environmental behaviour, this dissertation includes three separate but related studies:

(I) In study one, the theory of planned behaviour (TPB; Ajzen, 1991), was extended to improve its predictive ability for pro-environment behavioural intentions by including pro-environmental behaviour constraints and related negotiation strategies. Ajzen stated that the TPB is open to the inclusion of new variables as long as the theory's main predictors are taken into account and the new variables improve the predictive power of the theory.

(II) Study 2 utilized self-determination theory (Deci & Ryan, 1985), hierarchical model of leisure constraints (Crawford, Jackson, & Godbey, 1991), and constraints negotiation theory (Jackson, Crawford, & Godbey, 1993) to explore the associations among constraints, negotiation, motivation, and campers' pro-environmental behaviour. The relationships among these variable have been questioned in both leisure studies (e.g., Hubbard & Mannell, 2001; Son, Mowen, & Kerstetter, 2008). Because many possible combinations of influence have been proposed, several different possible structural models were examined in this research. Study 2 also investigated constraints using a systematic approach (Crawford et al., 1991). The influence of individuals' knowledge of pro-environmental camping on their behaviour was also investigated in Study 2.

(III) Study 3 combined all of the identified significant predictors of pro-environmental behaviour to formulate a comprehensive theory of pro-environmental behaviour prediction. This study was designed to capture a considerable amount of variation in people's pro-environment behavioural intentions. Variables and their

relationships included in the comprehensive theory were identified from the environmental psychology literature. Measurement scales for the variables used in this dissertation were developed based on the TPB, self-determination theory (SDT), and leisure constraints theory guidelines.

Objectives and Research Questions

The main purpose of this study was to explore people's pro-environmental behaviour while camping. Intention, hypothesized as the most accurate predictor of human behaviour (Ajzen, 1991; Krause, 1995; Ajzen, 2011) was the main dependent variable in all three studies. Actual behaviour was also examined with a second round of data collection 45 days after the initial survey. However, the sample size for the actual behaviour measurement was comparatively smaller because fewer people (26%; n = 264) agreed to participate in the second round of this survey. This sample did not have acceptable power based on Cohen's (1988; 1992) guidelines. Therefore, the actual behaviour measurement was excluded from the analysis.

Detailed aims and research questions of these three studies are described below:

Study 1

Objective:

To extend the theory of planned behaviour in order to improve its ability to predict campers' pro-environment behavioural intentions.

Research questions:

(1) Is the theory of planned behaviour a suitable framework to study campers' pro-environment behavioural intention?

(2) How do constraints to pro-environmental behaviour influence campers' intention to engage in pro-environmental camping activities?

(3) Do individuals' negotiate constraints to pro-environmental camping behaviour?

(4) What are the order of associations among constraints and negotiation and the TPB predictors of intentions (attitude, subjective norms, and perceived behavioural control)?

Study 2

Objectives:

(1) To study different possible associations among pro-environmental behaviour constraints, negotiation strategies, motivation, knowledge of pro-environmental camping, and intention to perform pro-environmental camping behaviours.

(2) To employ three different types of leisure constraints (i.e. intrapersonal, interpersonal, and structural constraints) in the study of pro-environmental behaviour research.

Research questions:

(1) How do different dimensions of constraints to pro-environmental behaviour (structural, intrapersonal, and interpersonal) influence campers' intentions to engage in pro-environmental camping practices?

(2) Do people negotiate constraints to engage in pro-environmental camping behaviours?

(3) What role individuals' knowledge of pro-environmental camping play in people's intention to engage in pro-environmental camping behaviours?

(4) What influence does motivation to engage in pro-environmental camping practices have on people's intention to engage in pro-environmental camping behaviours? (Motivation was operationalized using Self Determination Theory).

(5) What is the nature of the associations among constraints, negotiation, motivation, knowledge of pro-environmental camping, and intention?

Study 3

Objectives:

(1) To develop a comprehensive theory that is capable of predicting campers' pro-environment behavioural intention with considerable predictive power based on the literature in social psychology, leisure studies, and environmental psychology.

(2) To identify the factors that influence people's environment behavioural intentions with valid and reliable measurement scales utilizing the theory of planned behaviour, hierarchical leisure constraints theory, constraint negotiation theory, and self-determination theory.

Research questions:

(1) What are the best predictors of pro-environment behavioural intention?

(2) What is the nature of the association among these predictors of pro-environment behavioural intention?

(3) Does a combination of TPB, self-determination theory, leisure constraints theory, and constraint negotiation theory result in a comprehensive framework that can explain a significant portion of visitors' intention to engage in pro-environmental camping behaviour?

Study Setting

Front-country campers that stayed at least one night in Alberta Parks' campgrounds were the target population of this research. After consulting with Alberta Parks' managers, five different provincial parks were selected for the purpose of this study: Cypress Hills Interprovincial Park (southeastern Alberta), Long Lake and Cross Provincial Park (central Alberta), Gregoire Lake Provincial Park (northeastern Alberta), and Kananaskis Country (southwestern Alberta; foothills of Canadian Rocks). Cypress Hills, Long Lake, Cross Provincial Park, and Gregoire Lake possess only one front-country campground each, while Kananaskis Country has several front-country campgrounds. In Kananaskis Country, the Bow Valley, Willow Rock, Lac Des Arc, Three Sisters, Beaver Flat, Gooseberry, Little Elbow, Paddy's Flat, McLean Creek campgrounds were selected for this study. Camping in these parks is considered a major type of accommodation and a popular leisure activity. The above mentioned campgrounds are geographically scattered across Alberta and host a variety of people who participate in a diverse range of outdoor recreation activities.

Data collection was conducted during August and September 2014. Participants were selected among campers who intended staying at least one night after the data collection date in order to achieve a sample of campers who could comment on their intention to engage in pro-environmental camping during the remainder of their stay. Individuals were selected based on campsite reservation lists and approached at their campsites by either the primary investigator or trained research assistants. If a group of campers were encountered, the person whose birthday was the closest to the date of data collection was asked to complete the questionnaire.

The sample size for this study was calculated a priori based on Cohen's (1992) guidelines. Assuming a small effect size (i.e., .01) and a power of .80, a power calculator (Soper, 2015) generated the required sample size for an alpha level of .05 (n = 526) and for an alpha level of .01 (n = 791) for a model with 42 observed variables and six latent variables.

Approximately, 1,500 front-country campers were approached for the purpose of this study. About 75 people refused to participate in this research. Major reasons for not participating were tiredness, language problem, lack of time, and lack of interest. A total number of 1,415 questionnaires were distributed in randomly selected campsites. Of which, 1,047 completed questionnaires were returned (74% rate of response) and 1,009 questionnaires were selected for analysis after a careful data screening.

Campers who respond to the first questionnaire were invited to participate in the second round of the study which was focused on campers' actual participation in pro-environmental camping between the times of the two surveys. People who volunteered to participate in the second study were contacted by email or telephone six weeks after they completed the first questionnaire. This 45 days period was enough for the respondents to participate in at least one camping trip after the first data collection.

Dissertation Format and Outline

Consistent with the University of Alberta's Faculty of Graduate Studies and Research guidelines for paper-format dissertations, this dissertation consists of five chapters: Chapter 1: Introduction, Chapter 2: Study 1, Chapter 3: Study 2, Chapter 4: Study 3, and Chapter 5: Discussion and Conclusion. Each of the studies in Chapters 2, 3, and 4 consist of an exclusive introduction and literature review, methodology, results, discussion, and conclusion. Chapter 5 addresses all of the research questions in light of all the three studies' empirical findings.

Theoretical and practical implications, limitations of the studies, and future research avenues are identified and elaborated on in the final chapter.

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Chapter 2

CONSTRAINTS, NEGOTIATION, AND PRO-ENVIRONMENT BEHAVIOURAL INTENTION: AN EXTENSION TO THE THEORY OF PLANNED BEHAVIOUR

Introduction

Predicting human pro-environmental behaviour has been of interest to environmental psychologists for several decades. Many researchers have tried to develop theories or have employed social psychological theories to address the question: Why do people perform pro-environmental behaviours? Among these theories, the theory of planned behaviour (TPB) is known as one of the most accurate frameworks for explaining people's behaviour and behavioural intention in pro-environmental behaviour contexts (Steg & Vlek, 2007). The accuracy of TPB has been supported through many meta-analytical studies in different disciplines. While the efficacy of the theory has been confirmed through empirical research, behaviouralists have called for an expansion of theory to address the specific characteristics of contexts and behaviours (e.g., Conner, 2014; Conner & Armitage, 1998).

To date, several extensions to TPB have been suggested to improve the theory's predictive power. The present study reports on an effort to extend TPB to explain engagement (non-engagement) in pro-environmental behaviours in an outdoor recreation context. TPB is extended by incorporating perceived constraints to engaging in pro-environmental behaviour and negotiation through these constraints to the theory.

Although constraints to pro-environmental behaviour have been studied in previous research, a more systematic approach that categorizes constraints into sub-dimensions provides a better understanding of these factors. In addition, people's cognitive and behavioural negotiation through constraints to engaging in pro-environmental behaviour have not been empirically

tested. This present study extends the theory of planned behaviour through the inclusion of perceived constraints to pro-environmental behaviour and negotiation through these constraints. For this reason a three-dimensional conceptualization of constraints and constraints negotiation (i.e., structural, interpersonal, and intrapersonal) was employed to measure these constructs. Then two different models that hypothesized relationships between variables included in the extended version of the theory of planned behaviour were proposed and empirically tested. Finally, results of the structural models were compared to the original theory of planned behaviour to obtain an understanding of the potential improvements.

Literature Review

Theory of Planned Behaviour

The highly cited theory of planned behaviour (TPB) is known as one of the social psychological theories that has had major impacts on the study of human behaviour in North America (Ajzen, 2011). TPB claims that intention, defined as manifestation of a person's readiness to perform an action, is the most accurate predictor of behaviour when the behaviour is under volitional control (Ajzen, 1991). Intention, as the proximal component of the TPB, is an outcome of people's attitude toward a specific behaviour, the influence of the social surrounding (subjective norms), and perceived behavioural control. Attitude toward a particular behaviour reflects the degree to which people positively or negatively value a specific behaviour. Subjective norms indicates the influence of important others on individuals' behaviour. Perceived behavioural control (PBC) refers to the degree in which people perceive they have the ability to perform a specific action.

Reviews of TPB studies reveal that the theory is capable of explaining a considerable amount of variance in behaviour. For instance, Armitage and Conner's (2001) review of 187 behavioural studies reported that on average, TBP variables explained 27% of behaviour variance and 40% of intention variance. Hardman and colleagues (2002) in a systematic review of health studies that employed TPB explained 41% of the intention and 34% of the behaviour in health related topics.

Bamberg and Möser (2007), in a meta-analysis of psycho-social determinants of pro-environmental behavior, suggested that predictors of intention (attitude, subjective norms, and PBC) could capture 52% of the variance in pro-environment behavioural intention. Overall, several meta-analytical studies confirmed that attitude and subjective norms account for more than 50% of the variance in intention and PBC can improve that explanation of variance by more than 10% (Rivis & Sheeran, 2003). The explanatory power of each of the above variables varied with study context, measurement methods, and the behaviour being examined.

Although TPB's explanatory power has been confirmed through numerous empirical studies, many researchers suggest that a substantial proportion of the variation in intention and behaviour remains unexplained (Conner & Sparks, 2005). Therefore, additional variables can improve the predictive power of the theory (Sandberg & Conner, 2008). In other words "there is room for an increased amount of variance to be explained by other variables not already included in this model" (p. 590). Ajzen (1991) believed that the theory is open to additional factors that improve the predictive power of the theory as long as the theory's main predictors are considered in the framework. To date, several items have been suggested and tested as additional predictors of intention.

Conner and Arimitage (1998) suggested six variables as possible extensions to the TPB: belief, salience measures, past behaviour/habit, perceived behavioural control (PBC) vs. self-efficacy, moral norms, self-identity, and affective beliefs. They concluded that the inclusion of these variables could improve the theory's predictive power. In a meta-analysis of 21 studies with a sample size of 8,097, Rivis and Sheeran (2003) found that descriptive norms improved the explained variance of intention by 5% after the theory's main variables were considered. Sandberg and Conner (2008) indicated that affective components could increase the explained variance in intention and behaviour. They studied the additive effect of anticipated regret on intention through TPB's variables and directly on behaviour. Overall, they concluded that anticipated regret significantly and independently added to the predictability of the model. Rivis, Sheeran, and Armitage (2009) reviewed the impacts of anticipated affect and moral norms on intention and behaviour reported in an overview of 79 studies. These additional variables improved the model (5% and 3% respectively) and intention was reported as a mediator between the introduced variables and behaviour. In their meta-analytical review of the effect of self-identity and TPB, Rise, Sheeran, and Hukkelberg (2010) reported a 9% increase in explained intention's variance due to self-identity after controlling TPB's components.

Although parsimony is desirable in explanatory models and a core characteristic of the TPB, Sutton (1998), Ajzen (2011), and others believed that new variables may improve the model. This study suggest that constraints to pro-environmental behaviour and people's negotiation through these constraints could improve TPB's predictive power. These two variables are described on below.

Constraints to Pro-environmental Behaviour

Although constraints to pro-environmental behaviour have been considered as important elements that influence people's environmental behaviour, only a few studies have systematically reviewed the influence of constraints on people's pro-environmental behaviour (Steg & Vlek, 2009). Constraints to pro-environmental behaviour — also known as barriers (Kollmus & Agyman, 2002), external factors (Jensen, 2002), and contextual factors (Steg & Vlek, 2009) – either limit people's participation in an activity (e.g., running outdoor while it is raining) or completely foreclose the action (canceling ski trip because of avalanche hazard). Several studies have confirmed the negative influence of these elements on people's intention to participate in an activity. In environmental psychology, however, a comprehensive approach to studying these factors has rarely been implemented to date.

Previous studies have tried to categorize constraints in different ways. For instance, Blake (1999) studied barriers to pro-environmental behaviour under three different categories: individuality (e.g., lack of environmental concerns), responsibility (e.g., lack of locus of control), and practicality (e.g., lack of money and/or information). Tanner (1999) employed concepts of objective (e.g., lack of time, income, and knowledge), ipsative (e.g., limitations of technology that prevent people from considering the alternatives), and subjective (e.g., lack of motivation) constraints to cover different aspects of barriers to pro-environmental behaviour. Although she found constraints were significant restraining factors, this classification of constraints did not consider different social psychological aspects of constraints. Similarly Sutton and Tobin (2011) implemented subjective and objective constraints in their research and reported on the restraining effect of constraints on people's desire to engage in environmental behaviour regarding climate change. Other researchers have studied constraints to pro-environmental behaviour; however,

most only considered structural constraints such as a lack of facilities or money and did not systematically categorize constraints.

Regarding TPB and pro-environmental behaviour constraints, some studies compared constraints to perceived behavioural control (Steg & Vlek, 2009). These studies considered PBC as barriers with the assumption that lack of efficacy and perceived controllability constrains people's participation. Although these can be considered as constraints, a separate measurement of constraints provides a better understanding of these factors in research. Yoon, Kyle, van Riper, and Sutton (2013), in a study of people's environmental behaviour, employed the concept of constraints as a predictor of behavioural intention and behaviour in TPB. They hypothesized that constraints are negatively associated with intention and behaviour; attitude, subjective norms and PBC, in turn, negatively influence constraints. Even though significant, their study showed relatively weak associations among these variables (i.e., $\beta_{\text{attitude} \rightarrow \text{constraints}} = -.17$; $\beta_{\text{SN} \rightarrow \text{constraints}} = -.07$; $\beta_{\text{PBC} \rightarrow \text{constraints}} = -.08$; $\beta_{\text{constraints} \rightarrow \text{intention}} = .09$). However, the negative association of constraints with behaviour was fairly strong in their research ($\beta = -.57$). Overall, their proposed variables did not explain a considerable amount of variance in residents' climate change related behaviour ($R^2_{\text{behaviour}} = .23$).

Based on Tanner's (1999) and Sutton and Tobin's (2011) studies, Van Riper, Kyle, Sutton, Yoon, and Tobin (2013) considered constraints in their study of people's behaviour regarding climate change and environmentally responsible behaviour. They measured internal constraints such as lack of knowledge or opposing life priorities and external constraints such as lack of time or friends' lack of approval. Using the TPB's approach to studying human behaviour, they segmented their respondents into homogenous groups to identify the difference among these variables in each segment. They reported the influence of important others,

uncertainty about the outcome of individual efforts, financial concerns, and lack of awareness of the outcomes as the major constraints to respondents' engagement in pro-environmental behaviour. These are examples of pro-environmental behaviour constraints investigations. They demonstrate that constraints have major influence on people's behaviour. However, a systematic approach to the study of constraints to pro-environmental behaviour is necessary to obtain a better understanding of these factors.

Leisure constraints theory (Crawford, Jackson, & Godbey, 1991) introduced a three dimensional approach to the study of constraints to participation in leisure activities. This theory classifies constraints into intrapersonal, interpersonal, and structural constraints. Intrapersonal constraints are psychological factors that influence individuals' leisure preferences (e.g., being introvert or extrovert). Interpersonal constraints refer to the influence of the social surroundings on individuals' decision to perform a specific behaviour (e.g., the restraining influence of family and friends). Structural constraints concern the restraining influence of the environment on people's participation in a specific behaviour (e.g., lack of money, access to information, and facilities). This approach to the study of constraints has been used in numerous social psychological leisure research studies, both independently (e.g., Carroll & Alexandris, 1997 and White, 2008) and as extensions to other theories such as the TPB (e.g., Alexandris & Stodoska, 2004; Moghimehfar & Halpenny, 2015). For instance, Carroll and Alexandris (1997) found negative association between constraints and participation in leisure activities. Their results were consistent with the hierarchical order of constraints' influence on participation hypothesized by Crawford and colleagues (1991). White's (2008) study of outdoor recreation also supported this idea. His research revealed negative association between constraints and participation in outdoor recreation ($\beta = -.30$).

Alexandris and Stodolska's (2004) study of leisure participation is an example of the application of this approach in TPB. Using the TPB as their theoretical framework, they considered constraints as new variables that are antecedent to the predictors of intention. Their research findings supported this approach. In pro-environmental behaviour research, to date, Moghimehfar and Halpenny (2015) and Yoon et al. (2013) are the only studies that have examined interpersonal, intrapersonal, and structural constraints to engaging in pro-environmental behaviour. The approach of hierarchical leisure constraints theory has been employed in leisure studies for more than two decades. In a review of leisure constraints studies, Godbey, Crawford, and Shen (2010) concluded that the theory is applicable to the study of behaviours beyond leisure. This study employs a similar approach to investigate campers' pro-environmental behaviour constraints.

Negotiation through Constraints

Although constraints can prevent people from participating in an activity, they do not necessarily prevent the action (Jackson, Crawford, & Godbey, 1993; Schneider & Wilhelm Stanis, 2007). People may use cognitive and behavioural strategies to overcome their constraints that they encounter. Negotiation through constraints to engage in pro-environmental behaviour has not been widely studied. Sutton and Tobin (2011) indicated the importance of studying negotiation through constraints as an avenue for future environmental behaviour research. They suggested that investigators should consider different aspects of negotiation along with different types of constraints. Ernst (2009) also suggested that negotiation through pro-environmental behaviour constraints should be included in environmental behaviour studies.

To date only one study, an examination of hikers' intentions to engage in pro-environmental behaviour, has considered negotiation through constraints as a predictor of pro-

environmental behavioural intention (i.e., Moghimehfar & Halpenny, 2015). This study employed TPB to investigate Iranian hikers' intentions to engage in pro-environmental hiking activities. As an additional factor to the TPB variables, the authors investigated the influence of constraints on hikers' behavioural intention. Explaining 44% of variation in hikers' intention to engage in pro-environmental hiking, Moghimehfar and Halpenny's (2015) study results showed constraints significantly and negatively influenced people's intention ($\beta = -.35$). Structural and intrapersonal constraints appeared to impact pro-environmental intentions most strongly. In addition they studied how peoples' negotiation of constraints affected intention to engage in pre-environmental hiking practices. Results revealed that negotiation through perceived constraints significantly and negatively influenced people's perception of constraints ($\beta = -.11$).

A final point regarding the study of constraints and constraints negotiation highlights the importance of a robust conceptualization of constraints. The constraints studies highlighted above used different methods of conceptualizing constraints. Also, mixed results were observed regarding their role in predicting pro-environmental behaviours and their relationships with other pro-environmental predictors do not appear to be extensively theorized. To address these challenges this study examined all three types of constraints: structural, interpersonal, and intrapersonal. This approach is commonly employed by leisure scholars (Godbey, Crawford, & Shen, 2010). With a similar approach the current study explored campers' pro-environmental behaviour by testing alternative models of these relations. These are discussed next.

Conceptual Models and Hypotheses

This study examined two different approaches to the conceptualization of the influence of constraints and negotiation on behavioural intention. First I hypothesized that in addition to the direct positive influence of attitude, subjective norms, and perceived behavioural control on

intention, these three variables negatively influence constraints which in turn negatively influenced intention (see Figure 2.1). Previous research has supported this proposition. Yoon et al. (2013) suggested that TPB's predictors negatively influence constraints which in turn negatively influence intention. Although their results did not show very strong relationships among these variables, their results did support this idea. White (2008) proposed that constraints are negatively associated with participation in leisure activities and that negotiation mitigates the influence of constraints on participation through negative influence of negotiation efficacy on constraints and positive influence of negotiation on intention. His findings supported these associations. Moghimehfar and Halpenny (2015) also tested the relationship between TPB items and constraints and negotiation. As mentioned earlier, the proposed model in their study was similar to Yoon and colleagues' (2013); however they studied the influence of negotiation on intention and constraints. Based on similar assumptions this study hypothesized that attitude, subjective norms (SN), and PBC positively influences intention and negatively influence constraints. Negotiation also negatively influences constraints.

The second model in this study (see Figure 2.2) adopted a different approach to the study of constraints and intention. It proposed that the influence of constraints and negotiation were antecedent to the TPB's original predictors of intention (i.e., attitude, SN, and PBC). Ajzen and Driver (1992) believed that the perception of the intensity and number of constraints is negatively associated with PBC and other predictors of intention in the TPB. Alexandris and Stodolska (2004) proposed that constraints influence intention through the TPB's predictors. Their data supported these hypotheses; however, the strongest association between constraints and intention was through PBC. Similarly, the second model in this study proposed that constraints negatively influence attitude, subjective norms, and PBC. Negotiation also positively

influences these three predictors of intention. These assumptions are based on the notion that the degree that people perceive themselves to be constrained to engaging in pro-environmental behaviour influences their perception of control over the action. Also, the perceived number and strength of the constraints negatively influences the degree that people value an activity (attitude). It also mitigates the influence of social norms (Ajzen & Driver, 1992). Therefore, the more people feel constrained, the less social pressures push them to perform the behaviour. Negotiation, on the other hand, positively influences these three variables and mitigates the negative influence of constraints. The original TPB model was tested with the data obtained for this study to identify the difference in the amount of explained variance among the original TPB and the two proposed extended TPB models.

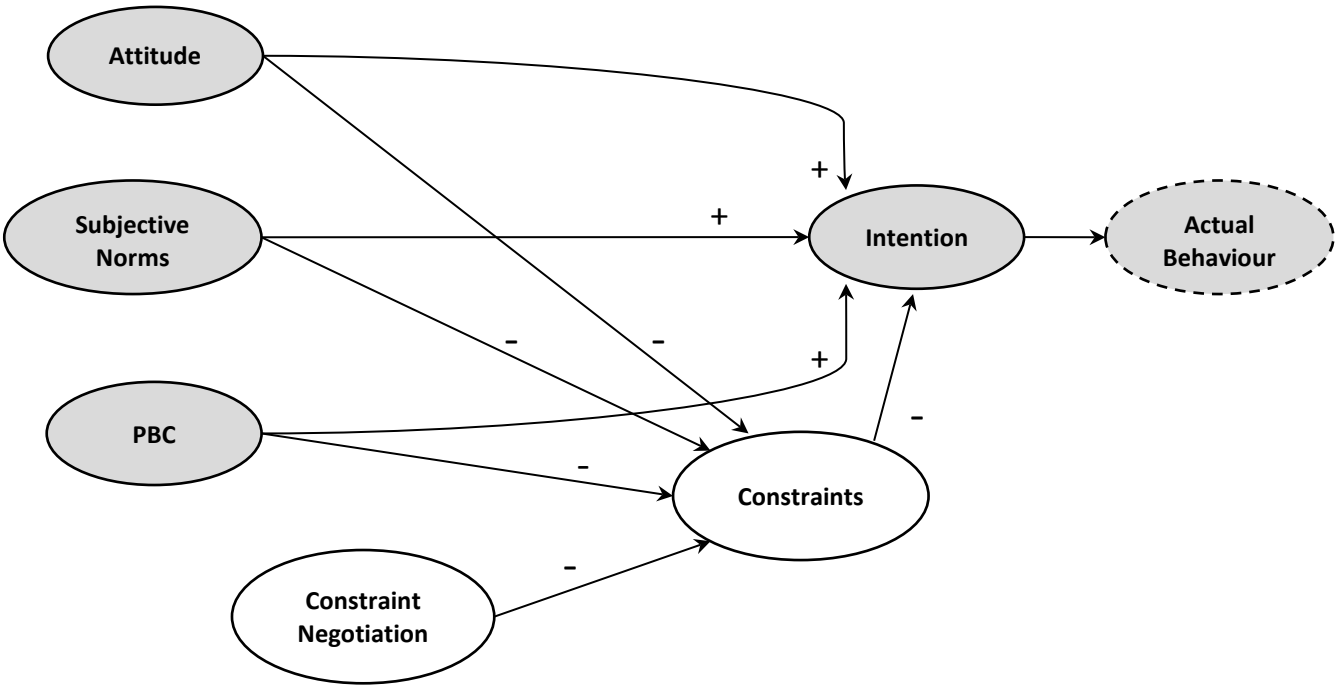

Figure 2.1. Model 1: The TPB's predictors are antecedents to the constraints

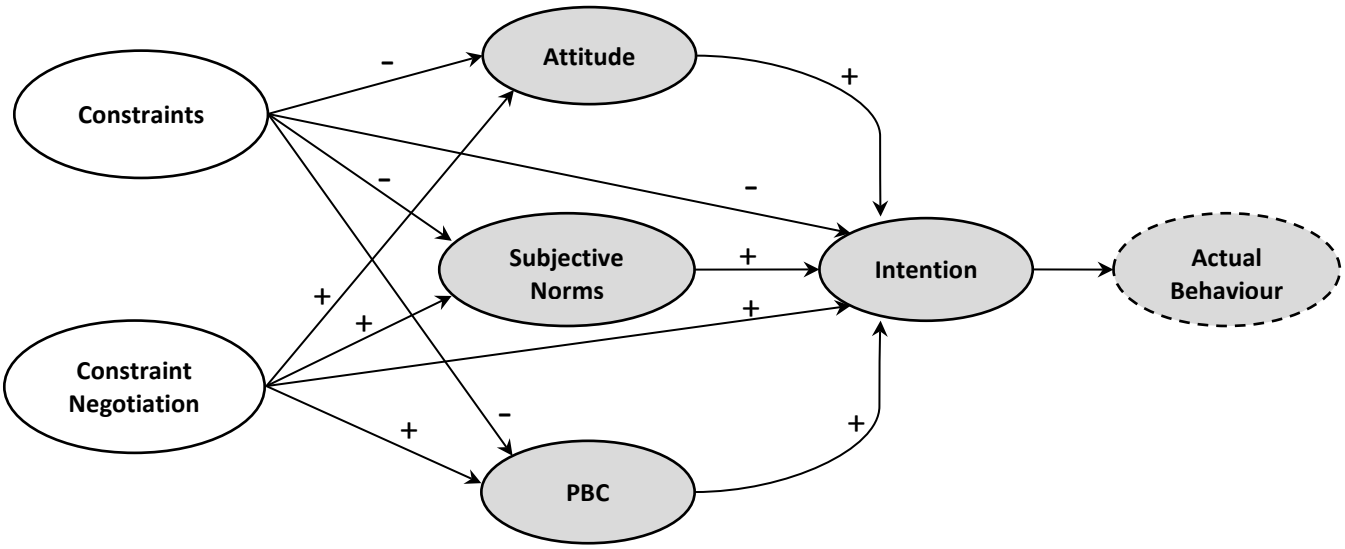

Figure 2.2. Model 2: Constraints are antecedents to the predictors of intention

Methods

Study Location and Participants

The study's target population was front-country campers visiting parks located in Alberta, Canada. From among 75 provincial parks in the Alberta parks system, Cypress Hills Interprovincial Park (South East), Long Lake and Cross Provincial Park (central), Gregoire Lake Provincial Park (North East), and Kananaskis Country (South East, foothills of Canadian Rocks) were selected. These parks are geographically dispersed across the province and they offer a variety of outdoor activities ranging from hiking and horseback riding to boating, water sports, and four-wheel touring.

Data collection was conducted during August and September 2014. The sample size for this study was calculated a priori based on Cohen's (1992) guidelines. Assuming a small effect size (i.e., .01) and a power of .80, a power calculator (Soper, 2015) generated the required sample size for an alpha level of .05 (n = 526) and for an alpha level of .01 (n = 791) for a model with 42 observed variables and six latent variables. Accordingly, front-country campers in Alberta parks were targeted as the sample for this study. One thousand and nine completed questionnaires (n = 1,009) were analyzed. Participants were selected among campers who intended staying at least one night after the data collection date in order to achieve a sample of campers who could comment on their intention to engage in pro-environmental camping during the remainder of their stay. Individuals were selected based on campsite reservation lists and approached at their campsites by either the primary investigator or trained research assistants. If a group of campers were encountered, the person whose birthday was the closest to the date of data collection was asked to complete the questionnaire. Overall, 1,047 completed questionnaires

were collected; of which 1,009 questionnaires were selected for analysis after data screening. The response rate for this research was 74%.

Survey Instrument

A paper-based self-reported questionnaire was used to obtain data for this study. Sixteen items were used to investigate TBP predictors. These items were developed according to Ajzen's (2011b) and Francis and colleagues' (2004) instructions on how to develop TPB constructs. Four items were designed to measure intention to participate in environmentally friendly camping practices; two of which investigated people's intention and two of which focused on individuals' willingness to engage in pro-environmental camping practices. People's attitudes toward environmentally friendly behaviour was measured using four items that considered both cognitive (i.e. harmful – beneficial, worthless – useful) and affective (i.e. unpleasant – pleasant, unfulfilling – fulfilling) attitudes. These items were measured on a bipolar seven-point scale ranging from –3 to +3 (rescaled into 1-7 for analysis proposes). For this question respondents were presented with the introductory statement: "protecting the natural environment while camping is …". Injunctive and descriptive subjective norms were measured using four items. Perceived behavioural control, both in terms of self-efficacy and controllability, was measured with four items.

Constraints and negotiation items were developed based on previous pro-environmental behaviour (Bamberg & Morse, 2007; Fransson & Gärling, 1999; Grob, 1995; Kaiser & Shimoda, 1999; Lorenzonia, Nicholson-Coleb, & Whitmarsh, 2007; Ölandar & Thögersen, 1995; Steg & Vlek, 2009) and leisure behaviour (Hubbard & Mannell, 2001; Son, Mowen, & Kerstetter, 2008) research. Accordingly, 15 items were developed to measure perceived constraints to pro-environmental behaviour (four intrapersonal, three interpersonal, and eight structural

constraints). Negotiation items development paralleled methods employed to develop the constraints measurement items (10 items in total: two items for intrapersonal, four items for interpersonal, and four items for structural).

As TPB items have previously been employed in numerous studies, their validity and reliability were expected to be robust. Constraints and negotiation items were extracted from pro-environmental behaviour constraints studies and in particular Yoon et al. (2013) and Moghimehfar and Halpenny (2015). Finally, experts check was used to confirm the validity of all the items in this study; internal consistency of the items was tested through Cronbach's alpha coefficient. The Cronbach's alpha measurements were within or very close to the acceptable range ($\alpha \geq .60$) due to the scale's low number of items (Cortina, 1993; Lance et al., 2006). Table 2.1 reports on the survey items as well as descriptive statistics and internal consistency.

Table 2.1

Constructs, Descriptive Statistics, and Cronbach's Alpha

Variables	M (SD)
Intention (α = .88)	
I intend to protect nature during my camping trips	4.58 (.59)
I want to protect the environment when camping	4.59 (.63)
I am willing to protect nature while I am camping	4.67 (.55)
I am willing to take good care of the environment while camping	4.59 (.58)
Attitude (α = .86)*	
Harmful – Beneficial[1]	6.47 (.86)
Worthless – Useful[1]	6.44 (.96)
Unpleasant – Pleasant[2]	6.68 (.81)
Unfulfilling – Fulfilling[2]	6.64 (.86)
Subjective Norms (α = .59)	
Most people who are important to me think that I should protect natural resources while camping[3]	4.61 (.63)
The people in my life whose opinions I value would approve of my effort to protect nature during camping trips[3]	3.35 (1.17)
I feel social pressure to protect the environment[4]	4.14 (.86)
It is expected of me that I protect nature during camping trips[4]	4.36 (.74)
PBC (α = .70)	
For me it is easy to protect nature during camping trips[5]	4.52 (.68)
If I wanted to I could protect nature when camping[5]	4.14 (.99)
I believe I have complete control over protecting nature while camping[6]	4.33 (.80)
It is mostly up to me to protect nature while camping[6]	3.95 (1.04)
Constraints (α = .66)	
I don't know how to engage in environmentally-friendly camping[7]	1.85 (.88)
I don't like to keep my campfire small[7]	2.80 (1.08)
Physically, I'm not able to participate in environmentally-friendly behaviour[7]	1.62 (.79)
I like to enjoy camping without thinking about environmental issues[7]	2.57 (1.12)
My close friends and family do not care about nature while camping[8]	1.91 (.92)
Although I try to keep campfires small, my family and friends prefer larger ones[8]	2.66 (1.08)
My camping companions don't help me to recycle[8]	1.88 (.89)
There are enough recycling facilities in the campground[9]	2.68 (1.22)
Environmentally-friendly camping is expensive[9]	2.28 (1.00)
There are good waste water disposal facilities in the campground[9]	2.71 (1.16)

Firewood is available to purchase so I don't need to use deadfall wood, cut live trees, or bring firewood into the park with me[9]	2.16 (1.16)
There is not enough space to park my vehicles in an environmentally-friendly manner[9]	2.12 (1.02)
There is adequate storage space available in the campground to keep food out of reach of animals[9]	2.73 (1.22)
Campground staff provide enough information about environmentally-friendly camping[9]	3.07 (1.07)
Long wait times at the dumping station deter me from emptying my waste water at the dumping station[9]	2.23 (1.06)
Constraint Negotiation (α = .79)	
I try to learn about environmentally-friendly camping techniques[10]	3.30 (.95)
I try to keep my campfire as small as possible[10]	3.04 (1.18)
I travel with people who care about nature[11]	3.92 (.80)
I try to keep the fire as small as possible even though my friends and family don't like me to[11]	2.66 (.97)
I teach my companions how to protect nature while camping[11]	3.48 (1.01)
I try to recycle waste even when companions don't care about recycling[11]	3.89 (.93)
I have asked park staff to provide me with information about environmentally-friendly camping practices[12]	2.29 (.87)
I do my best to find recycling facilities in the campground[12]	4.02 (.89)
I purchase recreation equipment that uses as little electricity and petroleum-based fuel as possible when camping[12]	3.23 (1.07)
I save money so that I can afford to buy camping equipment that is more environmentally-friendly[12]	2.76 (1.04)

Note. [1]affective attitude; [2]cognitive attitude; [3]injunctive social norm; [4]descriptive social norm; [5]self-efficecy; [6]controlability; [7]structural constraints; [8]interpersonal constraints; [9]intrapersonal constraints; [10]structural negotiation; [11]interpersonal negotiation; [12]intrapersonal negotiation

***** Participants reflected on the statement: "Protecting the natural environment while camping is …"

Results

Demographics

The majority of this study's respondents were female (55.5%). The average age was 42 years old (SD = 12.5). Forty percent of respondents had a college diploma, while university bachelor and graduate degrees accounted for 20% and 12% of the sample, respectively. The rest of the sample possessed a high school diploma. Over 94% were residents of Alberta, with the remaining 6% being visitors from other Canadian provinces or other countries.

Structural Model

IBM SPSS and Amos Graphics 22 were used to analyze data in this study. A structural equation modeling approach was employed to investigate the proposed extension to the TPB. To confirm model-data fit preliminary fit criteria, overall model fit, and fit of internal structure of models were tested (Root Mean Square Error of Approximation, RMSEA, Steiger 1990; Normed Fit Index, NFI, Bentler & Bonett 1980; Comparative Fit Index, CFI, Bentler 1990; Goodness if Fit Index, GFI, Cheung & Rensvold, 2002; Root Mean Square Residual index, RMR, Jöreskog & Sörbom, 1981). Results revealed good model fit for Model 2. The first model, however, did not fit with the data obtained for this study. The Chi-square statistics were significant, which is likely due to the study's large sample size (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Table 2.2 shows the model-data fit results. Based on model-data fit statistics, Model 2 was chosen as a focus for subsequent investigation.

Table 2.2

Model Fit Indices

	χ^2 (*df*)	IFI	NFI	GFI	CFI	RMR	RMSEA
Model 1	1724.36* (194)	.849**	.833**	.859**	.849**	.114***	.087****
Model 2	857.52* (187)	.932**	.914**	.928**	.931**	.048***	.060****

Notes.
**IFI, NFI, GFI, & CFI > .90; ***RMR < .05; ****RMSEA close to .05
* $p < .001$

SEM based on Model 2 revealed that among the TPB's original predictors, the strongest association in the proposed structural model was from subjective norms to intention ($\beta = .65$, $p < .001$). Perceived behavioural control imposed moderate positive influence on intention ($\beta = .24$, $p < .003$), and attitude towards pro-environmental camping practices produced a small positive influence on intention ($\beta = .16$, $p < .001$).

As hypothesized, constraints negatively influenced attitude ($\beta = -.45$, $p < .001$), subjective norms ($\beta = -.53$, $p < .001$), and PBC ($\beta = -.45$, $p < .001$). Negotiation however positively influenced attitude ($\beta = .34$, $p < .001$), subjective norms ($\beta = .32$, $p < .001$), and PBC ($\beta = .32$, $p < .001$). Constraints and negotiation explained 32% of the variance in attitude, 38% of the variance in SN, and 30% of the variance in PBC. The hypothesized direct associations between negotiation, constraints, and intention were not significant, and therefore they were dropped from the analysis. Table 2.3 reports on these associations. The overall model explained 84% of park visitor's intention to engage in pro-environmental camping.

The indirect effects of constraints and negotiation on intention were also calculated using the bootstrapping method[1]. In this study, the 95% confidence interval of the indirect effect was obtained with the 1,000 bootstrap resamples. Results of the mediation analysis confirmed the mediating role of attitude, SN, and, PBC on the association between constraints and intention ($\beta = -.46$, $p < .05$). Similarly, the indirect effect of negotiation on intention was calculated for Model 2. Bootstrapping results revealed that the indirect influence of negotiation on intention was mediated only through attitude ($\beta = .34$, $p < .001$).

To obtain a better understanding of the influence of constraints and negotiation on TPB this study conducted a SEM analysis on the original TPB independent of constraints and negotiation. Results revealed that all the three predictors of intention were significantly associated with intention ($\beta_{\text{attitude} \rightarrow \text{intention}} = .25$; $\beta_{\text{SN} \rightarrow \text{intention}} = .52$; $\beta_{\text{PBC} \rightarrow \text{intention}} = .64$). The original TPB was capable of explaining 74% of variance in intention (Table 2.4). The addition of constraints and constraint negotiation as depicted in Model 2 (see Figure 2.3), improved the explanatory power of the TPB by predicting 84% of intention. This was an improvement of 10% over the traditional TPB model.

[1] "Bootstrapping is a process by which statistics (e.g., regression weights) are generated over a very large number of replications, with samples drawn with replacement from a data set." (Tabachnik & Fidell, 2013, p. 143)

Table 2.3

Regression Associations for Model 2

Predictor	Dependent Variable	β	P-value	Indirect Effect
Attitude	Intention	.16	< .001	–
Subjective Norms	Intention	.65	< .001	–
PBC	Intention	.24	< .01	–
Constraints	Intention	–	NS*	-.46**
Negotiation	Intention	–	NS*	.34**
Constraints	Attitude	-.45	< .001	–
Constraints	Subjective Norms	-.53	< .001	–
Constraints	PBC	-.45	< .001	–
Negotiation	Attitude	.34	< .001	–
Negotiation	Subjective Norms	.32	< .001	–
Negotiation	PBC	.32	< .001	–

$R^2_{Intention}$ = .84; $R^2_{Attitude}$ = .32; R^2_{SN} = .38; R^2_{PBC} = .30; * Non-significant; ** $p < .05$

Table 2.4

Regression Associations for the Non-Extended, Original TPB Model

Predictor	Dependent Variable	β	P-value
Attitude	Intention	.25	< .001
Subjective Norms	Intention	.52	< .001
PBC	Intention	.64	< .001

$R^2_{Intention}$ = .74

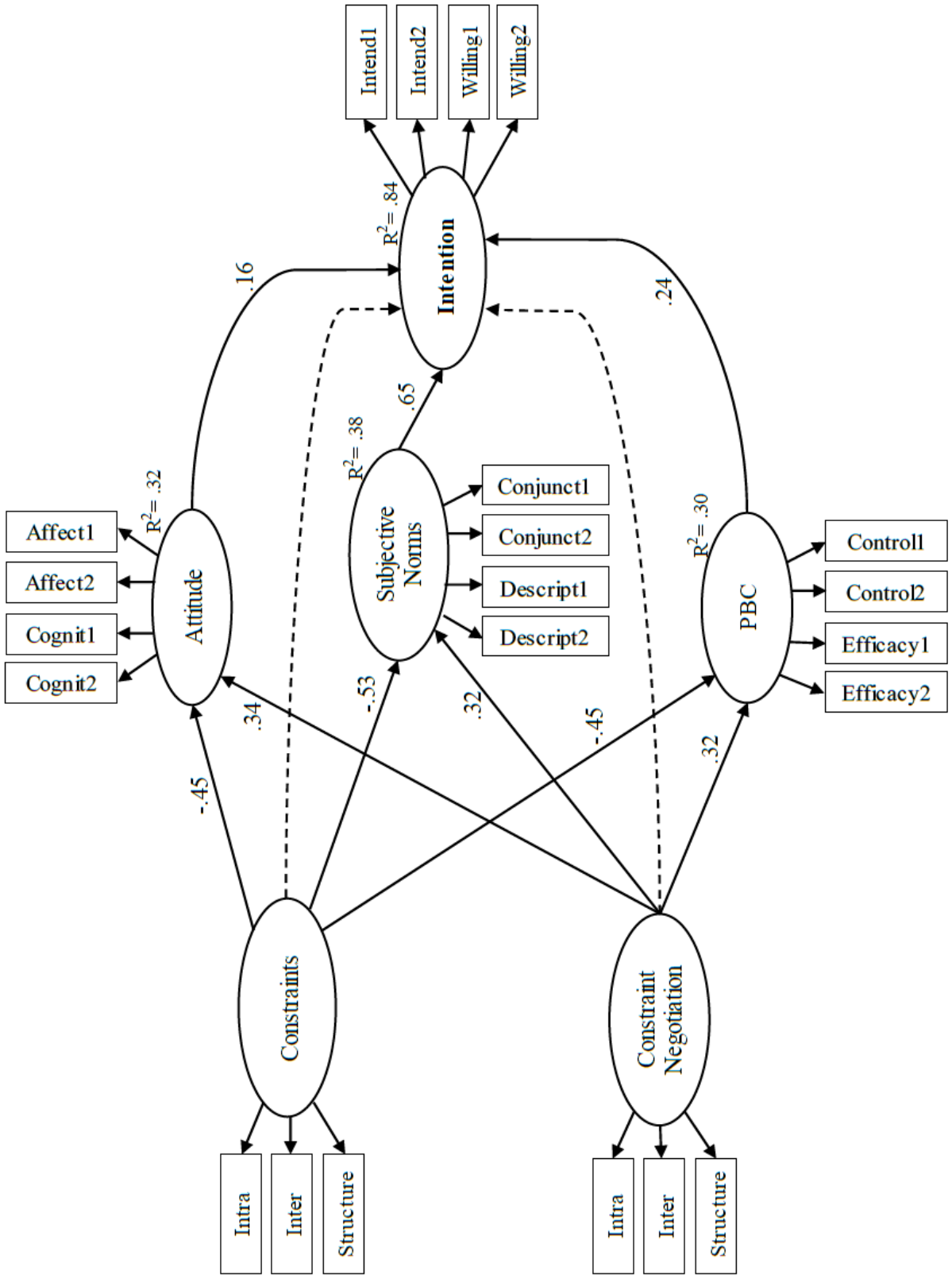

Figure 2.3. SEM results for model 2

Discussion and Conclusion

This study was designed to investigate the prediction of pro-environmental behavioural intention, using the theory of planned behaviour as a guiding framework. First, the inclusion of constraints and negotiation in the TPB were examined to improve the predictive power of the model behaviour context. Second, two different structural models for this extension to the TPB were proposed based on pro-environmental behaviour and leisure studies behaviour research. The extended TPB model was then compared with the original TPB model, to gauge the explanatory power that constraints and negotiation provided. This study also employed a three dimensional approach to the study of constraints based on the hierarchical leisure constraints theory (Crawford et al., 1991). This section summarizes the empirical findings of this study and elaborates on the theoretical and practical implications. Finally, limitations and further research avenues are discussed.

Summary of the Results and Theoretical Implications

Model 2, which depicted negotiation and constraints as antecedents, was selected for future analysis due to its superior fit with the data. SEM using Model 2 as a guiding framework confirmed that constraints negatively influenced attitude ($\beta = -.45$), SN ($\beta = -.53$), and PBC ($\beta = -.45$). Negotiation, however, positively influenced these three predictors of the TPB ($\beta_{negotiation \rightarrow attitude} = .34$; $\beta_{negotiation \rightarrow SN} = .32$; $\beta_{negotiation \rightarrow PBC} = .32$). Attitude, SN, and PBC positively influenced intention ($\beta_{attitude \rightarrow intention} = .16$; $\beta_{SN \rightarrow intention} = .65$; $\beta_{PBC \rightarrow intention} = .24$). The indirect effect of constraint and negotiation was also calculated. The influence of both constraints ($\beta_{indirect} = -.46$) and negotiation ($\beta_{indirect} = .34$) was fully mediated through the TPB's predictors.

Alexandris and Stodolska (2004) conducted a principal component analysis on the association between constraints and the TPB's predictors; similar to the second model in this study they hypothesized that constraints were antecedents to the TPB's predictors. Generally, this hypothesized extension to the TPB is based on several failed attempts to connect constraints to participation (Jackson, 2000). These failures also resulted in the emergence of the concept of negotiation (Alexandris & Stodolska, 2004) which was included in the present study. These results supported the conceptualization of constraints and negotiation as precursors to the TPB's predictors of intention.

Although the conceptualization of the relationship of variables in the second model fit better with the data in this study, both the hypothesized models are logically just. Model 1 (attitudes, SN, and PBC antecedent to the constraints) was based on the notion that people's attitudes, the influence of surrounding others (SN), and perception of control (PBC) affect how people perceive and negotiate structural, social, and individual constraints. This approach considered constraints as objective factors that vary with people's attitudes, social environments, and levels of perceived efficacy. For example, individuals who perceive less control over an action may experience constraints more strongly; their perception of control influences their perception of constraints.

Model 2 suggested that constraints influence the three predictors of intention in the TPB. Steg and Vlek (2009) believed that attitudes, affect, and personal norms may mediate the influence of constraints on behaviour. Alexandris and Stodolska (2004) also reported on the strong impact of constraints on PBC and in turn on behaviour. For example, structural constraints, such as lack of time and money, negatively influence people's perceptions of the degree of control that they have over their decision to participate in certain activities. Therefore,

these structural constraints negatively influence individuals' perception of control *per se* PBC in the TPB.

Another issue explored in this study was the influence of additional variables on the predictive power of the theory of planned behaviour. As was mentioned earlier, Ajzen (1991) indicated that the inclusion of new variables into the TPB was acceptable as long as the structure of the theory remained consistent and the new predictors were capable of improving the explanatory power of the theory through improvement in the captured variance. This study tested the original TPB model and compared the findings with an extended model (Model 2) to identify if there was an improvement. Findings revealed that the second model was an improvement over the conventional TPB model based on a 10% increase in the amount of variance explained. This suggests that the inclusion of the constraints and negotiation improved upon the TPB's predictability, at least in the context of this study.

The directions of the hypothesized associations (positive and/or negative associations) in the present study were congruent with previous theorizing and empirical studies. This research is among the first few studies that has examined the influence of constraints and on people's pro-environmental behaviour as an extension to the TPB. Empirical results of the present study as well as previous research (i.e., Moghimehfar & Halpenny, 2015; Yoon et al. 2013) confirmed that constraints negatively influence behavioural intention.

Previous environmental behaviour research that investigated the influence of constraints on pro-environmental behaviour has compared constraints to PBC (Steg & Vlek, 2009). This approach can be problematic. In the TPB, perceived behavioural control is hypothesized to be positively associated with intention and behaviour. The more control people perceive they have over the action the more they are likely to participate in the action. Therefore, PBC positively

influences intention and it does not restrain people's behaviour. In contrast, constraints restrain people from participating and negatively influence people's behaviour. Moreover, the standard PBC measurement scale suggested by the literature (Ajzen, 2011b; Francis et al., 2004), focuses on people's self-efficacy and controllability rather than their perceived constraints. Therefore, PBC cannot be considered as a corresponding measure of constraints.

Lack of a systematic approach to the study of constraints was also mentioned as a gap in the literature (Steg & Vlek, 2007). Most previous studies that focused on constraints to engaging in pro-environmental behaviour (e.g., Tanner, 1999), or researchers that considered constraints in their frame of study, did not employ a comprehensive approach that covers different individual, social, and contextual aspects of constraints to engaging in pro-environmental behaviour constraints. Using the hierarchical leisure constraint theory's approach to the study of constraints, the present study tried to consider these aspects of constraints through the implementation of intrapersonal, interpersonal, and structural constraints concepts. For instance, in their review of research related to environmental concern Fransson and Gärling (1999) included situational constraints in their model. They proposed that constraints directly influence behaviour; however, they neither expanded on this topic nor empirically tested this relationship. Lorenzoni et al. (2007) studied constraints toward behaviours to address climate change. Using a qualitative approach, they identified different constraints and categorized them into individual level and social level constraints, thus helping to improve our understanding of constraints to pro-environmental behaviour. However, their findings have not been tested with a quantitative approach. A quantitative study of their approach may approve the comprehensiveness and generalizability of their findings. They also briefly discussed coping strategies, which is similar to constraint negotiation. Although PBC can be considered as constraints (i.e., the less control

over the action an individual perceives, the more constrained the person is), it targets people's efficacy and controllability over the action (Ajzen, 2011b; Steg & Vlek, 2009). In another words, it measures perception of individual's ability to participate in an activity. In contrast, the constraints approach presented in this study goes beyond the contextual factors that restrain people's action through the study of psychological (e.g., personality) and social factors (influence of social surroundings). Moreover, this approach to the study of constraints is different from the concept of PBC as it considers the perception of constraints rather than individuals' perception of control over the action.

In addition to constraints, the inclusion of negotiation in this model was supported by the data. Although the importance of negotiation as a predictor of pro-environmental behaviour was suggested in the literature (Ernst, 2009; Sutton & Tobin, 2011) few studies have considered this as a factor to predict behaviour (Moghimehfar & Halpenny, 2015; Moghimehfar & Halpenny, in press). These results indicated that the cognitive and behavioural negotiation strategies people employed to overcome their constraints significantly mitigated the negative influence of constraints on the TPB's predictors of intention. This indicated that although constraints limit people's participation in environmentally-friendly behaviour or limit their actions, facilitating people's abilities to negotiate through these constraints can result in participation or continuation of the behaviour. This idea has been empirically supported in other disciplines (Schneider & Wilhelm Stanis, 2007). In pro-environmental behaviour studies, however, the influence of constraints and negotiation on human behaviour has been understudied. Both the current study and Moghimehfar and Halpenny's (2015) study of outdoor recreation pro-environmental behaviour supported the positive influence of negotiation on intention indirectly through other predictors of intention.

Practical Implications

This study's findings could prove useful for outdoor recreation administrators and park and campground managers. In Canada, over 13 million people visited national parks in 2014 (Parks Canada Attendance, 2015). In the province where this study was conducted, one-third of Albertans visited a provincial park in 2013 and over 1.5 million people stayed in campgrounds for at least one night ("Alberta Parks," n.d.). These visitor numbers emphasize the importance of influencing people's pro-environmental behaviour during their stay in campgrounds, as negative ecological and social impacts can rise rapidly with increased visitor numbers (Cole, 2004).

The present study examined factors that influence people's pro-environmental camping behaviour. Results revealed that people's attitude toward pro-environmental camping, the influence of social environment, and people's perception of control over pro-environmental activities highly influenced people's intention to practice environmentally friendly camping. Although changing how people value environmental activities (i.e., attitude) would likely result in increases in pro-environmental camping, the present study's findings identified subjective norms and perceived behavioural control as stronger predictors of behavioural intention. Both descriptive and injunctive aspects of social norms can be considered in promoting pro-environmental behaviours. Promoting an environmentally friendly campground culture through educational and interpretive programs that target family and group values (i.e., social norms) may make people practice environmentally responsible camping as norms (i.e., injunctive norms). Also, psychologist believed that people tend to follow others in specific situations (i.e., descriptive norms; Griskevicius, Cialdini, & Goldstein, 2008). Therefore, if the majority of campers respect natural resources in campgrounds others are more likely to follow them as that is the norm in the campground environment. Our results revealed that social norms have the

potential to considerably influence people's intentions to practice pro-environmental behaviour. Thus, these strategies can improve campers' environmental behaviour. Improving people's pro-environmental behaviour through the influence of subjective norms is also possible through delivering environmental messages to people during different stages of their camping trip. This can include exposing people to environmentally oriented messages during campground reservation (e.g., campground reservation website or mobile application); at the parks through mediums such as radio channels and park signage; and post-trip follow ups such as email and text messages (Artz & Cooke, 2007). The content of the message also should be considered to improve the efficiency of the message delivered and improve the desirability of the outcome (Goldstein, Cialdini, & Griskevicius, 2008).

The strong association between PBC and intention indicates that efforts to make people feel able to reduce the negative impact of their behaviour on natural resources while camping may result in more environmentally acceptable behaviour. Therefore, making people aware of their abilities and opportunities to protect natural resources through camping activities such as recycling, the wise use of campfires, and respecting wildlife habitats would make them feel more capable of practicing environmentally-friendly camping and therefore participating in pro-environmental behaviour.

This study also focused on the influence of constraints on campers' pro-environmental behaviour. Results revealed that constraints influenced people's behavioural intentions. Eliminating or downplaying the importance of key constraints would likely facilitate an increase in pro-environmental behaviours. Examples of ways to reduce structural constraints include providing more recycling facilities, wildlife-proof storage facilities, and effluent dumping stations. Providing information sources regarding environmental issues as well as accessible

environmentally-friendly campground facilities for individuals who experience mobility challenges are examples of facilitating the removal of intrapersonal constraints. In order to decrease the negative influence of interpersonal constraints on people's participation in pro-environmental behaviour managers could promote a culture of environmental protection in campgrounds through more frequent park staff interactions with campers and the establishment of a campground volunteer program that fostered peer-to-peer environmental education. Moreover, improving general awareness of environmental issues may result in greater engagement in pro-environmental camping practices which in turn decreases interpersonal constraints.

Finally, this study's findings supported the proposition that people's cognitive and behavioural negotiation of their perception of constraints influenced rates of pro-environmental intentions. Parks managers can facilitate people's negotiation through their constraints. Different ways of delivering information to campers that introduce them to alternative pro-environmental camping practices is an example of negotiation facilitators. This may improve people's awareness of environmental management issues in campgrounds and depreciative camping behaviour impacts and help them negotiate their constraints.

Limitations and Future Research Suggestions

Some limitations associated with this study need to be considered. This study employed a self-reported questionnaire. Previous research has indicated that self-reported TPB measurement can significantly differ from direct observation methods (e.g., Corral-Verdugo, 1997; Chao & Lam, 2011). Armitage and Conner (2001) believed that self-reported values can vary as much as 14% from actual behaviour values. Self-reported deviation from actual behaviour should be considered in the interpretation of the results reported here.

Factors affecting behavioural intention were explored in this paper and camper's actual behaviour, self-reported or measured through other methods, was not investigated. Meta-analytical reviews of the TPB studies in different disciplines addressed a noticeable gap between behavioural intention and actual behaviour (Armitage & Conner, 2001; Rivis, & Sheeran, 2003; Sandberg & Conner, 2008). Measurement of actual behaviour would provide insight into the behaviour-intention gap. In addition, the potential association among other items (PBC, constraints, negotiation etc.) and actual behaviour would be made clearer.

As noted earlier in this paper, constraints have been haphazardly investigated by pro-environmental behaviour researchers; generally the impacts of subjective constraints have been neglected. The present study measured constraints and constraint negotiation using scales based on previous leisure behaviour and pro-environmental behaviour studies. These items were adapted to meet the present study's unique population and activity context. This study advocate for a more through or systematic approach to identifying and measuring constraints in future environmental behaviour research. Leisure studies' hierarchical conceptualization of constraints (Jackson, Crawford, & Godbey, 1993) that categorize constraints structurally, interpersonally, and intrapersonally may provide a sound approach to achieving more comprehensive documentation of constraints. Also, developing a pool of activity-specific pre-environmental constraint items that can be consistently drawn from is suggested to facilitate improved comparison of results across studies. Finally, this study agrees with Kyle and Jun (2015) that current measurement and analysis of constraints should receive immediate re-assessment. This is tied, in part, to the performance of constraint scales (i.e., weak factor loadings and scale reliability). Kyle and Jun suggest researchers may wish to model constraints as a formative rather than reflective construct. This recommendation is linked to the difficulty of suggesting that

diverse constraints (e.g., access to financial resources vs. lifestyle priorities that limit engagement in pro-environmental behaviours) are produced by a single latent construct, as was done here in this study and its reflective conceptualization of constraints. In sum, greater dialogue about what constraints to measure and how to analyze their relationship with each other and other variables needs attention in future studies.

This study examined the influence of cognitive and behavioural negotiation through constraints on pro-environmental behaviour. This is a new contribution to the environmental behaviour literature. Further investigation of this factor and its association with pro-environmental behaviour is encouraged.

Additionally, this study focused on front-country camping. However, a considerable number of park visitors camp in the back-country. Future research that considers individuals' engagement in different park visitation activities and contexts and who are characterized by diverse levels of involvement with nature would significantly advance park managers' understanding of how to encourage sustainable park visitation. Also, the expansion of the types of park visitors and visitor activities should be included in future studies.

Finally, this study was among the first to empirically test the associations among constraints, negotiation, and the TPB's predictors of behaviour. Although findings of this study supported the inclusion of constraints and negotiation in the TPB and distinguished the difference between the two proposed structural models, more research is needed to confirm the true associations among these variables.

In conclusion, by employing the TPB as the guiding framework, this study attempted to identify factors that influence individuals' pro-environment behavioural intentions. With a major emphasis on constraints, the TPB was extended to obtain a better understanding of campers'

intension to participate in pro-environmental behaviour. Results confirmed that perception of constraints truly influenced people's engagement in pro-environmental activities. Moreover, this study expanded on the concept of constraints by considering intrapersonal, interpersonal, and structural dimensions of these factors. The influences of individuals' cognitive and behavioural negotiation through constraints were also explored. Results supported the positive indirect effect of these factors on intention. Overall, the proposed extension to the TPB successfully improved the theory's predictive power in this context.

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Chapter 3

HOW DO PEOPLE NEGOTIATE THROUGH THEIR CONSTRAINTS TO ENGAGE IN PRO-ENVIRONMENTAL BEHAVIOUR? A STUDY OF FRONT-COUNTRY CAMPERS IN ALBERTA, CANADA

Introduction

In North America, outdoor recreation plays an important role in many aspects of people's lives. From enjoyment of the aesthetics of the natural world to its contribution to physical and mental well-being, outdoor recreation activities have been very popular in recent decades (Clawson & Knetsch, 2013). Outdoor recreation often occurs in natural contexts. Therefore, the value of protecting natural resources increases along with the growing demand for these activities. Among different outdoor activities, camping is a very popular type of outdoor recreation with a high level of people-nature interaction (Cole, 2004; Van Heerden, 2008). Camping, which ranges from spending at least one night in a basic tent to staying in a full-service campground in a luxury recreational vehicle (RV) or upscale cabin, continues to be a popular North American activity (Eliss, 2010).

Nature-based activities play a major role in Canada's tourism industry. For example, Alberta Parks, the provincial park management department for Alberta, reported that 77% of the provincial residents had visited provincial parks at some point in their lives. In 2014, over 1,300,000 park visitors stayed in Alberta Parks' campgrounds (Alberta Parks, 2014). Many other campers used random or free camping sites in the province. The popularity of camping illustrates the importance of studying campers' pro-environmental behaviour during their stay in this type of accommodation. The high levels of human-nature involvement during camping activities as well as the consumptive nature of accommodation activities increase the chance of

negative environmental impacts (Cole, 2004; Leong & Marion, 1999; Marzano & Dandy, 2012). Therefore, promoting environmentally friendly camping activities and facilitating people's pro-environmental behaviour is necessary in order to obtain environmentally sustainable outdoor recreation. One of the main ways to achieve this objective is by understanding the constraints that individuals perceive about engaging in pro-environmental camping practices. This paper elaborates on this topic.

A review of pro-environmental behaviour literature reveals a number of empirical investigations of constraints to engaging in environmentally responsible behaviour in different settings (Bamberg & Möser, 2007; Steg & Vlek, 2009; Tanner, 1999). However, many of these studies focused on contextual constraints (e.g., limitation of time, income, money, infrastructures, etc.) and did not include the psychological and sociological aspects of constraints to human behaviour. Steg and Vlek (2009), in their review of the pro-environmental behaviour literature, indicated that constraints (i.e., contextual factors) had not been systematically investigated or included in theoretical approaches. Therefore, study of constraints to engaging in pro-environmental behaviour during outdoor recreation activities seemed necessary in order to fill this gap.

In addition, previous studies have revealed that constraints do not always prevent an action. In fact, people try to overcome their constraints through negotiation (Jackson, Crawford, & Godbey, 1993; White, 2008). These studies claimed that people utilize behavioural or cognitive strategies when they face constraints that may result in continuation of the restrained behaviour.

Motivation also plays an important role in people's participation in particular behaviours. Literature suggests that highly motivated people perceive fewer constraints to perform a

behaviour (Hubbard & Mannell, 2001; Son et al., 2008). This study explored the association among intention, constraints, negotiation, motivation, and people's knowledge of environmental camping practices. The influence of these factors on individuals' intention to participate in environmentally-friendly camping practices was also explored. For this reason, a structural equation modeling technique was employed to investigate different theoretically possible associations among these variables. A three dimensional classification of constraints that considered psychological, social, and structural aspects of constraints to pro-environmental behaviour was implemented in order to provide a deeper understanding of environmentally-friendly behaviour constraints.

Literature Review

Intention, defined as people's readiness to engage in a behaviour (Ajzen, 1991), shown to be the most accurate immediate predictor of behaviour in social psychology (e.g., theory of planned behaviour, Ajzen, 1991; attitude behaviour theory, Ajzen & Fishbein, 1980). From classic studies of pro-environmental behaviour such as Hines et al. (1986/87) to Bamberg and Moser's (2007) more recent meta-analytical study), the literature has confirmed the accuracy of intention as an immediate predictor of pro-environmental behavioural. Intention is capable of explaining a considerable amount of variation in behaviour (Klöckner, 2013; Sheeran, 2002). This study proposes that intention is the immediate predictor of behaviour that explains a great amount of variation in pro-environmental behaviour. The following sections expand on constraints to engaging in pro-environmental behaviour, cognitive and behavioural negotiation strategies people employ to overcome their constraints, motivation to engage in pro-environmental behaviour, and finally knowledge of environmental camping as predictors of pro-environmental behavioural intention.

Constraints to Pro-environmental Behaviour

The major goal of social psychology is to predict human behaviour. The theory of reasoned action (Ajzen & Fishbein, 1980), the theory of planned behaviour (Ajzen, 1991), the model of predictors of environmental behaviour (Hines et al., 1986), the norm-activation model (Schwartz & Howard, 1981), the value-belief-norm theory of environmentalism (Stern, 2000), and the model of pro-environmental behaviour (Kollmuss & Agyeman, 2002) are examples of approaches that have been used to explore people's pro-environmental outdoor recreation behaviour. These approaches suggested several factors that predict human behaviour in different contexts. However, the study of factors that constrain people from participation in pro-environmental behaviour have been neglected.

Restraining factors, known as barriers (Kollmus & Agyman, 2002), external factors (Jensen, 2002), contextual factors (Steg & Vlek, 2009), and constraints (Tanner, 1999), appear to play an important role in people's decisions to participate in pro-environmentally behaviour. Ajzen (1991) indicated that non-motivational factors (i.e. money, cooperation of others, and skills) play an important role in the performance of an action. Lack of these behavioural control factors that can be considered as constraints to engage in particular activities, is directly associated with behavioural intentions.

In a review of pro-environmental behaviour literature, Steg and Vlek (2009) noted that "in environmental psychology so far, except for a few studies […], contextual factors have not been examined systematically, nor are contextual factors included in the theoretical approaches" (p. 312). Yoon, Kyle, Van Riper, and Sutton (2013) also emphasized this issue stating that: "there is a strong need to consider the role of constraints in attitude–behaviour relationships [in environmental behaviour studies]" (p. 460).

Tanner (1999) introduced objective, ipsative, and subjective constraints to the literature of barriers for engaging in pro-environmental behaviour. Objective constraints refer to factors that influence the performance of an action. If these factors are not available the action may not occur or may be discontinued. Therefore, lack of these resources is the constraint. Examples of these resources are lack of time, income, knowledge, or social rules. Tanner defined subjective constraints as psychological barriers that influence individuals' intentions to participate in pro-environmental activities (e.g., lack of motivation or interest). Finally, ipsative constraints were considered as "barriers that prevent the activation of the alternative" (p. 147). For example, limitation of technology (e.g., absence of biodegradable detergents in some places) may prevent people from considering alternative behaviour that may result in negative environmental impacts. Overall, Tanner's findings supported the influence of constraints on preventing people from participating in pro-environmental activities.

Nordlund, Eriksson, and Garvill (2010) expanded on pro-environmental behaviour barriers based on four attributers: contextual factors (i.e. physical, economic, and social contexts), personal capabilities (i.e. knowledge, time, and money), attitudinal factors (i.e. values, beliefs, attitudes, and norms), and habits. Nordlund and colleagues believed that the study of pro-environmental behaviour barriers that emphasized physical constraints and sociocultural aspects of barriers has neglected. They also indicated that there is a lack of theoretical models in the literature.

Blake (1999) identified three sets of barriers to environmentally responsible behaviour: individuality (e.g., lack of environmental concern), responsibility (e.g., lack of locus of control), and practicality (e.g., lack of money and/or information). His explanation of barriers, however, was not comprehensive enough to cover every aspect of these factors (e.g., the influence of

social norms). Kollmuss and Agyman (2002) indicated that barriers to pro-environmental behaviour mitigate the influence of other factors on behaviour in different layers and stages (see the model of pro-environmental behaviour, Kollmuss & Agyeman, 2002). They emphasized institutional factors as key barriers to engaging in pro-environmental behaviour.

Sutton and Tobin (2011) utilized Tanner's (1999) concepts of subjective constraints (e.g., lack of environmental concern) and objective constraints (e.g., lack of time and/or money) to study barriers to people's engagement with climate change. They concluded that constraints limit people's desire to engage in pro-environmental activities.

Lorenzoni, Nicholson-Cole, and Whitmarsh (2007) framed barriers as those at the social and individual levels. They identified lack of knowledge, uncertainty and scepticism (regarding the cause of climate change), distrust in information sources, externalizing responsibility and blame, reliance on technology, perception of climate change, importance of other priorities, reluctance to change lifestyles (i.e., threat of mitigation to standard of living), fatalism (e.g., it is already too late to do something regarding climate change), and helplessness as major barriers in their study. They also mentioned lack of action by governments, businesses, pressure of social norms and expectations, and lack of enabling initiatives as social barriers. They concluded that people experience different barriers regarding engagement with climate change.

Yoon et al. (2013) defined constraints as factors that limit individuals' positive attitudes toward certain behaviours and can be under a persons' volitional control. They examined the influence of constraints on people's intentions and behaviours regarding the impact of climate change on the Great Barrier Reef in Australia. Their results did not show a strong association between constraints and behavioural intention ($\beta = -.09$). However, constraints were responsible for a great portion of variation in environmentally responsible behaviour ($\beta = -.57$). Although

they focused on objective constraints (e.g., lack of time and financial resources), they also tried to consider the influence of important others and lack of awareness about climate change in their research.

In summary, the pro-environmental behaviour literature has failed to properly categorize constraints or reach an agreement about how to characterize and classify constraints to pro-environmental behaviours. Also, constraints to pro-environmental behaviour during outdoor recreational activities are understudied and under theorized. A systematic classification of constraints to pro-environmental behaviour may reveal the relationships between constraints and intentions to engage in environmental activities. Moghimehfar and Halpenny (in press) conducted a qualitative study on constraints to pro-environmental behaviour from the view point of mountain guides in Iran. Their results revealed different types of constraints to people's participation in pro-environmental activities during hiking. They categorized identified constraints in their study into social, psychological, and structural constraints. They compared these categories to a classification of constraints that has been comprehensively used in the literature of leisure studies (i.e., hierarchical leisure constraints theory in Crawford, Jackson, & Godbey, 1991). In another study, Moghimehfar and Halpenny (2015) employed a similar three dimensional approach to identify the influence of these constraints on people's pro-environmental behavioural intention. Their findings supported this classification.

The hierarchical leisure constraints theory (Crawford et al., 1991) categorizes constraints into three major groups: intrapersonal, interpersonal, and structural constraints. Intrapersonal constraints refer to psychological factors that prevent people from performing certain actions (e.g., anxiety, stress, religiosity and subjective evaluations of the appropriateness of the action). Interpersonal constraints reflect barriers that are the outcome of individuals' interaction with

surrounding others. Finally, structural constraints represent physical surroundings that limit people's action. Lack of infrastructure and superstructure are examples of these types of constraints in tourism and outdoor recreation contexts. This study investigated constraints to pro-environmental behaviour during camping using a three category conceptualization of constraints.

Negotiation through Constraints to Pro-environmental Behaviour

Although constraints have been known as factors that can restrict people's participation in an activity, researchers believe they do not necessarily foreclose such participation (Jackson et al., 1993). Jackson and colleagues proposed that people facilitate their participation in leisure activities through a negotiation process. They suggested that people employ cognitive or behavioural strategies to overcome constraints. Researching leisure behaviour, Schneider and Wilhelm Stanis (2007) acknowledged that the study of negotiation is as important as the study of constraints themselves. Sutton and Tobin (2013) believed that "subjective and objective constraints require different negotiation strategies [… that] differ across social structural variables" (p. 904). They, along with Ernst (2009), suggested negotiation of constraints as an important topic for further investigations in environmental studies. This study explores the influence of people's negotiation through constraints. For this reason, similar categories as constraints (i.e., intrapersonal, interpersonal, and structural) were utilized to investigate people's negotiation through their constraints.

Motivation to Engagement in Pro-environmental Behaviour

Ryan and Deci (2000) held that "Motivation concerns energy, direction, persistence and equifinality—all aspects of activation and intention" (p. 69). They indicated that a variety of factors influence people's decisions to perform or not to perform an action. People choose to engage in an activity for many reasons, ranging from internal will to a fully externalized

pressure. Based on the concept of fundamental psychological needs, self-determination theory (SDT) tries to explain human motivation to perform an action (Deci & Ryan, 1985).

According to SDT, there are two types of motivations: intrinsic and extrinsic. Intrinsic motivation refers to the satisfaction of performing an action for its own sake. Deci and Ryan (1985) believed that intrinsically motivated people engage in activities because of an internal feeling of satisfaction as the result of performing the behaviour rather than for the sake of any sort of external reward or punishment. However, research shows that many behaviours are not intrinsically motivated.

To be involved in successful social interactions, people need to follow social norms and rules of the community. An assumption of SDT is that people tend to move "toward integration and organization of psychic materials" (Ryan & Deci, 2012, p. 87). This process happens through the internalization of information that people gain from interacting with the surrounding world and combining internal forces. Values, attitudes, norms, knowledge, feelings, and constraints are examples of information from the external world; emotions and drives are examples of internal factors (Ryan & Deci, 2012). The process of internalizing externally derived factors results in the formation of self-determined behaviours from extrinsic motivations (Deci &Ryan, 2000). The major difference between intrinsic and extrinsic motivation is that they are characterized by different goals. For example, extrinsically motivated activities are performed behaviour for the sake of rewards or to avoid an action because of a punishment. The process of internalization helps people self-regulate the behaviour and consequently bring the behaviour under autonomous control (Ryan & Deci, 2012).

Deci and Ryan (1985) identified four different types of regulations of extrinsically motivated behaviours: integrated, identified, introjected, and external. Integrated regulation - as

an extreme form of absorption of an external regulation - refers to behaviours that are highly integrated into the individuals' personal goals and values. In this process, individuals receive externally regulated rules and values and match them to their own cognitive structure through an internalization process and make them as their own values and norms (Darner, 2009). An example of integrated regulation regarding pro-environmental behaviours are people who try to consume less water during daily activities because it fits their personal goals and values. Another type of extrinsically motivated regulation is identified regulation. This type of regulation refers to activities that are more congruent with an individual's values and goals (Deci & Ryan, 2000); thus, people feel greater volitional control over them. If campers strongly value trees, they feel self-determined when they keep the campfire smaller and burn less firewood, even though a bigger campfire may be more intrinsically pleasing.

Introjected regulation refers to behaviours that people perform due to an externally approved value that is not fully internally accepted. People usually perform this type of activity to avoid feelings of shame, guilt, or diminishing self-esteem (Darner, 2009). An example of introjected regulation is driving carefully on roads inside national parks to avoid feeling the guilt which could result if the driver's car hit a crossing animal. As the last type of extrinsic behavioural regulation, external regulation refers to behaviours that people perform purely based on the external possibility of reward or punishment (Deci & Ryan, 2000). Keeping food secured (i.e., away from animals) while camping to avoid a punishment fine, or recycling cans and bottles to get a refund, are examples of this type of extrinsically motivated regulation. Finally, when people are neither intrinsically nor extrinsically motivated to participate in certain behaviour they are amotivated toward that particular behaviour. In this way, SDT presents a continuum of motivations from intrinsic to extrinsic motivation that end in the extreme point of

amotivation. Similarly, a regulation continuum starts with intrinsic regulation and continues to external regulation. These two continuums range from self-determined to non-self-determined behaviours.

To date, SDT has been used as the conceptual framework in several environmental behaviour studies and confirmed as an accurate theory to investigate human behaviour in this context (e.g., Deci & Ryan, 2002; Darner, 2009, 2012; Karaarslan, Sungur, & Ertepinar, 2014; Osbaldiston & Sheldon, 2003). Ryan, Huta, and Deci (2008) stated that people with intrinsic goals are more likely to perform sustainable behaviour. Kollmus and Agyeman (2002) mentioned motivation as "the reason for a behaviour" (p. 249). Regarding environmental behaviour, they believed that motivations make us participate in certain behaviour and constraints that "stifle certain behaviour. Usually, internal barriers to pro-environmental behaviour are non-environmental motivations that are more intense and directed differently (e.g., I will drive to work because I'd rather be comfortable than environmentally sound)" (p. 250).

Motivation is known to be directly associated with willingness and intention. Ryan and Deci (2000) mentioned that "Motivation concerns energy, direction, persistence and equifinality all aspects of activation and intention" (p. 69). Ajzen (1991) believes that "intentions are assumed to capture the motivational factors that influence a behaviour" (p. 181). In leisure research, motivation has been considered as an important factor to overcome leisure constraints. This study considered motivation as an important predictor of intention to participate in environmental activities during front-country camping.

Knowledge of Pro-environmental Behaviour

Studies have shown both no association and a positive association between individuals' knowledge and pro-environmental behaviours. In 1980s, Hines and colleagues (1986/87)

reported on a direct association between knowledge of the issue and individuals' intention to perform pro-environmental behaviour (r = .30). Twenty years after Hines et al.'s paper, Bamberg and Möser (2007) conducted a meta-analysis of the social-psychological determinants of pro-environmental behaviour. Although they included individuals' knowledge of environmental issues as a determinant of behaviour in their model, results showed an indirect association to behavioural intention. More recently, Steg and Vlek (2009), in a review of the pro-environmental behaviour literature, indicated that increases in individuals' knowledge result in increases in knowledge of environmental problems, which, in turn, increases knowledge of alternative behaviour. They believed that "generally, information campaigns hardly result in behaviour changes. However, prompts appeared to be effective in changing behaviour" (p. 314). Another highlighted reason for the association between knowledge and behaviour in Steg and Vlek's study is that knowledgeable people are prone to accept environmental policies.

Milanowski (2002) studied Leave-No-Trace (LNT) guidelines to understand visitors' behaviour. The researcher reported moderate level of awareness among the visitors and non-significant LNT-awareness relationship. Boland and Heintzman (2010), in a qualitative study of knowledge gained from environmental education programs and people's environmental behaviour, reported a positive association between these two variables.

Kollmuss and Agyeman (2002) indicated that the literature of pro-environmental behaviour does not show a consistent association between knowledge of pro-environmental behaviour and behavioural intention. The indirect association of knowledge and intention, however, was observed. The authors introduced the concept of pro-environmental consciousness as a complex factor of awareness, values, and attitudes; this factor influenced behaviour in their model.

In leisure studies, awareness of a particular issue or knowledge of how to engage in a desired behaviour has not been included in constraints research. Most of the studies on this topic focused on the association among constraints, negotiation, and motivation related to leisure participation (e.g., Hubbard & Mannell, 2001; Son et al., 2008). In the pro-environmental behaviour context, however, awareness of environmental issues can be a potential predictor of behavioural intention and is linked to motivation and constraints. Sutton and Tobin (2013), for instance, stated that knowledge of environmental behaviour can be viewed as a motivational factor for pro-environmental behaviour. They also stated that lack of knowledge can be a constraint to pro-environmental behaviour. Based on similar assumptions, this study hypothesized the links between knowledge of how to engage in pro-environmental camping, and intention, motivation, constraints, and negotiation.

Alternative Models of Pro-environmental Behaviour Constraints

Although previous research attempted to identify factors that influence people's participation in pro-environmental behaviour, the possible relationships among constraints to pro-environmental behaviour, negotiation through these constraints, motivation, and knowledge of environmental issues need to be empirically tested. This section proposes three alternative structural models of the associations among these variables and their relationship with intention.

The first model of this study (Figure 3.1) presents the relationship between these variables and intention, independent of each other. The independent model proposes that motivation, knowledge of environmental camping, and constraint negotiation each independently, positively, and directly influences intention and constraints directly and negatively influences intention. The aim of this structural model was to identify the influence of each of these factors on intention regardless of their influence on each other.

The second model (Figure 3.2) proposes that other than the direct association of constraint, negotiation, and knowledge with intention, constraints and negotiation mediate the influence of knowledge and motivation on intention. Negotiation also mediates the impact of constraints on intention. Knowledge positively influences motivation. This study assumed a negative association between constraints and intention. Knowledge and motivation are also negatively associated with constraints and positively with negotiation.

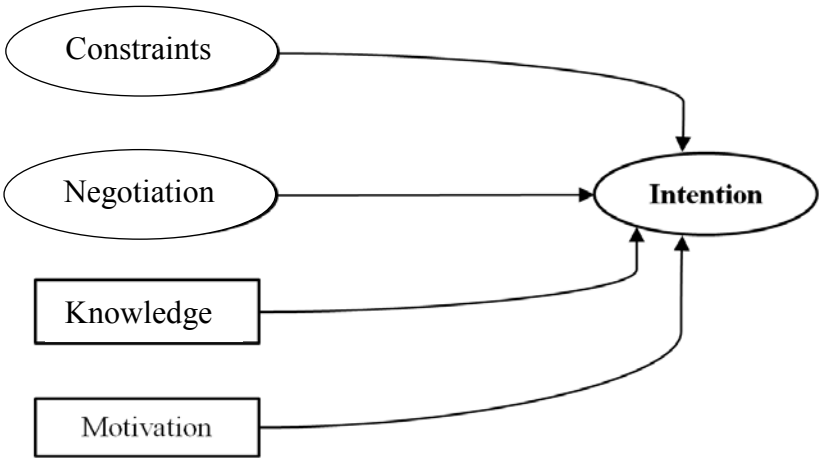

Figure 3.1. Independent model

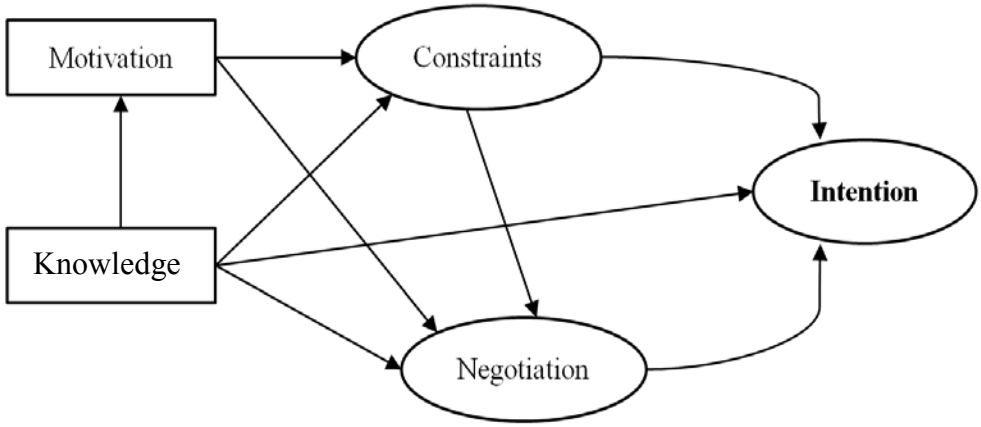

Figure 3.2. Negotiation mediation model

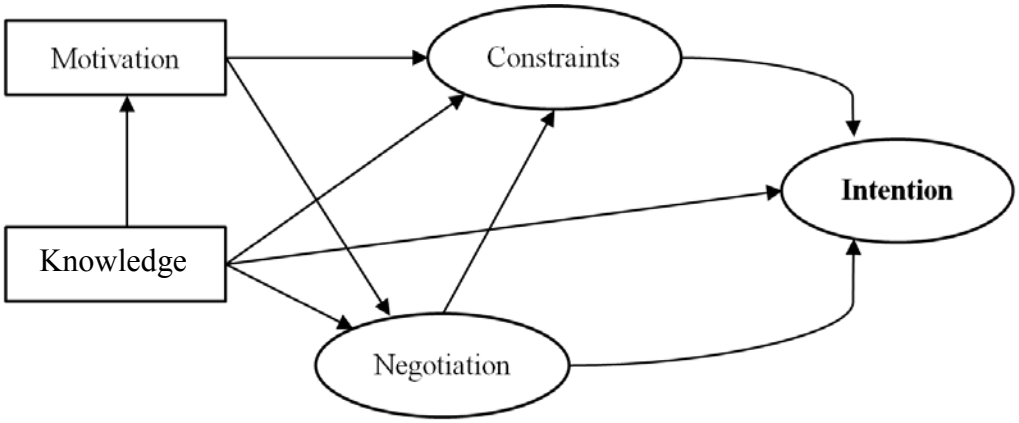

Figure 3.3. Constraints mediation model

Regarding the association between constraints and negotiation, two possible hypotheses were addressed in the literature (Hubbard, & Mannell, 2001; Son, et al., 2008). The first hypothesis assumes that negotiation triggers the perception of constraints and, therefore, magnifies the impact of constraints. The second hypothesis considers negotiation as a mitigating factor that decreases the negative impact of constraints. In a pro-environmental behaviour context, this study expected a mitigation effect from negotiation. Therefore, it was hypothesized that negotiation negatively influences constraints or vice versa. In the second model, negotiation mediates the influence of constraints on intention (mitigation effect).

Similar to the second model the third model in this study (Figure 3.3) hypothesized that constraints, negotiation, and knowledge directly influence intentions to pro-environmental behaviour. Motivation indirectly influences behavioural intention through constraints and negotiation. The major difference between the second and the third model in this study is that in in the third model constraints mediate the impact of negotiation on intention (which is the opposite of the association among constraints, negotiation, and intention in the second model). Therefore, this study proposes that negotiation, motivation, and knowledge are negatively associated with constraints. This model is based on the notion that "people with sufficient negotiation resources will perceive themselves to be less constrained" (Hubbard & Mannell, 2001, p. 149).

Methodology

Place of Study

This research was conducted within provincial parks in Alberta, Canada. There is a network of approximately 500 sites in Alberta's provincial park system covering more than 27,500 square kilometers. These designated areas are classified into six natural regions (i.e.

Boreal Forest, Canadian Shield, Foothills, Grassland, Parkland, and Rocky Mountain) and 21 sub-regions (Downing & Pettapiece, 2006). Among these areas 76 sites are designated as provincial parks. Four of these provincial parks were selected for the purpose of this study: Cypress Hills Interprovincial Park (South East Alberta), Long Lake and Cross Provincial Park (central Alberta), Gregoire Lake Provincial Park (North East Alberta), and Kananaskis Country (South East Alberta – foothills of Canadian Rocks). Geographical location, number of visitors, visitors' typology, and type of outdoor activities were considered to select the study sites with the major goal of obtaining a diverse sample.

Data Collection and Sample

Data were collected via an on-site self-administrated questionnaire during August and September 2014, which is the high visitation season for the parks in this study. Participants were campers staying in the major front-country campgrounds in Cypress Hills Interprovincial Park, Long Lake and Cross Provincial Park, Gregoire Lake Provincial Park, and Kananaskis Country (several campgrounds). Both tent and RV campers were studied. Participants were approached at their campgrounds by trained survey administrators. Only campers who intended to stay for at least one day after the survey time were asked to complete the questionnaire in order to obtain a sample of individuals who were able to answer behavioural intention questions. Target campsites were selected based on the campground registration lists. For groups of people at a campsite, the person whose birthday was closest to the data collection date was asked to complete the survey to avoid group leader bias (Battaglia, Link, Frankel, Osborn, & Mokdad, 2008). Respondents were asked to complete a paper-based questionnaire. Participants' were asked about their intention to engage in pro-environmental behaviour, constraints to engaging in pro-environmental actions, negotiation strategies they choose to overcome perceived constraints,

knowledge low impact camping practices, and their motivation for participating in pro-environmental behaviour. Demographic information was also obtained. These items are elaborated on the next section. 1,009 completed questionnaires were analyzed for the purpose of this study. This sample size met the requirements for the selected effect size at the confident interval of .99 (Cohen, 1988; 1992). The minimum required sample size was calculated using Soper's (2015) online power calculator.

Survey Instrument

The theory planned behaviour's (Ajzen, 1991) approach to intention was used to investigate people's intention to engage in pro-environmental behaviour in this study. Fishbein and Ajzen (1980) suggested a single question that directly asks about people intention to participate in pro-environmental behaviour (e.g., I intend to …). In addition to this item, three other questions starting with 'I want to' and 'I am willing to' were used to inquire about campers' intention to participate in pro-environmental behaviour. Armitage and Conner (2001), in a meta-analytical study, confirmed the internal consistency of these four questions.

As mentioned earlier, a three-dimensional approach to constraints was used to investigate constraints to pro-environmental camping behaviour in this research. A total of 15 questions (four intrapersonal, three interpersonal, and eight structural constraints items) were used to investigate constraints. Structural constraints items were developed based on previous studies in the fields of leisure and pro-environmental behaviour. Most research studies in these fields have considered structural factors as constraints to participation in environmentally-friendly activities (Steg & Vlek, 2009). In terms of measuring interpersonal and intrapersonal constraints, because they were not extensively used in pro-environmental behaviour literature, these items were

mainly adopted from leisure constraints studies and modified to match the outdoor recreation pro-environmental behaviour context.

Ten items were developed to identify the influence of negotiation on people's intention to participate in pro-environmental behaviour. As with constraints, constraint negotiation was classified into three categories: intrapersonal (two items), interpersonal (four items), and structural (four items). Because the concept of negotiation through constraints is new to the pro-environmental behaviour literature, these items were also developed based on previous leisure studies that examined constraint negotiation (e.g., Hubbard & Mannell, 2001; Son et al., 2008).These items were matched with the constraints scale utilized in the present study.

Self-determination theory's approach to the study of individuals' motivation was used to investigate campers' motivation to participate in pro-environmental behaviour. To measure different types of regulation (i.e. intrinsic, integrated, identified, introjected, and external) participants were asked to express their level of agreement with 12 different motivational items. All of these items share an introductory statement: "I try to protect nature while I am camping because…"

Another predictor of pro-environmental behaviour in this study was knowledge of environmental issues. A self-rated knowledge measurement method to investigate campers' knowledge of pro-environmental camping practices was used. Table 1 reports on these measures.

A five point Likert scale ranging from strongly disagree to strongly agree was employed to measure intention, constraints, negotiation, and motivation. Knowledge items were measured with a five point unipolar scale from not familiar at all to totally familiar. Questions were randomly ordered for each category. Finally, campers' place of residence, gender, age, education level, and total household income were obtained. An expert check was used to ensure the face

validity of the constructs and Cronbach's alpha coefficient confirmed the internal consistency of the items. Table 3.1 reports alpha coefficients as well as descriptive statistics.

Table 3.1

Measurement Items and Descriptive Statistics

Variables	M (SD)
Intention (α = .877)	
I intend to protect nature during my camping trips	4.58 (.59)
I want to protect the environment when camping	4.59 (.63)
I am willing to protect nature while I am camping	4.67 (.55)
I am willing to take good care of the environment while camping	4.59 (.58)
Constraints (α = .664)	
I don't know how to engage in environmentally-friendly camping[1]	1.85 (.88)
I don't like to keep my campfire small[1]	2.80 (1.08)
Physically, I'm not able to participate in environmentally-friendly behaviour[1]	1.62 (.79)
I like to enjoy camping without thinking about environmental issues[1]	2.57 (1.12)
My close friends and family do not care about nature while camping[2]	1.91 (.92)
Although I try to keep campfires small, my family and friends prefer larger ones[2]	2.66 (1.08)
My camping companions don't help me to recycle[2]	1.88 (.89)
There are enough recycling facilities in the campground[3]	2.68 (1.22)
Environmentally-friendly camping is expensive[3]	2.28 (1.00)
There are good waste water disposal facilities in the campground[3]	2.71 (1.16)
Firewood is available to purchase so I don't need to use deadfall wood, cut live trees, or bring firewood into the park with me[3]	2.16 (1.16)
There is not enough space to park my vehicles in an environmentally-friendly manner[3]	2.12 (1.02)
There is adequate storage space available in the campground to keep food out of reach of animals[3]	2.73 (1.22)
Campground staff provide enough information about environmentally-friendly camping[3]	3.07 (1.07)
Long wait times at the dumping station deter me from emptying my waste water at the dumping station[3]	2.23 (1.06)
Constraint Negotiation (α = .788)	

I try to learn about environmentally-friendly camping techniques[4]	3.30 (.95)
I try to keep my campfire as small as possible[4]	3.04 (1.18)
I travel with people who care about nature[5]	3.92 (.80)
I try to keep the fire as small as possible even though my friends and family don't like me to[5]	2.66 (.97)
I teach my companions how to protect nature while camping[5]	3.48 (1.01)
I try to recycle waste even when companions don't care about recycling[5]	3.89 (.93)
I have asked park staff to provide me with information about environmentally-friendly camping practices[6]	2.29 (.87)
I do my best to find recycling facilities in the campground[6]	4.02 (.89)
I purchase recreation equipment that uses as little electricity and petroleum-based fuel as possible when camping[6]	3.23 (1.07)
I save money so that I can afford to buy camping equipment that is more environmentally-friendly[6]	2.76 (1.04)
Knowledge (α = .855)	
Environmentally-friendly use of my campsite (e.g., where to set up my tent, where to park)	3.83 (1.09)
Appropriate disposal of garbage and recyclables at campgrounds	4.24 (.87)
Reducing my impacts on the campground's natural spaces (e.g., staying on paths, parking in designated areas)	4.28 (.83)
Secure food storage that does not attract animals	4.40 (.81)
Environmentally-friendly use of campfires	3.94 (.99)
Disposal of waste water in designated locations	4.09 (1.06)
Green ways of camping such as the use of solar panels	3.25 (1.31)
Motivation (α = .867)	
It is fun for me (intrinsic)	3.61 (1.01)
It is interesting for me (intrinsic)	3.53 (1.03)
Caring about nature reflects who I am (integrated)	4.12 (.88)
Nature is part of who I am as a person (integrated)	4.08 (.93)
If I do it I feel proud of myself (introjected)	3.89 (.97)
Protecting nature makes me feel good about myself (introjected)	4.04 (.90)
If I don't do it, I feel guilty (introjected)	3.69 (1.12)
That's what I'm supposed to do (external)	4.08 (.94)
There are costs and penalties if I don't do it (external)	3.14 (1.25)
It makes others feel good about me (external)	3.11 (1.09)

Note. [1]structural constraints; [2]interpersonal constraints; [3]intrapersonal constraints; [4]structural negotiation; [5]interpersonal negotiation; [6]intrapersonal negotiation

Results

More than 50% of the respondents were female campers (55.5%). The average age of the participants was 42 years old (SD=13 years). Thirty two percent of the sample were university graduates (20% held bachelor's degree and 12% held graduate degrees). The majority of the respondents had college diploma (40%) and the rest possessed high school diploma. Of the respondents only 6% were visitors from other Canadian provinces or other countries.

To assess the preliminary fit criteria of the proposed structural models, overall model fit, and fit of internal structure of models were tested (Table 3.2). Although in SEM a non-significant chi-squared is preferred, this study's results showed significant chi-squared for both the hypothesized models which is acceptable due to the large sample size in this study (Barrett, 2007). Model fit indices indicated that the second and third model fit well with the data. However, the independent model did not show a good fit and therefore is not reported on further here.

Table 3.2

Model Fit Results

Model	χ^2 (*df*)	IFI	NFI	GFI	CFI	RMR	RMSEA
Independent model	925.80* (126)	.887	.872	.897	.887	.133	.079
Negotiation mediation	412.03* (124)	.959	.943	.955	.959	.032	.048
Constraints mediation	399.55* (123)	.961	.944	.956	.961	.031	.047

Notes.
IFI, NFI, GFI, & CFI > .90; RMR < .05; RMSEA close to .05
* P < .001

Using maximum likelihood estimation, a structural equation modeling (SEM) approach was used to test the hypothesized relationships among variables in the proposed models IBM SPSS Amos 22 was employed to perform the analysis in this study. Intentions and knowledge were entered into the structural model with their observed reflections. For constraints and negotiation, however, observed variables were divided into three dimensions: structural, interpersonal, and intrapersonal. Motivation items were combined using a Relative Autonomy Index (RAI; Grolnick & Ryan, 1987). To form the RAI, the controlled subscales of motivation were weighted negatively (i.e. external: -2, introjected: -1) and the autonomy subscales of motivation were weighted positively (i.e. integrated: +1, intrinsic: +2) (RAI = 2 × Intrinsic + Identified − Introjected − 2 × External).

In the negotiation mediation, as hypothesized, constraints were negatively associated with intention ($\beta = -.39$, $p < .001$) and negotiation ($\beta = -.37$, $p < .001$). Negotiation was positively associated with intention ($\beta = .14$, $p < .01$). Negotiation also partially mediated the relationship between constraints and intention (direct effect of constraints on intention without negotiation = –.46, $p < .001$; direct effect on intention with negotiation = –.39, $p < .001$; partial mediation was supported as the association between constraints and intention remained significant after deleting negotiation from the model and constraints had smaller negative association with intention). Knowledge of environmental issues was also significantly associated with intention ($\beta = .13$, $p < .001$). Motivation did not show any significant association with intention. However, motivation was significantly associated with constraints ($\beta = –.26$, $p < .001$) and negotiation ($\beta = .10$, $p < .001$). Knowledge of pro-environmental camping practices had a considerably strong negative influence on constraints ($\beta = –.42$, $p < .001$). It also positively influenced motivation ($\beta = .25$, p

< .001) and negotiation (β = .28, p < .001). Table 3.3 and Figure 3.4 report on these associations. Overall, the model explained 31% of the variance in intention.

As discussed, the third model, constraints mediation, proposed similar assumptions as the second model. However, it was hypothesized that the influence of negotiation on intention was mediated by constraints. The results of analysis were similar to the findings of the second model. Constraints showed a negative direct association with intention (β = –.38, p < .001). Knowledge positively influences intention (β = .14, p < .01), motivation (β = .26, p < .001), and negotiation (β = .42, p < .001). It also negatively influenced constraints (β = –.26, p < .001). Motivation showed a positive impact on negotiation (β = .20, p < .001) and a negative impact on constraints (β = –.26, p < .001). The hypothesized association between motivation and intention, however, was neither significant nor considerable. Negotiation positively influenced intention (β = .13, p < .01) and was negatively associated with constraints (β = –.36, p < .001). Similar to the second model, constraints partially mediated the influence of negotiation on intention as the direct association between negotiation and intention remained significant while this association was stronger (direct effect without constraints = .29, p < .001; direct effect with negotiation =.13, p = .007). This indicated that constraints considerably mitigate the positive influence of negotiation on intention. Thirty one percent (31%) of the variance in intention was explained in this model (Table 3.4 & Figure 3.5).

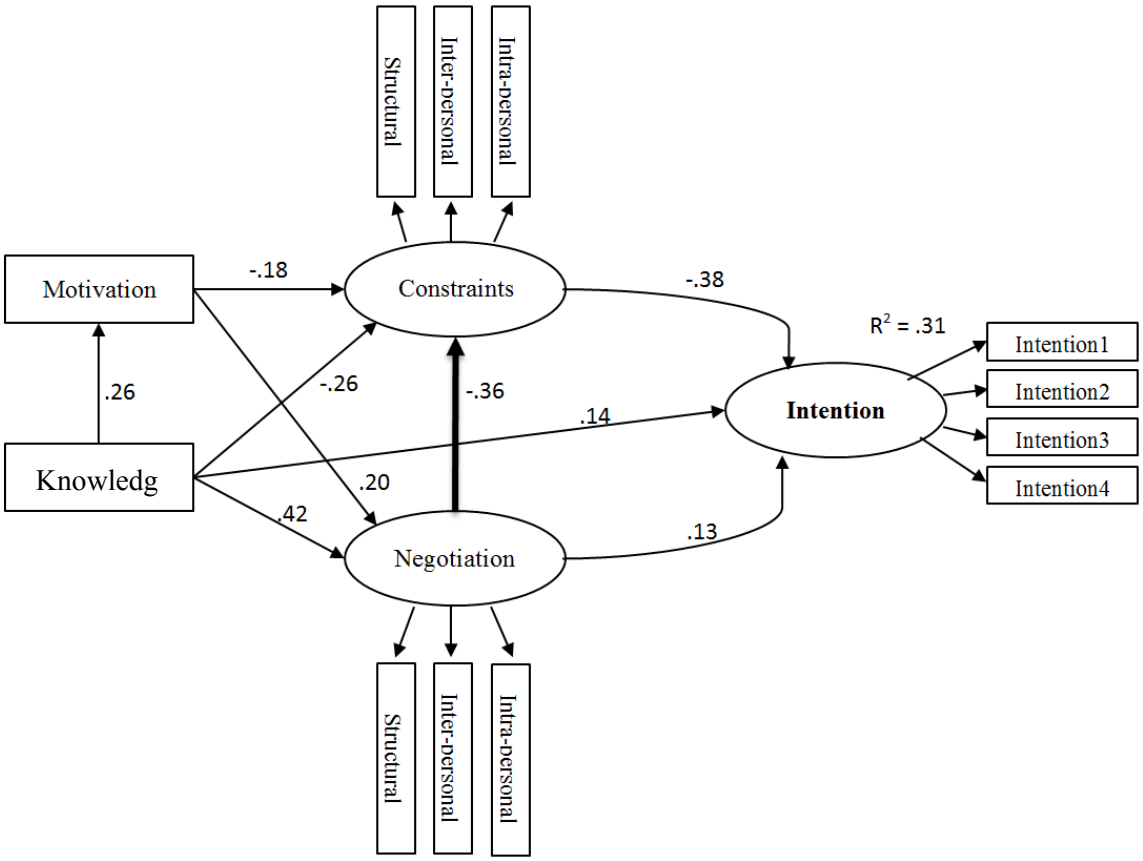

Figure 3.4. SEM results for constraints mediation model

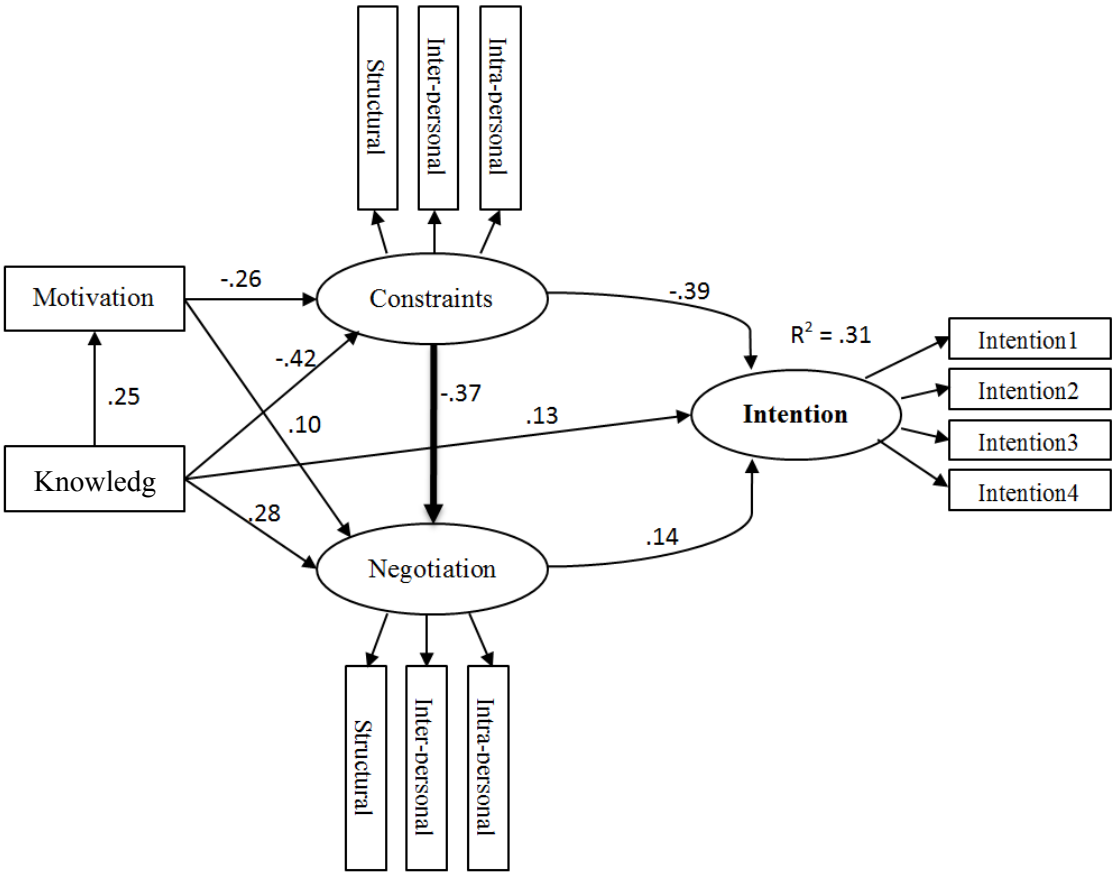

Figure 3.5. SEM results for negotiation mediation model

Table 3.3

Model 2's (Negotiation Mediation) Regression Associations

Predictor	Dependent Variable	β	p-value
Constraints	Intention	-.39	< .001
Negotiation	Intention	.14	< .01
Motivation	Intention	–	Non-significant
Knowledge	Intention	.13	< .001
Constraints	Negotiation	-.37	< .001
Knowledge	Negotiation	.28	< .001
Motivation	Negotiation	.10	< .001
Knowledge	Constraints	-.42	< .001
Motivation	Constraints	-.26	< .001
Knowledge	Motivation	.25	< .001

$R^2_{Intention} = .31$

Table 3.4

Model 3's (Constraints Mediation) Regression Associations

Predictor	Dependent Variable	β	p-value
Constraints	Intention	-.38	< .001
Negotiation	Intention	.13	< .01
Motivation	Intention	–	Non-significant
Knowledge	Intention	.14	< .01
Negotiation	Constraints	-.36	< .001
Knowledge	Negotiation	.42	< .001
Motivation	Negotiation	.20	< .001
Knowledge	Constraints	-.26	< .001
Motivation	Constraints	-.18	< .001
Knowledge	Motivation	.26	< .001

$R^2_{Intention} = .31$

Discussion

The present study was an attempt to examine the association among factors that influence individuals' pro-environmental behavioural intention during outdoor recreation. For this reason, constraints to pro-environmental behaviour as well as negotiation, motivation, and knowledge of environmental camping were explored. Three different structural models suggested by the literature were examined. This section summarizes the findings. The theoretical and practical implications of the results are discussed. Finally, limitations and future research avenues are addressed.

The first model hypothesized that all the predictors significantly influence intention independent of each other. Model fit with the data was poor and was therefore rejected. The second model also supported the hypothesized negative impact of constraints on intention; it revealed that negotiation significantly mediated this association. In this model, knowledge of pro-environmental camping practices can be considered the most important determinant of people's intention. In addition to the direct positive influence on intention, knowledge mitigated the negative impact of constraints with a strong negative association to constraints. It also positively influenced all of the other factors in the model. Motivation positively influenced negotiation and negatively influenced constraints. However, it did not show any significant association with intention. The revealed mediating effect of negotiation on the association between constraints and intention supported the idea that people employ cognitive and behavioural strategies to overcome their barrier.

The results of the third model were similar to the second model; however the association between constraints and negotiation was hypothesized to be the opposite of the second model. This was based on the assumption that negotiation through constraints decreases an individual's

perception of constraints or it triggers the perception of constraints. Therefore, people with stronger cognitive and behavioural negotiation abilities perceive themselves as less constrained. Results suggest the mitigating effect of negotiation on constraints was significantly confirmed in both the second and third models.

The findings of the present study empirically tested the association among constraints, negotiation, and intention to engage in pro-environmental camping practice. In addition to investigating the impact of constraints on people's pro-environmental behaviour that was strongly suggested in the literature (Steg & Vlek, 2009), this study incorporated an investigation of the relationship between negotiation and constraints to engaging in pro-environmental behaviour. To date, only a few scholars have suggested the inclusion of this factor when studying pro-environmental behaviour constraints (Ernst, 2009; Sutton & Tobin, 2013), and only one study has actually employed this variable in empirical research (Moghimehfar & Halpenny, 2015). Both the present study and Moghimehfar and Halpenny (2015), confirmed the influence of constraints through statistical methods. Therefore, negotiation should be considered an important element in future studies in this field.

Regarding motivation to engage in pro-environmental behaviour, evidence from this research suggests that motivation is a factor that greatly influences people's behavioural intention but indirectly through other determinants of intention. Hubbard and Mannell's (2001) and Son et al.'s (2008) studies of the associations among motivation, constraints, negotiation, and participation reported similar findings. Both studies reported an indirect association of motivation and participation which was in line with the findings of the present study.

As noted, some pro-environmental behaviour studies have identified the direct and indirect effect of knowledge on intention and behaviour. This study found a similar direct

association between knowledge of pro-environmental camping practices and pro-environmental behavioural intention as well as a strong indirect association among the other predictors of intention. However, this study utilized a self-rated scale to measure knowledge of pro-environmental camping that was different from the scale in some of these studies and can be considered as limitation to this research.

In practice, the findings of the present research indicate the importance of the influence of constraints and negotiation on people's pro-environmental behaviour during outdoor recreation, specifically camping. A strong negative association between constraints and intention emphasizes the significance of these restraining factors. To address structural constraints the physical environment of parks and campgrounds should facilitate people's participation in pro-environmental behaviour. Examples include providing accessible recycling facilities, well-designed fire pits, locally sourced firewood, and parking spaces designed to accommodate large RVs, campers, and the all-terrain vehicles. Also, strategies such as providing public transportation from campgrounds to trail heads in popular destinations and parks can solve many problems such as parking space and traffic jams. It also decreases air pollution at destinations as well as road maintenance costs. Although not very popular in Canada these strategies have been used in some destinations in North America (i.e., Grand Canyon).

Among different intrapersonal constraints lack of interest, knowledge, and skills are the most frequently reported. In this research the highest score was obtained for lack of interest in environmental activities. Techniques such as gamification of environmental activities can make people interested in environmental activities. It is also indicated that people who know the skills are more interested in participating in the activity.

Interpersonal constraints, namely negative social opinion about pro-environmental activities, played a significant role in individuals' intention to engage in pro-environmental camping behaviour. Similarly, intrapersonal constraints such as lack of skills and interest appeared to curtail individuals' intention to engage in pro-environmental camping. Providing more information about environmental issues and environmentally-friendly practices can decrease interpersonal and intrapersonal constraints. Example of a strategy that may result in reduction of interpersonal constraints is planning entertainment activities that involve families and groups in environmentally friendly activities.

Facilitating people's negotiation through constraints should be pursued by park agencies. Complete removal of constraints can be difficult or impossible due to time, budget, and physical environment limitations. Providing a context that allows people to negotiate through their constraints is a good alternative for promoting pro-environmental behaviour in campgrounds. An example is providing accurate and available information resources for people who are not aware of the negative impacts of their behaviour on the environment. The strong negative association between knowledge of pro-environmental practices and constraints, as well as the positive impact of knowledge on negotiation in this research, is evidence of this proposition. Previous studies concluded that the extent to which individuals try to negotiate their constraints defines the level of their participation (Gilbert, & Hudson, 2000). Lyu and Oh (2015) found that accomplishment of desirable outcomes is another reason for people to negotiate through their constraints. This issue is very important in fostering pro-environmental behaviour. Awareness of the consequences of their behaviour regarding environmental issues can be a practical way to involve campers in pro-environmental practices through negotiating their constraints.

This research also employed a new approach to the study of constraints to pro-environmental behaviour that considered three types of psychological, sociological, and structural constraints to pro-environmental behaviour. A comprehensive approach to the study of constraints provides a deeper understanding of these restraining factors. Although structural factors play a major role in restraining people's pro-environmental actions, psychological and social restraining factors could be just as important as structural factors. The present study attempted to include a variety of constraints including the restraining impact of social surroundings as well as internal psychological factors. The same approach was used to study negotiation to obtain a parallel scale for both constraints and negotiation. The three dimensional approach to the study constraints reveals the importance of these aspects of constraints that has been neglected in previous pro-environmental constraints research.

In addition to constraints and negotiation, knowledge of pro-environmental camping practices played an important role in the structural models of this study. The results confirmed that knowledge is an important determinant of pro-environmental behavioural intention. In addition to the direct association to intention, people's knowledge mitigated their perception of constraints, increased their motivation to participate in environmental actions, and facilitated negotiation through constraints. Considerable direct and indirect influence of knowledge in the proposed models in this study emphasized the importance of this factor in people's participation in pro-environmental camping practices. It can be concluded that increasing people's knowledge of environmental camping is a key element in achieving an environmentally sustainable campground. Exposing campers to information sources before, during, and after their stay in campgrounds is a practical way to achieve this goal. This is possible through the online or telephone reservation process, while campers wait to register at the campground, through

informative park signage, and educational programs as well as by sending information packages to campers after their stay.

Although motivation did not directly influence people's intention, it was strongly associated with constraints. Based on data obtained for this study, motivation considerably mitigated individuals' perception of constraints. Therefore, people who are motivated to practice pro-environmental camping perceive fewer constraints to do so. Motivation also positively influenced negotiation in these models which empowered people's negotiation strategies to overcome their constraints. According to self-determination theory's (Deci & Ryan, 1985) assumptions, motivating people to participate in environmentally responsible camping practice can be an effective strategy to promote pro-environmental behaviour in campgrounds. Techniques such as gamification of activities can be useful in achieving this goal (Huber & Hilty, 2015). This technique focuses on the motivational aspect of games to make people intrinsically enjoy participation in pro-environmental activities. In addition to the above mentioned technique focused on the intrinsic motivation, externally regulated motivations such as prizes and punishments may also be applicable.

This study attempted to provide an understanding of the association between constraints and negotiation with the inclusion of negotiation, motivation, and knowledge of environmental camping. Although the structural model was capable of explaining more than 30% of the variation in intention, the inclusion of other important psychological determinants of behaviour are important to obtain a better understanding of campers' behaviour. Future research should consider the influence of this study's factors as well as other predictors of behaviour. As mentioned in the methodology section of this paper, campgrounds in different geographical locations and other recreational activities were selected obtain a diverse sample for this research.

However, this study focused on front-country campers. Future researchers are encouraged to involve backcountry campers diversify the sample. Moreover, the direction and strength of the influence of these factors may be different for outdoor recreational activities other than camping. Finally, constraint and negotiation items developed for the purpose of this study were specifically designed for camping activities and were based on the cultural and geographical context of Canada. Developing and validating a general constraints scale with a global approach that can be used in wider cultural and geographical contexts is needed to obtain a deeper understanding of these associations.

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Chapter 4

A COMPREHENSIVE THEORY OF PREDICTING OUTDOOR RECREATION PRO-ENVIRONMENT BEHAVIOURAL INTENTIONS: A CASE STUDY OF CAMPERS IN ALBERTA, CANADA

Introduction

While outdoor recreation, as a tool to connect people to nature, has been promoted in North America over the past decades, the environmental impacts of outdoor activities have been a major concern (Hammitt, Cole, & Monz, 2015). Many studies have attempted to identify factors that cause negative impacts on natural resources (e.g., Buckley, 2004; Mieczkowski, 1995; Monz, Pickering, & Hadwen, 2013). In environmental psychology, several theories have been used to predict pro-environmental behaviour (see table 4.1). These theories introduced numerous psychological factors that influence individuals' decision to participate in pro-environmental activities. Whether originally developed for environmental psychology research (e.g., value-belief-norm-theory, Stern, 2000) or adopted from social psychology (e.g., the theory of planned behaviour, Ajzen, 1991; theory of reasoned action, Ajzen & Fishbein, 1980), these theories attempted to predict people's behaviour by measuring variations in people's pro-environmental behaviour caused by psychological factors. Table 4.1 provides a brief overview of the major theories that have been developed with the aim of predicting pro-environmental behaviour. Although these theories included factors that were suggested in the social psychology literature and were supported by empirical results, some failed to predict a considerable portion of variation in behaviour due to structural problems or context related issues. Therefore, generating social psychological theories that are capable of predict human in different settings is necessary. Klöckner (2013) believed:

> Both from a theoretical and practical perspective it would be helpful to reduce the complexity of environmental psychological theory by integrating the most successful theories into a general theory which additionally includes assumptions about how the variables of the different models relate to each other across different model traditions. (p. 1029)

With high rates of nature-based recreation and camping activities in North America, it is essential to study people's behaviour during such activities to avoid further damage to natural resources. Because of the vulnerability of the physical environment and limitations of infrastructure in contexts that outdoor recreation occurs, it is important to generate tools that assist researchers and practitioners in understanding people's behaviours while in nature. This study introduces a comprehensive theory that is capable of predicting pro-environmental behaviour during outdoor recreation. For this reason, an extended version of the theory of planned behaviour (Ajzen, 1991), self-determination theory's approach to study motivations (Deci & Ryan, 1985), hierarchical model of leisure constraints (Crawford, Jackson, & Godbey, 1991), and constraints negotiation theory (Jackson, Crawford, & Godbey, 1993) were combined to predict people's pro-environmental camping behaviour during outdoor recreation, particularly, front-country camping. The proposed comprehensive theory was empirically tested on a sample of front-country campers in Alberta, Canada to examine its applicability and accuracy.

Table 4.1

Overview of the Major Pro-Environmental Behaviour Theories

Year	Author(s)	Theory	Predictors on Environmental behaviour
1981	Schwartz & Howard	The norm-activation-theory	Awareness of consequences Aspiration of responsibility Subjective norms Perceived behavioural control Personal norms
1986/7	Hines, Hungerford, & Tomera	The model of responsible environmental behaviour	Intention Action skills Knowledge of the action strategy Knowledge of the issue Personality factors (attitude, locus of control, and personal responsibility)
1991	Ajzen	The theory of planned behaviour*	Intention Attitude Subjective norms Perceived behavioural control
1995	Grob	The structural model of environmental attitude and behaviour	Perceived control Emotions Personal philosophical values Environmental Awareness
1995	Hornik, Cherian, Madansky, & Narayana	A model of consumer recycling behaviour	Intention Situational factors Internal facilitators (knowledge, commitment, etc.) Internal incentives (personal satisfaction) External facilitators (monetary reward, social influence, etc.) External incentives(frequency of collection)
1998	Burgess, Harrison, & Filius	Deficit models of public understanding and action	Environmental attitude Environmental knowledge
2000	Stern	The value-belief-norm-theory	Values Ecological worldview Awareness of consequences Aspiration of responsibility Personal norms

2002	Kollmuss & Agyeman	Model of pro-environmental behaviour	Internal factors (personal trait, knowledge, feelings, fear, emotional involvement, values, attitude, etc.) External factors (infrastructure; political, social, and cultural factors; Economic situation) Barriers (olds behaviour patterns, lack of incentives, etc.)
2007	Bamberg & Möser	Psycho-social determinants of pro-environmental behaviour	Intention Attitude PBC Moral norms Social norms Feelings of guilt Problem awareness Internal attributes
2007	Barr & Gilg	Framework of environmental behaviour	Intention Situational factors (i.e., infrastructure, geographical location, socioeconomic structure, and knowledge) Psychological factors (i.e., intrinsic motivation, response efficacy, self-efficacy, environmental threats, social influence) Social and environmental variables
2013	Klöckner	A comprehensive model of the psychology of environmental behaviour	Intentions Attitudes Social norms Perceived behavioural control Habits Personal norms Awareness of consequences Ecological world view Self-enhancement values Self-transcendence values

*Although not specifically designed for pro-environmental behaviour prediction, the theory of planned behaviour has been extensively employed as a behaviour prediction model in the field of environmental psychology.

Literature Review

Utilizing significant social psychological and leisure behaviour theories, this study attempted to develop a theory that explains front country campers' intention to engage in pro-environmental behaviour. Several thousand empirical studies have confirmed that the theory of planned behaviour (TPB) is one of the most successful behaviour prediction theories in social psychology (Ajzen, 2011b). The accuracy and predictive power of the TPB has been acknowledged through several empirical studies (e.g., Armitage & Conner, 2001; Rivis & Sheeran, 2003; Sheeran, 2002). Although, the TPB's uniqueness, generalizability, and parsimony make this theory a desirable framework for behaviour prediction in different areas of research (Ajzen, 2011b), Ajzen (1991) acknowledged that the theory is open to the inclusion of new factors that improve the predictive power of the TPB in diverse contexts as long as the TPB's original predictors are taken into consideration. Many factors have been added to the TPB to improve the theory; however, only a small number of these new factors significantly improved the predictive power of the theory (Conner & Armitage, 1998). Among these new predictors, past behaviour (Ajzen, 2002) and knowledge (Ajzen, Joyce, Sheikh, & Cote, 2011) have been extensively utilized as extensions to the TPB.

Motivation to participate in environmental behaviour has also been a widely investigated factor that has been shown to significantly influence people's behaviour (Ryan & Deci, 2000). In social psychology self-determination theory (SDT, Deci & Ryan, 1985) has been successfully utilized to investigate people's motivation in different disciplines and settings as well as in pro-environmental behaviour research (Cooke & Fielding, 2010; Darner, 2009; Darner, 2012; DeCaro & Stokes, 2008; De Groot & Steg, 2010; Green-Demers, Pelletier, & Ménard, 1997; Pelletier, Dion, Osbaldiston & Sheldon, 2003; Pelletier & Sharp, 2008; Renaud-Dubé et al.,

2010). Gradually developed over 40 years, self-determination theory's approach to the study of the regulations that drive people's motivation has been acknowledged by behaviour researchers (Gagné & Deci, 2014). This research employed SDT's approach to investigate individuals' motivations to participate in pro-environmental camping practices.

Although the restraining impact of constraints on people's pro-environmental behaviour has been examined in previous studies (Jensen, 2002; Kollmus & Agyman, 2002; Nordlund, Eriksson, & Garvill, 2010; Tanner, 1999), a systematic approach to the examination of constraints to engaging in pro-environmental behaviour has been missing and has been encouraged in the literature (Steg & Vlek, 2009). However, in leisure research constraints to leisure activity participation have been intensively investigated. The hierarchical model of leisure constraints (Crawford et al., 1991) is one of the major approaches to studying constraints to engaging in leisure activities. This theory includes different psychological, social, and structural aspects of constraints to participation in leisure activities that provide an understanding of the restraining impact of constraints on the performance of behaviours. To date, only a few environmental behaviour studies have successfully utilized this approach to constraints (Moghimehfar & Halpenny, 2015; Yoon, Kyle, Van Riper, & Sutton, 2013). Results of these studies has confirmed the applicability of this approach in the investigation of the influence of constraints on engagement in pro-environmental behaviour. The present study employed a similar approach to explore the restraining impact of constraints on pro-environmental camping behaviour.

Shortly after the emergence of the hierarchical model of leisure constraints researchers realized that people do not necessarily stop performing an action because of the presence of constraints (Jackson, Crawford, & Godbey, 1993). When faced with constraints, individuals

utilize behavioural and cognitive skills to negotiate constraints that can result in continuation if the behaviour. This mechanism is called negotiation.

The influence of constraint negotiation has been investigated in several leisure behaviour studies (Lyu, & Oh, 2015; Son, Mowen, & Kerstetter, 2008). In environmental psychology, however, there are only few studies that have suggested the inclusion of these factors in the study of constraints (Alexandris, Kouthouris, Funk, & Tziouma, 2013; Ernst, 2009; Hubbard & Mannell, 2001; Pavelka & Draper, 2015; Schneider & Wilhelm Stanis, 2007; Sutton & Tobin, 2013); to date there is only one study that empirically tested this factor to obtain an understanding of the influence of negotiation on people's pro-environmental behaviour (Moghimehfar & Halpenny, 2015). Although Moghimehfar and Halpenny's results support the influence of negotiation on constraints, more empirical research is needed to confirm the potential influence of this factor on pro-environmental behaviour. Therefore, negotiation was included in the model of this present study to examine its impact on people's pro-environmental camping behaviour. The following sections in this paper elaborate on the above theories.

Theory of Planned Behaviour

Since the emergence of the theory of planned behaviour (TPB; Ajzen, 1991) it has been extensively utilized in human behaviour studies. The TPB posits that intention is the most accurate immediate predictor for a given behaviour (Ajzen, 1991). Attitude, subjective norms (SN), and perceived behavioural control (PBC) are capable of predicting a considerable amount of variation in intention. These factors are briefly elaborated below:

Behaviour. Predicting behaviour − defined as "the manifest, observable response to a given situation with respect to a given target" (Ajzen, "behaviour," n.d.) – is the ultimate objective of the TPB. The TPB is designed to predict behaviours that are under volitional

control (Ajzen, 1991). This theory proposed that people's behaviour is guided by their intentions; therefore, predicting individuals' intentions can help to predict their behaviour. The results of numerous meta-analytical studies of TPB have confirmed the accuracy of predicting behaviour through intention.

Intention. As the most accurate predictor of behaviour, intention refers to the person's readiness to engage in a particular action. Ajzen (1991) believed that a considerable amount of variation in behaviour can be identified by measuring people's intentions to perform a given action. Several empirical studies have confirmed effectiveness of the intention as the direct predictor of behaviour. Willingness to perform an action has also been considered as a factor that reflects people's intention (Ajzen & Fishbein, 2005; Fishbein, 2008). In addition to intention, this study measured willingness to engage in pro-environmental activities as indicator of intention.

Attitude. Referring to the degree to which people positively or negatively value an action, attitude has been a classic predictor of people's behaviour in the literature (Ajzen, 1991). Attitudes are formed by individuals' expectations of a certain outcome as a response to given behaviours (Ajzen, "attitude," n.d.). Attitude was suggested as the best predictor of behaviour in the literature until a few decades ago when human behaviour research revealed the significant role of other factors in people's participation in certain actions (e.g., Ehrlich, 1969). The TPB literature includes both cognitive and affective aspects of attitude in the measurement of attitude. Therefore, both of these aspects were employed to measure attitudes toward pro-environmental in the proposed theory.

Subjective Norms (SN). Since the emergence of the theory of reasoned action (Ajzen & Fishbein, 1980), subjective norms has been considered a major predictor of behavioural

intention in social psychology. Representing the influence of social surroundings on people's behaviour, subjective norms refer to the amount of social pressure individuals' perceive as the outcome of performing a behaviour (Ajzen, 1991). The perceived social pressure varies according to the normative concerns and expectations of the important referents.

Perceived Behavioural Control (PBC). Based on individuals' beliefs about the presence of the facilitators to a particular action, perceived behavioural control reflects people's perception of their abilities to engage in an activity (Ajzen, 1991). Self-efficacy (i.e., how confident the person is regarding performing a behaviour) and controllability (i.e., how much control the person has over performing the action) have been widely examined as sub-dimensions of PBC in social psychology. This study investigated both these aspects of controllability.

Past Behaviour. As one of the most frequently employed extensions to the TPB, past behaviour has been proposed as a predictor of both intention and behaviour in many studies. In social psychology past behaviour has been suggested as an important predictor of people's engagement in highly-frequent behaviours (Knussen, Yule, MacKenzie, & Wells, 2004). The association between past behaviour and actual behaviour has been reported to be stronger where the behaviour was habitual (Ouellette & Wood, 1998; Neal, D. T., Wood, W., Labrecque, & Lally, 2012). Ajzen (2002) argued that frequency of behaviour does not necessarily make the behaviour a habit; he argued that when attitudes are replaced with newer attitudes, older attitudes do not necessarily disappear but may frame past behaviour (Ajzen, 2001); therefore, past behaviour is very likely to influence

intention and behaviour. In the present study behaviours that avoided harmful impacts on nature during past camping trips were considered as past behaviour.

Knowledge of Pro-nvironmental Action. In environmental psychology knowledge of pro-environmental action this factor has been examined in several empirical studies and the influence of this factor on people's behaviour has been shown to have no effect (e.g., Wurzinger & Johansson, 2006) or positive impact (e.g., Amante-Helvege, 1996; D'Antonio, Monz, Newman, Lawson, & Taff, 2012). Literature reviews in environmental behaviour domain confirmed the influence of the knowledge of pro-environmental actions on people's pro-environmental behaviour (Jensen, 2002; Finger, 1994; Kollmus & Agyeman, 2002). Generally, in environmental psychology it is assumed that knowledgeable people are aware of the alternative actions; therefore, they are more likely to choose the action with less negative environmental impacts (Goldman, Yavetz, & Pe'er, 2006; Kollmuss, & Agyeman, 2002).

Self-determination Theory

Motivation is known to be an important factor that influences people's decisions to engage in pro-environmental behaviours; therefore, this factor was included in this study. As one of the most extensively studied theories of motivation, self-determination theory (SDT; Deci & Ryan, 1985) is a meta-theoretical approach to investigate people's motivations to engage in different behaviours. SDT introduced autonomy (i.e., sense of having volitional control over particular action), competence (i.e., perceived effectiveness of social interactions), and relatedness (i.e., sense of belonging to the community or social surrounding) as basic human needs. These three needs foster people's motivation to engage in different activities and the quality of their performance. SDT posits that intrinsic and extrinsic motivations drive actions.

People perform an intrinsically motivated behaviour for its own sake. An internal feeling of satisfaction to perform the behaviour is the major reason to participate in intrinsically motivated activities. A well-known example of intrinsically motivated activity is children's play. SDT assumes that human beings are inherently active; thus, people tend interact with the surrounding environment (Deci & Ryan, 2012) and should not be considered as beings that are determined only by external forces. This reflects on people's need for autonomy as one of the basic psychological needs and the internally driven forces (motivations) that cause the performance of self-determined behaviours.

Extrinsic motivation is a source of reward or punishment that may foster an activity or limit the desirability of the action (Ryan & Deci, 2000). Individuals participate, avoid, or discontinue an action due to an external source such as reward or punishment. An example of extrinsically motivated action is using bear proof canisters for food storage while camping to avoid penalties where storing the food and toiletries in bear canisters is mandatory. The SDT also assumes that human beings tend to integrate and organize the psychic materials (Darner, 2009). In contrast to developmental psychology that assumes that psychic materials are learned from the social environment and define the persons self, organismic perspective considers people pro-active that integrates and develops the self during interacting with physical and social environments (Deci & Ryan, 2014). This process is called internalization. Internalization transforms information received from the surrounding environment (e.g., knowledge, norms, and feelings) to internal mechanisms such as emotions and motivations. This process results in the formation of self-determined behaviour. Recalling the example of using bear canisters, another motivation to keep food in a bear canister may be to maintain safety in campgrounds; people use canisters to keep the campsite clear for their own safety. A more ecologically-minded reason to

keep the food in a bear canister may be to avoid changing bears' behaviour. This is not only for the sake of campers' safety but also to protect bears. In this process the major reason to use the canister can change from an externally-driven reason (i.e., avoiding a penalty) to an internally prompted action (i.e., keeping animals wild).

Internalization is the mechanism that people employ to regulate their non-self-determined behaviour and obtain autonomous control over the action. The SDT introduces five different regulations on a spectrum from no-self-determined to self-determined behaviour. The present study utilized these five regulations to investigate people's motivations regarding participation in pro-environmental activities:

External Regulation. This type of regulation refers to behaviours that individuals' perform solely due to external punishment or reward. Examples include people performing environmentally significant camping behaviours such as avoiding feeding animals and keeping pets on leash in parks to avoid fines.

Introjected Regulation. As a regulation for extrinsically motivated behaviours, introjected regulation refers to behaviours that are externally approved by societal norms, values, or regulations but may not be fully internally appreciated. People usually perform such behaviour to avoid feelings of shame or guilt, or to boost their self-esteem. Examples include feeling guilty due to wasting drinking water, or a positive feeling of self after performing an environmentally supportive behaviour such as recycling.

Identified Regulation. This type of regulation refers to activities that are more congruent with people's personal goals and identities. In another words, people identify themselves as being autonomously motivated to perform behaviours that are consistent with their self-selected goals (Gagné & Deci, 2014). For example, if someone values green spaces he

might avoid parking his vehicle on the green spaces while camping. Another example is when people participate in unpleasant environmental activities such as separating recyclables from garbage because they value natural resources.

***Integrated Regulation*.** Referring to behaviours that are extremely integrated with a person's values and goals, integrated regulation transforms external rules to individuals' own values and beliefs (Deci & Ryan, 2000). This process is known as the extreme version of internalization of an externally-oriented motivation to be fully autonomous or under volitional control. In this way the behaviour is fully an integral part of who the person is. If integrated, individuals not only respect the importance of protecting the natural environment during outdoor recreation activities, but also they integrate protecting natural environment to other aspects of their lives. For instance, if protecting natural environment is incorporated into every aspect of a person's work and life, their caring about the natural environment goes beyond superficial activities such as using designated parking spaces in the campground. Rather he tries to decrease his overall impact on the natural environment in his life.

Although motivations to participate in pro-environmental behaviour have been studied in environmental psychology, the influence of motivations on environmentally significant behaviour is still questioned. Also, the association among the mentioned predictors of behaviour and motivation has not been clearly stated. Using SDT's approach, the present study attempts to investigate these associations in the framework of this paper.

Constraints to Pro-environmental Behaviour

Constraints have been incorporated in pro-environmental behaviour prediction theories over the last few decades. Several environmental behaviour researchers namely Tanner (1999),

Nordlund, Eriksson, and Garvill (2010), Blake (1999), Kollmuss and Agyman (2002), Sutton and Tobin (2011), Lorenzoni, and Nicholson-Cole, and Whitmarsh (2007) have investigated the influence of constraints on people's pro-environmental behaviour. These factors were also considered as a lack of behavioural control (i.e., skills, knowledge, cooperation of others, etc.) as suggested in the TPB (Ajzen, 1991). Although included in several studies, the influence of restraining factors on people's pro-environmental behaviour has not been systematically studied. Therefore, a systematic approach to investigate the negative impacts of constraints on people's behaviour was encouraged in the literature (Steg & Vlek, 2009). To date, Yoon et al. (2013) and Moghimehfar and Halpenny (2015) adopted a leisure constraints theory (Crawford, Jackson, & Godbey, 1991) approach to study the role of intention in people's engagement engage in pro-environmental behaviours. Their results supported the applicability of this method in the study of constraints' impact on pro-environmental behaviour. The present study employed a similar approach to investigate the influence of constraints on pro-environmental camping behaviour.

The hierarchical model of leisure constraints (Crawford, Jackson, & Godbey, 1991) defined three categories of constraints to leisure activities: intrapersonal, interpersonal, and structural constraints. The theory posits that each of these three categories influence people's participation in a hierarchical fashion. Intrapersonal constraints influence individuals' leisure preferences (e.g., someone who is not interested in doing activities in cold weather may not consider skiing for a leisure activity). Interpersonal constraints interfere with people's decisions to participate in an activity due to their compatibility and coordination with the social surroundings (e.g., an individual may decide to cancel his ski trip due to lack of companions). Finally, structural constraints can influence people's actual participation or non-participation in an activity (e.g., if there is no snow people cannot ski). With a similar approach the present study

investigated different types of pro-environmental behaviour constraints. These dimensions are presented below:

Intrapersonal Constraints. This set of constraints is characterized by the psychological factors that prevent people from participating in pro-environmental activities. Lack of knowledge of environmental actions, lack of interest, moral opposition to the activity, and introvert or extrovert personalities are examples of intrapersonal constraints in environmental behaviour context.

Interpersonal Constraints. These are constraints caused as a result of interactions with others when the social environment restrains people from participating in an activity. Examples are family obligations and absence of companions.

Structural Constraints. This type of constraint refers to the physical environment or the context in which the activity is being performed. Lack of infrastructure, lack of time, age-related issues, and disabilities are examples of structural constraints. This type of constraints has been commonly investigated in pro-environmental research; these constraints are also known as external factors (Jensen, 2002) and contextual factors (Steg & Vlek, 2009).

Negotiation Strategies

Shortly after the emergence of the hierarchical leisure constraints theory, researchers realized that the presence of constraints do not always result in discontinuation of the action. People utilize cognitive and behavioural resources to negotiate their constraints (Jackson, Crawford, & Godbey, 1993). Using a similar assumption, I proposed that people negotiate their constraints to participate in pro-environmental camping. For example, lack of knowledge does not necessarily foreclose an individual's participation in pro-environmental behaviour as the

person may try to learn about pro-environmentally friendly behaviours or people may wear extra layers of cloths as oppose to making a bigger campfire in cold weather conditions with the aim of saving trees. In this way individuals' negotiate intrapersonal constraints. This present study includes constraint negotiation in its behavioural theory to investigate the influence of this factor on campers' engagement in pro-environmental behaviour. Negotiation in this study was examined using a similar approach that was employed to measure constraints to pro-environmental behaviour.

A Comprehensive Model

The main purpose of this study was to develop a comprehensive theory to predict front-country campers' pro-environmental behaviour. This study combined the theory of planned behaviour, self-determination theory, leisure constraints, and constraints negotiation theories to generate a theory that has excellent explanatory power to predict people's pro-environmental behaviours during outdoor recreation, particularly front-country camping. Knowledge of pro-environmental actions and past behaviour were also included in the model. These associations are elaborated below and demonstrated in Figure 4.1.

This study proposes that intention, as the most accurate immediate predictor of behaviour, is influenced by people's attitudes, subjective norms, and PBC. Constraints to pro-environmental behaviour directly and negatively influence people's attitudes, subjective norms, and perceived behavioural control as well as intentions. Motivation, knowledge, and negotiation directly and positively influence attitudes, subjective norms, and PBC. These three variables also negatively influence constraints. Motivation and knowledge positively and directly influence negotiation. Finally, past behaviour influences constraints, negotiation, attitude, subjective norms, PBC, motivation, and knowledge.

To illustrate how these factors may influence a person's behaviour during camping, consider the following example:

Sally is a front-country camper that has been camping for three years. During her past camping trips she tried to engage in environmentally responsible activities (past behaviour). What she has learned from these camping experiences helps her protect the natural environment in different ways such as responsible use of campfire. Recently, she learned that feeding wild animals may harm them. Therefore, even though the act of feeding animals is joyful, her attitudes about feeding wildlife have changed. She told her friends about consequences of feeding wildlife so her companions are also aware of that and they all try to keep the animals wild (subjective norms). Also, she learned about bear-proof storage in campgrounds (knowledge) and she is able to keep her food away from animals. She is very motivated to protect natural resources while outdoors as she personally values nature (identified regulation). Although she faces constraints such as limited parking space, Sally tries to negotiate her constraints by carpooling or using off-site parking stalls. She knows a sustainable way of using campfire and she is confident that she can enjoy the campfire in a sustainable way (perceived behavioural control). All these abilities and skills increased her willingness to practice sustainable camping and she is intended to do that in future camping trips. Thus, the presence and the strength of these factors in the theory of this research can determine a person's intention and willingness to participate in environmentally responsible camping behaviour.

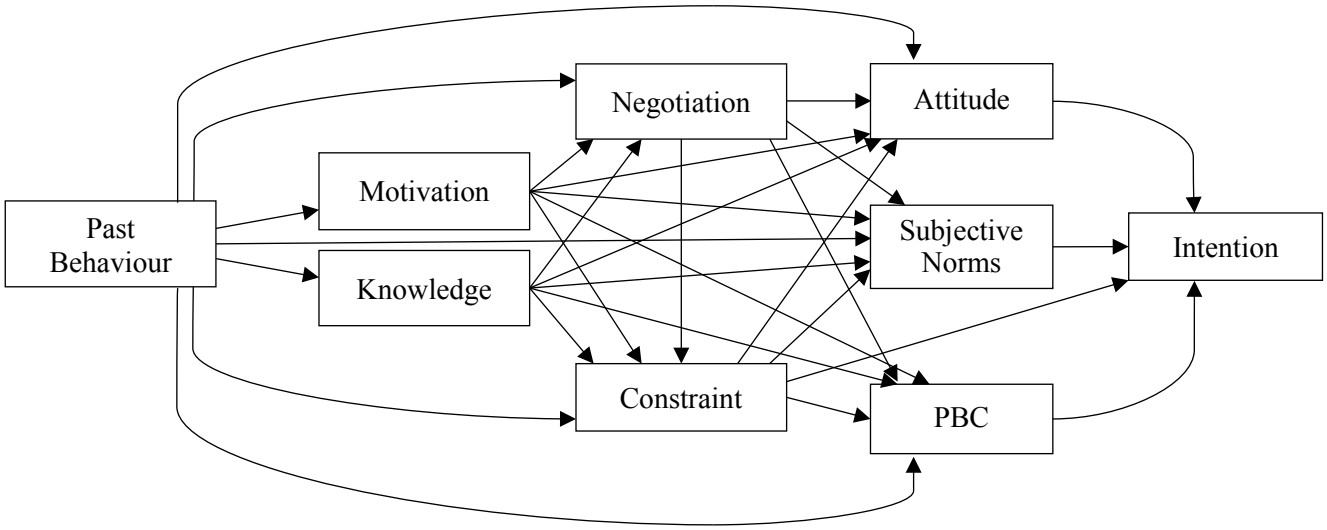

Figure 4.1. A comprehensive predictive model of pro-environmental camping behaviour

Methodology

The target population of this study was front-country campers who stayed in designated Alberta Parks campgrounds. A total number of 69 provincial parks located in Alberta parks system provide a variety of outdoor recreational activities ranging from hiking to off-road vehicle riding take place in these parks. Among these preserved areas, Kananaskis Country, Long Lake, Cross Lake, Cypress Hills, and Gregory Lake Provincial Parks in Alberta were selected to obtain a diverse sample of campers who seek diverse geography and recreation activities. As the study sought to measure people's intentions, both RV and tent campers who intended to stay in their campground for more than one night after the data collection time were asked to complete the questionnaire. Targeted campsites were selected based on the

campgrounds' registration lists. Data were collected using a self-administrated paper-based questionnaire during August and September 2014. For the TPB related questions Ajzen's (2011a) and Francis et al.'s (2004) TPB questionnaire construction guidelines were employed. People's intentions to engage in pro-environmental camping activities were assured through four items; two items directly asked about people's intentions to participate in pro-environmental camping behaviours (i.e., 'I intend to …', and 'I want to …'); and two items asked about people's willingness to participate in pro-environmental camping behaviour (i.e., 'I am willing to …'). To measure subjective norms, four statements were utilized to measure both injunctive and descriptive social norms. People's perceived behavioural control was measured using four items that addressed both self-efficacy and controllability aspects of PBC. All these factors were measured using five point Likert scales from strongly disagree to strongly agree. Both cognitive (i.e., harmful – beneficial, worthless – useful) and affective (i.e., unpleasant – pleasant, unfulfilling – fulfilling) attitudes were investigated in this study. These items were asked as response to the statement: 'protecting the natural environment while camping is …'. A seven point bipolar scale was used to collect responses.

Participants' past behaviour were measured by asking them to rate their effort to engage in environmentally friendly activities during their last three camping trips (Ajzen, 2011a). A seven point bipolar measurement scale ranging from 'I did not try hard' to 'I did my best' was employed to obtain the answers for this question.

Campers' knowledge of environmental actions was measured by seven self-rated questions inquiring about individuals' knowledge environmentally friendly camping behaviours. Campers rated their knowledge on a five point scale ranging from 'not familiar at all' to 'totally familiar' as response to statements such as: 'environmentally-friendly use of my campsite,'

‘disposal of waste water in designated locations,’ and ‘secure food storage that does not attract animals.’

Motivation to participate in environmental camping practices was measured by asking about respondents’ level of agreement with 12 statements based on the self-determined theory’s approach. These 12 statements shared an introductory sentence: ‘I try to protect nature while I am camping because…’ These statement were designed to measure intrinsic (three statements), integrated (two statements), identified (two statements), introjected (three statements), and external (two statements) regulations. People’s level of agreement with these items was measure using a five point Likert scale.

Measurement items for intrapersonal, interpersonal, and structural constraints to pro-environmental were developed based on the hierarchical leisure constraints theory (Crawford et al., 1991). In total, 15 items were developed to measure people perceived constraints to pro-environmental behaviour. Of which, eight items were designed to study structural constraints to pro-environmental camping; four statements were designed to investigate intrapersonal constraints and three items were developed to measured interpersonal constraints.

Similar to the measurement scale used to study constraints, people’s negotiation through intrapersonal, interpersonal, and structural constraints to engaging in pro-environmental camping was investigated. Consistent with the constraints items, 10 statements investigating intrapersonal (two items), interpersonal (four items), and structural (four items) constraints were developed. A five-point Likert scale was used to measure campers’ level of agreement with each statement for all the constraints and negotiation measures.

Data were obtained from 1,009 front-country campers. The present structural model consists of 9 latent and 61 observed variables. Using an online software (Soper, 2015) the

adequate sample size for this study was calculated based on the Cohen's (1988; 1992) power analysis guidelines. Accordingly, the minimum sample size for small effect size at the power level of .80 and confidence interval of 95% is equal to 757. The structural equation modeling literature (i.e., the main data analysis technique in this study) suggests 10 cases per observed variable as a general rule (Blunch, 2008) which requires more than 610 participants to obtain a desirable power of analysis. Therefore, the sample size of 1,009 was adequate to obtain a proper power of analysis from both these viewpoints. Table 4.2 demonstrates these measures along with Cronbach's alpha coefficient as well as mean and standard deviation values of each item.

Table 4.2

Constructs, Descriptive Statistics, and Cronbach's Alpha

Variables	M (SD)
Intention (α = .88)	
I intend to protect nature during my camping trips	4.58 (.59)
I want to protect the environment when camping	4.59 (.63)
I am willing to protect nature while I am camping	4.67 (.55)
I am willing to take good care of the environment while camping	4.59 (.58)
Attitude, [a] (α = .86)*	
Harmful – Beneficial[1]	6.47 (.86)
Worthless – Useful[1]	6.44 (.96)
Unpleasant – Pleasant[2]	6.68 (.81)
Unfulfilling – Fulfilling[2]	6.64 (.86)
Subjective Norms (α = .59)	
Most people who are important to me think that I should protect natural resources while camping[3]	4.61 (.63)
The people in my life whose opinions I value would approve of my effort to protect nature during camping trips[3]	3.35 (1.17)
I feel social pressure to protect the environment[4]	4.14 (.86)
It is expected of me that I protect nature during camping trips[4]	4.36 (.74)

PBC (α = .70)	
For me it is easy to protect nature during camping trips[5]	4.52 (.68)
If I wanted to I could protect nature when camping[5]	4.14 (.99)
I believe I have complete control over protecting nature while camping[6]	4.33 (.80)
It is mostly up to me to protect nature while camping[6]	3.95 (1.04)
Constraints (α = .66)	
I don't know how to engage in environmentally-friendly camping[7]	1.85 (.88)
I don't like to keep my campfire small[7]	2.80 (1.08)
Physically, I'm not able to participate in environmentally-friendly behaviour[7]	1.62 (.79)
I like to enjoy camping without thinking about environmental issues[7]	2.57 (1.12)
My close friends and family do not care about nature while camping[8]	1.91 (.92)
Although I try to keep campfires small, my family and friends prefer larger ones[8]	2.66 (1.08)
My camping companions don't help me to recycle[8]	1.88 (.89)
There are enough recycling facilities in the campground[9]	2.68 (1.22)
Environmentally-friendly camping is expensive[9]	2.28 (1.00)
There are good waste water disposal facilities in the campground[9]	2.71 (1.16)
Firewood is available to purchase so I don't need to use deadfall wood, cut live trees, or bring firewood into the park with me[9]	2.16 (1.16)
There is not enough space to park my vehicles in an environmentally-friendly manner[9]	2.12 (1.02)
There is adequate storage space available in the campground to keep food out of reach of animals[9]	2.73 (1.22)
Campground staff provide enough information about environmentally-friendly camping[9]	3.07 (1.07)
Long wait times at the dumping station deter me from emptying my waste water at the dumping station[9]	2.23 (1.06)
Constraint Negotiation (α = .79)	
I try to learn about environmentally-friendly camping techniques[10]	3.30 (.95)
I try to keep my campfire as small as possible[10]	3.04 (1.18)
I travel with people who care about nature[11]	3.92 (.80)
I try to keep the fire as small as possible even though my friends and family don't like me to[11]	2.66 (.97)
I teach my companions how to protect nature while camping[11]	3.48 (1.01)
I try to recycle waste even when companions don't care about recycling[11]	3.89 (.93)
I have asked park staff to provide me with information about environmentally-friendly camping practices[12]	2.29 (.87)
I do my best to find recycling facilities in the campground[12]	4.02 (.89)
I purchase recreation equipment that uses as little electricity and petroleum-based fuel as possible when camping[12]	3.23 (1.07)

I save money so that I can afford to buy camping equipment that is more environmentally-friendly[12]	2.76 (1.04)
Knowledge (α = .85)	
Environmentally-friendly use of my campsite (e.g., where to set up my tent, where to park)	3.83 (1.09)
Appropriate disposal of garbage and recyclables at campgrounds	4.24 (.87)
Reducing my impacts on the campground's natural spaces (e.g., staying on paths, parking in designated areas)	4.28 (.83)
Secure food storage that does not attract animals	4.40 (.81)
Environmentally-friendly use of campfires	3.94 (.99)
Disposal of waste water in designated locations	4.09 (1.06)
Green ways of camping such as the use of solar panels	3.25 (1.31)
Motivation (α = .87)	
It is fun for me (intrinsic)	3.61 (1.01)
It is interesting for me (intrinsic)	3.53 (1.03)
Caring about nature reflects who I am (integrated)	4.12 (.88)
Nature is part of who I am as a person (integrated)	4.08 (.93)
If I do it I feel proud of myself (introjected)	3.89 (.97)
Protecting nature makes me feel good about myself (introjected)	4.04 (.90)
If I don't do it, I feel guilty (introjected)	3.69 (1.12)
That's what I'm supposed to do (external)	4.08 (.94)
There are costs and penalties if I don't do it (external)	3.14 (1.25)
It makes others feel good about me (external)	3.11 (1.09)

Note. [1]affective attitude; [2]cognitive attitude; [3]injunctive social norm; [4]descriptive social norm; [5]self-efficecy; [6]controlability; [7]structural constraints; [8]interpersonal constraints; [9]intrapersonal constraints; [10]structural negotiation; [11]interpersonal negotiation; [12]intrapersonal negotiation

* Participants reflected on the statement: "Protecting the natural environment while camping is …"; [a] Attitude was measured on a scale of 1 to 7.

Results

Over 55% of the participants were female and the average age of the sample was 42 years old (SD = 12.5). Regarding participants' education, 12% of the sample held a graduate level degree, 20% held bachelor's degree, 40% had college diploma, and the rest possessed a high school diploma. These data are presented in Table 4.3.

Table 4.3

Demographics

Variable	Percent
Gender	
Male	42%
Female	56%
Education	
High school diploma and below	22%
College diploma	40%
Bachelor's degree	19%
Graduate degree	12%
Average age	42 years old
Income (CAD)	
<50,000	10%
50,000 – 100,000	29%
>100,000	48%

Structural equation modeling (SEM) was used to test the hypothesized relationships among variables in the proposed models. IBM SPSS and Amos 22 was used to analyze data in this study. TPB's original items (i.e., intentions, attitudes, subjective norms, and perceived behavioural control) were entered in the SEM analysis with their observed reflections. Aggregate means were calculated for constraints and negotiation using the values for each dimension (intrapersonal, interpersonal, and structural), and utilized in the SEM.

To analyze motivation items the Relative Autonomy Index (RAI) method was employed (Grolnick & Ryan, 1987). For this reason, external and introjected subscales of motivation (controlled subscales) were weighted negatively (i.e. external: -2, introjected: -1) and identified and intrinsic regulations (autonomy subscales) were weighted positively (i.e. identified: +1, intrinsic: +2). Then the weighted subscales were summed to obtain the RAI score. Finally, an aggregated mean of the knowledge scores was also calculated and included in the SEM.

Results showed a significant chi-square for the proposed model in this study which is acceptable due to the large sample size of the present research (Barrett, 2007). Model fit indices, including preliminary fit criteria, overall model fit, and fit of internal structure of models were tested (Root Mean Square Error of Approximation: RMSEA, Normed Fit Index: NFI, Comparative Fit Index: CFI, Goodness if Fit Index: GFI, Root Mean Square Residual index: RMR) were calculated. Overall, the findings showed a good model data-fit. These are presented in Table 4.4.

Table 4.4

Model Fit Indices

	χ^2 (*df*)	IFI	NFI	GFI	CFI	RMR	RMSEA
Model 2	1009.637* (162)	.910**	.894**	.915**	.909**	.066***	.069****

Notes. Model fit indices criteria: **IFI, NFI, GFI, & CFI > .90; ***RMR < .05; ****RMSEA close to .05
* P < .001

Utilizing maximum likelihood estimation, the results of the SEM demonstrated the significance of the proposed model. All the TPB original paths in the present study were significant. Attitude ($\beta = .20$, $p < .001$), subjective norms ($\beta = .46$, $p < .001$), and PBC ($\beta = .48$, $p < .001$) positively and directly influenced intention. As was hypothesized, constraints directly

and negatively influenced attitude ($\beta = -.16$, $p < .001$), subjective norms ($\beta = -.15$, $p < .001$), and PBC ($\beta = -.21$, $p < .001$). The direct association between constraints and intentions, however, was not significant. Negotiation positively influenced attitude ($\beta = .18$, $p < .001$), subjective norms ($\beta = .15$, $p < .001$), and PBC ($\beta = .14$, $p < .001$). The hypothesized negative regression association from negotiation to constraints was also significant ($\beta = -.21$, $p < .001$). Motivation to participate in pro-environmental camping practices directly and negatively influenced constraints ($\beta = -.10$, $p < .001$) and positively influenced negotiation ($\beta = .16$, $p < .001$). Results did not show any direct association among motivation and TPB's predictors including intention. Knowledge of environmental camping practice negatively influenced constraints ($\beta = -.20$, $p < .001$). This variable, also positively and directly influenced negotiation ($\beta = .30$, $p < .001$). Regarding the TPB predictors, knowledge of environmentally-friendly camping practices positively and directly influenced subjective norms ($\beta = .13$, $p < .001$) and PBC ($\beta = .17$, $p < .001$); but results did not show any significant association between knowledge and attitude.

Past behaviour, as an antecedent to the above mentioned variables, directly and positively influenced knowledge of environmental camping ($\beta = .32$, $p < .001$), motivation ($\beta = .15$, $p < .001$), negotiation ($\beta = .20$, $p < .001$), attitude ($\beta = .40$, $p < .001$), subjective norms ($\beta = .23$, $p < .001$), and PBC ($\beta = .24$, $p < .001$) and negatively influenced constraints ($\beta = -.17$, $p < .001$). These associations are presented in Table 4.5 and Figure 4.2.

In total, the structural model could predict 70 percent of the variation in behavioural intention ($R^2 = .70$). Also, a considerable amount of variance in predictors of intention was captured in the model (i.e., 33% in attitude, 23% in SN, 29% in PBC, 23% in constraints, and 24% in negotiation).

Table 4.5
Regression Associations

Predictor	Dependent Variable	β	P-value	Indirect Effect
Attitude	Intention	.20	< .001	−
Subjective Norms	Intention	.46	< .001	−
PBC	Intention	.48	< .001	−
Constraints	Intention	−	NS	−
Negotiation	Intention	−	−	.17
Constraints	Intention	−	−	−.10
Knowledge	Intention	−	−	.17
Motivation	Intention	−	−	<.01
Past Behaviour	Intention	−	−	.36
Constraints	Attitude	−.16	< .001	−
Negotiation	Attitude	.18	< .001	−
Motivation	Attitude	−	NS	.03
Knowledge	Attitude	−	NS	.05
Past Behaviour	Attitude	.19	< .001	.25
Constraints	Subjective Norms	−.15	< .001	−
Negotiation	Subjective Norms	.15	< .001	−
Motivation	Subjective Norms	−	NS	.04
Knowledge	Subjective Norms	.13	< .001	.21
Past Behaviour	Subjective Norms	.23	< .001	.36
Constraints	PBC	−.21	< .001	−
Negotiation	PBC	.14	< .001	−
Motivation	PBC	−	NS	.05
Knowledge	PBC	.17	< .001	.27
Past Behaviour	PBC	.24	< .001	.39
Negotiation	Constraints	−.21	< .001	−
Motivation	Constraints	−.10	< .001	−
Knowledge	Constraints	−.20	< .001	−
Past Behaviour	Constraints	−.17	< .001	−.31
Motivation	Negotiation	.16	< .001	−
Knowledge	Negotiation	.30	< .001	−
Past Behaviour	Negotiation	.20	< .001	.32
Past Behaviour	Motivation	.15	< .001	−
Past Behaviour	Knowledge	.32	< .001	−

$R^2_{Intention}$ = .70; $R^2_{Attitude}$ = .33; R^2_{SN} = .23; R^2_{PBC} = .29; $R^2_{Constraints}$ = .23; $R^2_{Negotiation}$ = .24; $R^2_{Motivation}$ = .08; $R^2_{Knowledge}$ = .11

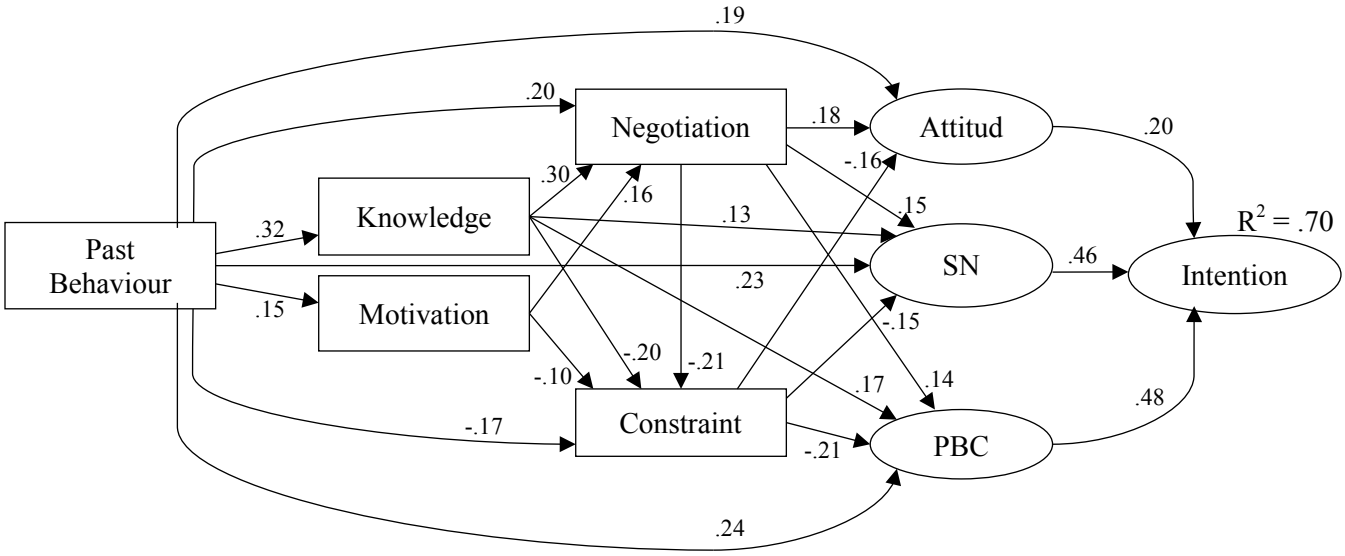

Figure 4.2. Structural equation modeling results

Discussion

This study proposed and tested a comprehensive theory to predict pro-environmental behaviour during outdoor recreation, particularly camping. Important human behaviour predictors identified in the pro-environmental behaviour literature were employed to develop this theory. The theory of planned behaviour (Ajzen, 1991) was extended by adding knowledge of and past engagement in pre-environmental camping. The self-determination theory's (Deci & Ryan, 1985) approach was used to study people motivation to engage in pro-environmental camping as a predictor of pro-environmental behavioural intention. Three categories of constraints (i.e., hierarchical model of leisure constraints; Crawford et al., 1991) were utilized to study people's perceived constraints to engage in pro-environmental camping behaviour.

Constraints negotiation was introduced into the model to identify the influence negotiation on people's behaviour. The proposed theory was empirically tested on campers in Alberta, Canada.

Data obtained from as sample of 1,009 front-country campers in Alberta, Canada supported these findings. All of the hypothesized regression associations were significant except for the paths between motivation and the TPB's predictors of intention, knowledge of environmental camping, and attitude, and the direct regression path between constraints and intention. Model-data fit results supported the structural model in this study.

Predicting intention as the most immediate influence of behaviour is important for understanding behaviours. Explaining a great proportion of variation in intention is a major goal in behaviour studies. Although the TPB is known for its parsimoniousness, the inclusion of new variables to the theory is encouraged to improve the predictive power of this theory (Ajzen, 1991; Armitage & Coner, 2001). The captured (R-squared) variation in intention reported by meta-analytical studies on TPB guided papers has ranged from 40% to 60% (Ajzen, 2011b; Armitage & Conner, 2001). This study was successful in improving the TPB's explanation of pro-environmental behaviour. Including new variables in the prediction of behavioural intention the proposed theory explained 70% of variance in intention which is considerable.

The results of this study confirmed the expected association between attitude, SN, and PBC and intention to engage in pro-environmental camping activities. At the closest level to intention, PBC showed a strong association with intention. This means that people's perception of control over the action is an important determinant of their participation in pro-environmental camping behaviour. If individuals believe that they are capable of performing an activity they are more likely to perform the behaviour. Similarly, subjective norms showed strong associations with intention that suggests the importance of other people's opinion on individuals' intention to

engage in pro-environmental behaviour. These two variables were the strongest predictors of intention in the entire model. Attitudes toward pro-environmental camping were also directly associated with intention. However, this association was not as strong as the two other TPB's predictors (i.e., SN and PBC). In general, these results fully supported the accuracy and power of the TPB's variables in predicting pro-environmental camping behaviour. This study corresponds with the results of previous pro-environmental behaviour studies (e.g., Klöckner, 2013; Yoon et al., 2013) that reported a strong association between SN and PBC and intention and a relatively weaker association between attitude and intention regarding pro-environmental behaviours.

As mentioned in the literature, constraints to pro-environmental behaviour restrain people's participation in pro-environmental actions. However, constraints were not systematically classified in previous studies to create a comprehensive scale that investigates more detailed constraints to people's participation in environmental behaviours. Leisure constraints theory approach to the study of constraints to people's engagement in certain actions allowed this study to inquire about people's personal and social constraints in addition to the contextual constraints that had been explored in several previous studies. To date, only a few studies align with this approach that included interpersonal (social) and intrapersonal (psychological) aspects of pro-environmental behaviour constraints as well as structural constraints (i.e., Moghimehfar & Halpenny, 2015; Yoon et al., 2013). People's responses to these items provide more information which will assist practitioners and researchers to understand the nature of constraints and find solutions to help people overcome their constraints. Sutton and Tobin (2011) introduced a theoretical model of constraints to personal engagement with climate change solutions. Their model's mechanics are similar to the hierarchical model of leisure constraints. Similar to the leisure constraints theory they proposed that constraints influence

people's behaviour in a hierarchical order. However, instead of influencing people preferences they hypothesized that subjective constraints influenced individuals' cognitive and affective engagement. This process shapes the desirability of a behaviour. In the next step, objective constraints interfere with people's decision to engage in the behaviour. However, they employed Tanner's (1999) objective and subjective categories of constraints that combine social and psychological aspects of constraints to pro-environmental behaviour. With a similar approach to both these theories this study included all the intrapersonal, interpersonal, and structural constraints to provide more details regarding constraints.

Although constraints to pro-environmental behaviour have been included in research studies for more than a decade, the nature of the association between constraints and behaviour and its predictors is still unknown. Previous studies that employed leisure constraints theory's approach to study constraints to environmental behaviour (i.e., Moghimehfar & Halpenny, 2015; Yoon et al., 2013) posited that factors such as attitude, subjective norms, PBC, and knowledge are antecedent to constraints in predicting behavioural intention. These studies claimed that attitude, SN, and PBC negatively influence constraints and constraints, in turn, negatively influence behavioural intention. However, this study proposed that campers' perception of constraints negatively influences people's attitude, subjective norm, and PBC. Therefore, the extent to which individuals perceive themselves restrained by psychological factors (e.g., lack interest and personal health issues), social factors (cooperation of companions), and physical environment (e.g., lack of facilities and structures) influences their attitude, the influence of social surrounding (SN), and their perception of control over the action (PBC). Although both of these approaches to the study the association among constraints, attitudes, SN, and PBC are theoretically sound, the results of this study showed better model-data fit for the proposed

associations in this study (constraints antecedent to attitude, SN, and PBC). Future research comparing these two associations may reveal details of these relationships. Overall, constraints in this study negatively influenced the TPB's predictors that confirmed the mitigating impact of constraints on people's engagement in pro-environmental camping practices. These results suggested that the strongest negative impact of constraints in the model was on people's perception of control. This finding was in line with previous research reports on the association between constraints and PBC (see Steg & Vlek, 2009). This indicates that removing constraints to pro-environmental camping behaviour increases people's perception of control over the action.

This study was among the first to included negotiation in the study of pro-environmental behaviour. As was mentioned earlier, Jackson et al.'s (1993) negotiation theory and later Sutton and Tobin's (2011) environmental behaviour constraints theory discussed the role of people's negotiation resources on their engagement in pro-environmental behaviour. For instance, Sutton and Tobin stated that "individuals must first negotiate subjective constraints to form a desire to become behaviourally engaged in an environmental issue" (p. 895). Negative influence of negotiation on people's perception of constraints indicated that individuals with stronger cognitive and behavioural negotiation resources perceived fewer constraints to perform pro-environmental behaviour while camping. Also, the positive influence of negotiation on attitudes, subjective norms, and PBC revealed the influence of people's negotiation abilities on the quality of their cognitive and affective valuation of pro-environmental behaviour as well as the strength of others' influence on their behaviour and perceived ease or difficulty of the action. Therefore, negotiation not only mitigates campers' perceived constraints but also triggers the positive influence of attitude, subjective norms, and PBC on intention. Sutton and Tobin's (2011) model

of pro-environmental behaviour constraints and Hubbard and Mannell's (2001) study of constraints negotiation supported the idea that negotiation is antecedent to constraints. In general, the study of constraints to pro-environmental behaviour without the inclusion of negotiation may exaggerate the negative influence of constraints on behaviour. Also, the influence of people's cognitive and behavioural negotiation abilities remains unknown.

Antecedent to the above mentioned factors, knowledge of pro-environmental camping practices showed a remarkable influence on intention indirectly through SN, PBC, constraints, and negotiation. The strongest association in this level was between knowledge and negotiation. It can be interpreted that the more people know about pro-environmental behaviour, the easier they negotiate their constraints. They were more influenced by social pressure to engage in pro-environmental camping activities. They were also less restrained by their constraints and perceived more control over participating in pro-environmental activities during camping. These results confirm the influence of knowledge on people's behavioural intentions during camping activities. Thus, improving people's knowledge about pro-environmental camping actions may result in increased pro-environmental behaviour.

Motivation was also proposed to be associated with attitudes, subjective norms, PBC, constraints, and negotiation. However, results revealed that motivation was only associated with negotiation and constraints. Therefore, it can be interpreted that individuals who were motivated to participate in preserving natural resources perceived less constraints to pro-environmental camping and had stronger resources to negotiate their constraints. However, these associations were moderate in range.

Most distally, past behaviour was proposed to be associated with all the other layers of factors that influenced behavioural intentions (attitude, SN, PBC, negotiation, constraints,

knowledge, and motivation). All of these associations were supported by the data obtained for this study. The strongest associations in this part of the model were between past behaviour and knowledge and past behaviour and PBC. It can be interpreted that people who previously participated in pro-environmental camping behaviour possess higher levels of pro-environmental camping knowledge and also perceive more control over pro-environmental camping behaviours as they are more experienced. Behaviour studies that have incorporated the TPB as their guiding framework support past behaviour being antecedent to the other predictors of behaviour (Bamberg, Ajzen, & Schmidt, 2003; Hagger, Chatzisarantis, & Biddle, 2002).

As mentioned earlier, this study was focused on the theoretical understanding of pro-environmental behaviour during outdoor recreation activities. Indeed there are practical implications for the findings of the present study. People spend a great proportion of their time outdoors in the campgrounds (Cole, 2004). Several research studies have investigated the environmental impacts of the accommodation industry including green hotels and lodges. However, environmental aspects of tent and RV campers' behaviour, as two of the most popular outdoor recreation accommodation types in North America, have not been extensively studied. Focusing on this type of accommodation with its significantly high level of human-nature interaction, this study investigated the nature of association among factors that considerably influence people's pro-environmental behaviour. This generated knowledge that will assist in reducing the negative impacts of camping on natural environment.

The indirect influence of constraints on intention indicates the restraining impact of these factors on people's pro-environmental behaviour. In terms of structural constraints, providing amenities that facilitate people's pro-environmental behaviour in campgrounds is an effective way to reduce the negative environmental impacts of camping. Examples of these are providing

proper recycling facilities, dumping stations, and fire pits as well as providing local firewood, recycling bags/bins at campsites, and bear-proof canisters. Regarding intrapersonal constraints, lack of interest was the most important constraint reported by the participants of this study. Improving people's pro-environmental skills and knowledge as well as providing motivational elements such as gamification of the behavior (e.g., mobile application games) may increase people's interest in participation in pro-environmental camping practices.

The strong association between PBC and intentions in this study emphasizes the importance of people's confidence and self-awareness of their abilities to protect natural resources during camping. Introducing people to easy ways of protecting natural resources such as ecofriendly use of water resources and disposal of waste water, proper use of campfires, and safe animal encounters increases their efficacy and therefore their willingness to engage in pro-environmental activities. Also, considerable indirect influence of campers' knowledge of pro-environmental behaviour on their intentions to perform pro-environmental behaviours by increasing their perception of control over the action as well positive stimulation of the influence of social pressure on their behaviour confirms the importance of delivering pro-environmental action knowledge to people in campgrounds. Moreover, knowledge of pro-environmental camping behaviour mitigates the negative influence of constraints on their behaviour both directly and by introducing campers to the ways that they can overcome their constraints (i.e., negotiate their constraints). Therefore, exposing people to information regarding green ways of camping helps people protect campground environments. This is possible in different ways and stages during a camping trip. Examples are delivering environmental knowledge to people during phone or online booking, using parks and campground signage, and conducting workshops for different age groups during their stay in the campgrounds. Mobile applications

also can be a used as a great platform to deliver different messages to park users. Mobile applications are also useful in terms of gamifying pro-environmental actions. An example of that is Centieiro, Romão, and Dias' (2011) study that utilized a location-based game application to promote pro-environmental behaviours. Their results strongly supported the effectiveness of mobile games in promoting pro-environmental behaviours. This was a great example of the use of gamification techniques that target people's intrinsic motivations to encourage pro-environmental behaviour. Similar programs can help park managers improve environmental outcomes of their service.

Subjective norms were also strongly associated with pro-environmental behavioural intention in this research. Focusing on the influence of both descriptive and injunctive subjective norms can change people's behaviour in campgrounds. Promoting a camping environment that pro-environmental behaviour is valued by campers encourages people to engage in environmentally responsible activities. Environmental messages that indicate how other fellow campers are contributing the pro-environmental achievements in the campgrounds is an example of using descriptive norms to engage more people in pro-environmental behaviour (Goldstein, Cialdini, & Griskevicius, 2008). Entertainment and interpretation programs in campgrounds promote an environmentally responsible culture in the campgrounds. This is a way to engage people in pro-environmental behaviour using the influence of injunctive norms. More practical implications are discussed in the Chapter 5 of this dissertation.

Conclusion

The theory presented in this study was generated based on the pro-environmental behaviour and outdoor recreation literature. Major social psychological theories (e.g., TPB, SDT, leisure constraints theory, and constraint negotiation) were employed to measure the most

important predictors of pro-environmental behaviour identified in the literature. Several social psychological theories successfully predict a considerable amount of variation in people's behaviour. However, different factors have different impacts (regarding both the size and order of influence) on individuals' behaviour in different settings. Although data obtained from front-country campers supported the proposed theory in this study, further studies are encouraged to test this structural model for other outdoor recreation activities.

The role of attitude in the formation of behaviour was not strong in this research study (attitude was not strongly associated with intention). Also, knowledge of environmental actions was not associated with attitude which was surprising. Although knowledge of environmental actions is different from awareness of environmental issues that has shown associations with attitudes, future research may reveal the nature of these associations by including both of these variables in the theory of their research.

Finally, although a considerable amount of variation in intention was explained by the predictors in this model, the association between intentions and actual behaviour is still unknown. The actual behaviour of participants in this study was examined in a second follow up survey. However, the large number of observed variables in the proposed theory required a larger sample size. Unfortunately, the current sample size was not large enough to provide the necessary level of power. Therefore, actual behaviour was not examined in the comprehensive model. Although intention is known as the most accurate predictor of behaviour, future research utilizing this theory is encouraged to measure actual behaviour as well.

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Chapter 5

DISCUSSION AND CONCLUSION

The goal of this dissertation was to explore factors that influence people's pro-environmental behaviour while camping. For this reason three studies were designed. The first study utilized the theory of planned behaviour to study intentions to engage in pro-environmental camping behaviour. In Study 1, to enhance the explanatory power of TPB, two additional variables were introduced to the model to predict pro-environment behavioural intentions: constraints and negotiation strategies related to pro-environmental behaviour. Based on previous literature, two different structural models were proposed to examine constraints and negotiation's relationship with TPB variables and their prediction of behavioural intentions.

The second study examined different possible associations among pro-environmental behaviour constraints, negotiation through these constraints, motivations to engage in pro-environmental behaviours, and knowledge of pro-environmental camping practices. A leisure constraints theory approach was employed to obtain a more detailed understanding of constraints to pro-environmental behaviour. Three different possible structural models were developed and tested. Two of the proposed structural models were supported by the data.

The third study utilized the TPB, SDT, leisure constraints theory, and constraint negotiation theory to frame a structural model designed to predict campers' pro-environment behavioural intentions. The theory also included knowledge of pro-environmental camping and past behaviour in its structure. It was anticipated that the complexity of the model (i.e., number of antecedent variables) would produce enhanced explanation of individuals' intention to engage in pro-environmental camping behaviours. The model was then tested with the data obtained

from front-country campers in Alberta, Canada. The proposed theory was capable of explaining a considerable amount of variation in intention.

Discussion and Theoretical Contributions

Study 1 proposed two different extensions to the TPB: (1) constraints and negotiation as antecedents to attitude, subjective norms, and PBC; (2) and constraints and negotiation as mediators to the associations between attitude, SN, and PBC and intention. Structural equation modeling results only supported the second model. This model was capable of explaining 84% of the variation in pro-environment behavioural intentions. This was a considerable achievement as meta-analytical reviews of the TPB studies reported a 40%-60% captured variation in intention (Armitage & Conner, 2001; Hardman et al., 2002). Findings of this study are important as they reveal that the ordering of constraints and negotiation as antecedents to TPB's variables was statistically sound and significant. Previous studies reported no association or a relatively weak association between constraints and engagement in the activities (e.g., Yoon et al., 2013). This could be due to misplacement of constraints in behavioural models.

These results, along with previous studies' findings (e.g., Alexandris & Stodolska, 2004), supported the hypothesized negative impact of constraints on behaviour and its position as an antecedent to the TPB's predictors of intention. The inclusion of negotiation in the model was also supported by the data, and emphasized the influence of people's cognitive and behavioural abilities to overcome their constraints to engage in pro-environmental behaviour. It also revealed that negotiation not only mitigates the influence of constraints, but also increases the positive impacts of attitudes, subjective norms, and PBC on intentions. Moreover, the inclusion of negotiation in behavioural studies that investigate the relationship between constraints and behaviour may explain failure in associating constraints to motivation by previous studies

(Alexandris & Stodolska, 2004). Findings of the first study contributed to the literature on the TPB and pro-environmental behaviour by improving the predictive power of the TPB as well as testing the proposed positions for constraints and negotiation in a model designed to predict pro-environment behavioural intentions. Also, this study was among the first to empirically test the influence of negotiation on intentions in environmental psychology.

The associations among constraints, negotiation, motivation, and intention have been a focus of leisure scientists' attention over the last two decades. In environmental psychology several studies have attempted to understand the relationships among motivation and constraints and pro-environmental behaviour. The second study of this dissertation contributed to this area of inquiry by empirically testing the associations. Additionally, Study 2 explored constraints to pro-environmental behaviour from a different perspective that not only considered contextual constraints to pro-environmental behaviour, but also examined the influence of social and psychological factors that may restrain people's participation in pro-environmental behaviour. Findings of the second study revealed that these types of constraints have considerable influence on people's decision to participate in pro-environmental camping activities.

Employing self-determination theory in Study 2 enhanced the measurement of individuals' motivation to engage in pre-environmental behaviour. Self-determination theory is known as one of the most rigorous social psychological theories that focuses on motivation. Scales used to measure SDT related motivations have been successfully tested in numerous studies. Due to SDT's enhanced conceptualization of motivations Study 2 measured motivations with a higher level of accuracy than other studies that developed their own motivation measurement scales or utilized scales that were not strongly supported by empirical data. The structural model of the second study explained 27% of the variation in pro-environment

behavioural intention which is acceptable due to the absence of major behaviour predictors namely attitude, norms, and perception of control.

Several studies have attempted to develop a comprehensive social psychological theory that can explain people's pro-environmental behaviour. The third study in this research identified the most empirically supported predictors of behaviour from the literature and explained them based on the rationale suggested in social psychological theories (i.e., TPB, SDT, leisure constraints, and constraint negotiation). Also, the predictors of pro-environmental behaviour proposed in this study were measurement by the scales affiliated with the above mentioned theories, these scales have been empirically tested in many previous studies.

Structural equation modeling results supported the associations hypothesized in Study 3. It was found that attitude, subjective norms, and PBC directly influenced people's pro-environment behavioural intentions in the first level. In the second level, these three variables were influenced by constraints and negotiation. In the third level motivation to engage in and knowledge of pro-environmental camping practices influenced constraints, negotiation, attitude, subjective norms, and PBC. Finally, antecedent to all these variables, past behaviour significantly influenced all these factors in the model.

All the three studies contributed to our understanding of factors that influence people's pro-environmental behaviour by: (1) introducing new variables to environmental psychology (i.e., negotiation); (2) exploring the 'true' order of influence of behaviour predictors on intention (i.e., the TPB's extensions); (3) proposing a new approach to studying pro-environmental behaviour constraints (i.e., three dimensional approach to the study of constraints and negotiation adopted form leisure studies); (4) examining the association among constraints, motivations, negotiation, knowledge, and past behaviour on intention; and (5) introducing a comprehensive

theory specifically designed to study outdoor recreation and pro-environmental camping behaviour based on significant social psychological theories.

Summary of Practical Implications

In terms of practice, findings reported in this dissertation revealed the influence of different factors on people's behaviour in parks and campgrounds. It has long been questioned whether strategies such as improving people's knowledge, motivating people to engage in pro-environmental behaviour, changing people's attitude toward environmental protection, or providing more infrastructure result in pro-environmental behaviour. This dissertation attempted to address these issues through theory guided and empirically tested studies. In conclusion, the following practical implications are suggested based on the findings of this dissertation.

Although attitudes, social norms, and perception of control over the action have a direct impact on individuals' intention, there are other factors that indirectly influence people's engagement in pro-environmental activities. The importance of constraints perceived by front-country campers was observed repeatedly in the results of this dissertation. The less people perceive themselves as being inhibited by constraints, the more they are willing to participate in pro-environmental activities. Therefore, facilitating campgrounds with more amenities such as recycling facilities, dumping stations, and fire pits, as well as providing firewood, recycling bags/bins at campsites, and bear proof food storage canisters may help people feel less physically constrained. Another example of an action that reduces structural constraints is the provision of public transportation form campgrounds to popular trail heads and attractions in the high season. This can reduce pollution caused by personal cars, solve traffic parking space problems, and increase road safety in parks. It may also result in lower road maintenance costs. A successful management technique that can be used by park managers is best practice benchmarking (Povey,

1997). This technique helps park managers improve their services through adopting other parks' successful environmental plans to improve environmental achievements in their park. An example of a benchmark best practice is the public transportation plan is Grand Canyon National Park in the United States ("National Parks Services," n.d.) which reduces the number of personal cars in the park, solving many issues, especially parking problems. These were examples of constraints caused by contextual factors, addressing these constraints could facilitate people's engagement in pro-environmental activities.

In terms of intrapersonal constraints lack of knowledge, skills, and interest are some of the most frequently reported constraints for people. In this research, lack of interest was identified as the strongest constraint for individuals (see Table 2.1). These intrapersonal constraints can be reduced by enhancing individuals' knowledge as it improves their skills and may result in pro-environmental behaviour (Townsend, 2000); however, improvements in skills as a result of knowledge acquisition depend on the technique used to operationalize the knowledge (Day & Gettman, 2001). Also, stretching people's existing skills regarding pro-environmental behaviours may result in participation in pro-environmental behaviour (see flow theory, Csikszentmihalyi, 1988). In this study, knowledge of pro-environmental camping influenced constraints, negotiation, SN, and PBC. It can be interpreted that delivering knowledge to park visitors is important as it helps people overcome their constraints and strengthen their negotiation resources. It also increases the influence of social pressure to engage in pro-environmental behaviours and increases their perception of control over pro-environmental behaviour.

Delivering knowledge to park visitors can be accomplished at different stages of a trip. It can be done during the pre-travel decision making process such as performing a campsite

reservation, through destination advertisements, and by sending pre-departure reminders. It can be improved during the travel time. Examples of this method are provision of a radio channel for park visitors that is specifically designed to deliver environmental messages to park visitors (as has been employed by the United States' National Parks Service), providing informative brochures/pamphlets, and effective use of park signage (Park et al., 2008). Examples of post-travel strategies to deliver pro-environmental knowledge to people are providing take-home messages to visitors at the exit gate and sending reminders about the messages that were delivered at the park. Also, the suggested public transportation service at parks provides a desirable setting to deliver environmental messages to park visitors. Mobile applications that assist people during their travel to parks (e.g., reservations, weather conditions, directions and maps, traffic information, etc.) can be an excellent platform to deliver environmental knowledge and information to park visitors. Empirical studies have confirmed the significant influence of electronic materials and social networks such as email listservs. Social media can play an important role as vehicles to deliver environmental information to people (Artz & Cooke, 2007). In conclusion, although delivering environmental information to people is important, the amount of information delivered is a key determinant of its effectiveness. The amount of information delivered should be enough to make individuals change their behaviour, but it must not be overwhelming (Artz & Cooke, 2007).

Accomplishment of desirable outcomes is also known as a reason for people to negotiate their constraints (Lyu & Oh, 2015). Informing park visitors about their environmental achievements through post-trip follow up messages that reports results of visitors' environmental behaviours and compare results to previous years or seasons is an example of this. It helps people become aware of their achievement and therefore improves their negotiation resources.

Another method is demonstrating people's contributions to sustainable consumption of natural resources. Examples are providing facilities that report the number of plastic bottles saved due to refilling water bottles, or reporting the amount of recycled plastic bottles and cans by campers.

The strong association between subjective norms and intention as well as the influence of intrapersonal constraints on people's behaviour revealed the importance of social context on park visitors' pro-environmental behaviour. More specifically, focusing on the influence of descriptive subjective norms that refers to what other people normally do in a situation (Griskevicius, Cialdini, & Goldstein, 2008) can help improve people's pro-environmental behaviours. It encourages that people follow what others do in a situation. Previous research in this area found that people tend to donate more when they see others donating (see Griskevicius et al., 2008). Therefore, having more people engage in environmentally responsible behaviour may encourage people to participate in environmentally friendly behaviours. In a study of hotel guests, Goldstein, Cialdini, and Griskevicius (2008) realized that using a social norms oriented message (i.e., join your fellow guests in helping to save the environment) to encourage guests to reuse towels increased the rate of towel reuse. This type of message was much more effective than the informative messages and the message to encourage guests to cooperate with the hotel. Similar messaging strategies may help park administrators to encourage more campers and park visitors to engage in environmentally responsible behaviours. Dolnicar and Grün (2009) acknowledged that environmental promotion is more effective for visitors with specific behavioural patterns: the more people engage in pro-environmental activities, the more environmental messages influence their behaviour.

Findings of previous studies suggest that other than environmentally oriented promotions that conveyed the prevalence of environmental activities (descriptive norms), injunctive norms

also effectively influenced people's intention to engage in pro-environmental behaviours such as recycling (Cialdini, 2003). Promoting a camping culture that supports environmentally-friendly behaviour increases the influence of peer pressure on people's engagement in pro-environmental camping. A simple example of descriptive norms is when individuals automatically lower their voice when they enter a health clinic. People unintentionally perform this behaviour as it is what is expected in the cultural environment of a clinic. Promoting an environmentally responsible culture in parks and campgrounds can result in similar patterns that people engage in environmentally responsible activities due to the cultural setting. This may be achieved through environmentally-oriented entertainment programs in campgrounds that involve families and groups in activities that emphasize the importance of conservation of natural resources. Another issue that emphasizes the importance of targeting social norms is the role of anti-ecological salient descriptive norms. It is found that environmental messages were less influential where there was conflict between the message and the descriptive subjective norms (Oceja & Berenguer, 2009). An example of this is when pro-environmental behaviour is being promoted in a context where environmental issues are not a priority. For instance, in a campground that is heavily being used by roudy campers whose main focus is partying, promoting pro-environmental behaviour through messaging may be less effective comparing to other campgrounds.

Perception of control over pro-environmental behaviours was also strongly associated with intention. The above mentioned suggestions can improve people's perception of control. Moreover, environmental messages that reflect the cumulative effect of small individual actions (e.g., engaging in Leave No Trace practices) can change people's behaviour as it helps them identify the influence of their actions as individuals.

Although indirect, the influence of motivation on people's pro-environment behavioural intentions was supported by the findings of this study. As self-determination theory postulates, there are different forms of motivation regulation; each of these can be used to motivate people to engage in pro-environmental behaviour. For example, educational programs for children and younger campers can help them shape their environmental values that in turn may motivate them to participate in pro-environmental behaviour (integrated and identified regulations). With regard to introjected regulation, exposing people to emotional messages such as information about animals' social behaviour and family relationships and consequences of human-wildlife interactions (e.g., consequences of feeding wild animals) can be an effective way of to motivate people to participate in pro-environmental activities. This strong association of emotional messaging has been identified in wildlife tourism studies (Hughes, 2013; Jacob & Harms, 2014; Madin & Fenton, 2004; Orams, 1995; Searles, 2010). In addition to the positive effect of emotional messages on people's intentions, the medium that delivers the message may also play an important role. For example, Perrin (2011) reported on higher levels of effectiveness of video environmental messages comparing to text only environmental messages. This emphasizes the importance of delivery method and visualized messaging. Overall, in this study motivation was an important factor in the theory of this research that indirectly influenced people's behaviour; however, it is argued that in the pro-environmental behaviour context, messages that are self-transcending (i.e., protecting the environment) are more effective than self-interested oriented messages (i.e., targeting economic benefits; Evans et al., 2013). This emphasizes the priority of targeting identified, integrated, and introjected motivations. Therefore, it is suggested to utilize information campaigns that target these motivations rather than external motivations such as

economic benefits in order to influence people's motivations. In conclusion, I suggest the followings to be considered in the provincial parks targeted for the purpose of this study:

- Public transportation system to and from the point of interests in the parks. Specially, in larger parks such as Kananaskis Country it may be an effective way to reduce visitors' environmental impact, solve public parking and traffic problems, and improve road safety. Also, public transportation is a great context to deliver educational messages to people.
- Park signage is an effective way of delivering environmental messages. Signage can be used in different places for both small and large parks. Campground registration office/booth, trail heads, washrooms, and concession areas are examples of places that signage can attract people's attention.
- A park specific radio channel available inside the parks can be a great platform to deliver different information such as weather forecast, trail condition, and safety hazards mixed with environmental messages. Signage on the way to the park can be used to inform people about the radio channel.
- A mobile app that assists people with their visits to parks can be a very useful tool to deliver environmentally oriented messages to people before, during, and after their stay at parks.
- Provision of recycling bags at the registration office for campers may encourage people to recycle their waste during their stay in the campgrounds.

Limitations and Future Research Avenues

There were some limitations with this dissertation research. The target population of the study was front-country campers which produced two problems: First, although front-country

campers provided a coherent sample that was very diverse in terms of geographical location and recreation activities, they may not be representative of all park users as same-day visitors and people who use other types of park accommodations were neglected. A second problem was the absence of back-country campers and random campers. These types of camping activities need to be considered in the pro-environmental research as they closely interact with the wildlife and nature. Also, there is less infrastructure available for these campers; this makes it more difficult to behave pro-environmentally. I encourage future investigation of day visitors and backcountry campers as well as random campers.

Although attempted, the measurement of actual behaviour in this study was not successful due to the sample size. Only about one fourth of the sample participated in the actual behaviours measurement. This sample size was not enough to maintain the power of analysis necessary for theory testing in this study. Future research should focus on actual behaviour measurement to address the nature of the association between intention and behaviour.

Self-reported behaviour measurement is a popular method in the TPB guided behaviour studies. However, results obtained by this method may be different from studies of actual behaviour that utilized observation. The major reason self-reported behaviour measurement was utilized in this research was due to limited resources, the need for a large sample size, and difficulty of engaging in observation as a method of documenting environmentally-significant camping behaviours. If possible, future research studies are encouraged to use a different method for behaviour measurement.

As with any other self-reported questionnaire, this study's data collection instrument was subject to social desirability bias. Of particular relevant to issues such as environmental problems, social desirability bias needs to be considered in the survey design and interpretation

of the results (Grimm, 2010). Including a social desirability scale in the questionnaire will help researchers to identify the degree to which social desirability influences responses (Dodou & De Winter, 2014). This also can be avoided through a more clear and careful wording of the questions (neutralized administration) as well as placement of questions in different sections (McKibben & Silvia, 2015). Also the questionnaire used for this research included the title, "Environmentally-friendly camping survey." This may have inadvertently primed the respondents, informing them of the desired behaviours the researcher was looking for, and resulting in social desirability tainted responses.

A self-rated measurement scale was used in this research to investigate people's knowledge of pro-environmental camping. This method of knowledge measurement can result in social desirability bias. Also, the knowledge measurement scale in this research was focused on general questions about pro-environmental camping activities. I suggest a more activity specific measurement scale in future research to obtain precise answers about the issue. Other knowledge measurement methods such as true or false questions or scenario quiz format questions have been used in the literature, however, I avoided these types of knowledge measurement questions as they may induce a perception of being tested or judged. Also, there were some overlaps between the negotiation measures and knowledge measures that should be avoided in further research. This study only included individuals' knowledge of pro-environmental camping behaviours. Inclusion of awareness of environmental issues in addition to knowledge of action is suggested for future research. However, there is a debate about whether awareness of environmental issues and education level necessarily result in environmentally-friendly behaviour (see Chapter 3).

Regarding the method of analysis, although structural equation modeling is a common data analysis method for investigating relationships between variables, I suggest using partial least square method (PLS). PLS is an effective method to analyze models with formative structure. Although not confirmed in the literature, constraints measurement scales developed for leisure research seem to be formative in nature rather than reflective. SEM has been the most frequently used data analysis method for constraints scales, however, using PLS in empirical research may reveal a difference between findings based on these two different methods (Kyle & Jun, 2015).

The TPB and self-determination theory's measurement scales in this research were developed based on validated questionnaires (see method sections in Chapters 1 and 2). Although not reported, exploratory and confirmatory factor analyses were conducted for constraints and negotiation items in this research. Low factor loadings and cross loaded items were observed which may be because of the formative nature of the questions in the measurement models and lack of convergent meanings (Kyle & Jun, 2015).

The Cronbach's alpha coefficient reported for the constraints items in this research was in the questionable range. This is not unique to this study as Kyle and Jun (2015) reported the same issue with several constraints measurement scales utilized in previous leisure research. These issues are also explained, in part, by the formative nature of the constraints construct (Kyle & Jun). Test-retest is suggested as proper reliability measurement method for constructs and models with a formative nature (DeVillis, 2003; Diamantopoulos, Riefler, & Roth, 2008).

Some of the questions in measurement scales of this research targeted general environmental behaviours such as 'protecting natural environment while camping.' I suggest

future researchers use behaviour specific questions that target a particular type of pro-environmental behaviour. This was missing in the TPB measurement scale of the present study.

Although RAI (relative autonomy scale) is a common aggregation method to the study self-determination theory's behaviour regulations, there are some debates on the accuracy of this aggregation method (Chemolli & Gagné, 2014). One of the problems with the RAI method is that it cancels the influence of identified regulation in the scale. Therefore, using another aggregation method that includes identified regulation in the analysis may result in more detailed findings. Also, Chemolli and Gagné argued that a proper way to include motivation regulations in the research results is to include them as separate variables in the analysis.

This research included the constraints negotiation concept in its research framework. However, other concepts such as accommodation (Samdahl, Jacobson, & Hutchinson, 1998), coping (Schneider & Wilhelm Stanis, 2007), and facilitators to leisure (Raymore, 2002) can be included in future research to obtain a better understanding of the influence of these factors on people's perception of constraints and their behaviour.

In conclusion, utilizing proven social psychological theories, the present dissertation research attempted to explore different predictors of pro-environmental behaviour in outdoor recreation contexts. First, factors that strongly influence people's pro-environmental behaviour were identified. Then, the associations among these factors were explored in two separate studies. Finally, a comprehensive theory was framed based on these findings and tested using data obtained from campers in Alberta parks, Canada. Findings revealed the importance of factors such as social norms and people's perception of control in shaping pro-environmental behaviour. The negative influence of perceived constraints on individuals' pro-environmental

behaviour was also emphasized by the results. Theoretical implications of these findings were discussed. Finally, practical implications of the findings were presented.

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Appendix: Questionnaire

Environmentally-Friendly Camping Survey

UNIVERSITY OF ALBERTA

Dear park visitor: This survey is designed to document visitors' engagement in and knowledge of environmentally-friendly camping. Information we collect will be shared with Alberta Parks to help them achieve environmental protection goals through enhanced education programs and campground services. This survey is being conducted by Farhad Moghimehfar at the University of Alberta under the supervision of Dr. Elizabeth Halpenny (elizabeth.halpenny @ualberta.ca). **It will take you approximately 10 to 15 minutes to complete the questionnaire. By agreeing to complete this questionnaire, you are giving your consent for us to use the data you provide us.** Additional information about this survey is available in a participant information letter that can be provided by Farhad Moghimehfar (farhad.moghimehfar@ualberta.ca) or his research assistants. Thank you in advance for taking the time to complete this survey.

Please return the completed questionnaire to the research assistant who handed you the survey or campground staff.

Section A: Please answer the following questions.

1. How often do you go camping (average number of trips per year)? _____
2. How many camping trips do you expect you will take in 2014? _____
3. What type of camping accommodation(s) do you most often use (please check all that apply)?

□ Tent □ Travel Trailer □ Motor Home □ Pop up/tent Trailer

□ Truck Camper □ Camping Van □ 5th wheel Trailer

□ Other_____

4. If you use a trailer, what length is it? _____ feet _____meters
5. How many motorized vehicles did visitors residing at your campsite use to travel to this park? _____

Section B: Please, tell us your attitude about protecting natural environments.

1. How do you rate your effort to behave in an environmentally-friendly manner during your last three camping trips?

	-3			0			+3	
I did not try hard	○	○	○	○	○	○	○	I did my best

2. Protecting the natural environment while camping is:

	-3			0			+3	
Unfulfilling	○	○	○	○	○	○	○	Fulfilling
Unpleasant	○	○	○	○	○	○	○	Pleasant
Harmful	○	○	○	○	○	○	○	Beneficial
Worthless	○	○	○	○	○	○	○	Useful

Section C: The following statements ask about your opinions about protecting natural environments.

Please indicate how you feel about these statements:

	Strongly Disagree -2	Disagree	Neutral 0	Agree	Strongly Agree +2
1. It is expected of me that I protect nature during camping trips.	□	□	□	□	□
2. I am willing to protect nature while I am camping.	□	□	□	□	□
3. I feel social pressure to protect the environment.	□	□	□	□	□
4. If I wanted to I could protect nature when camping.	□	□	□	□	□
5. It is mostly up to me to protect nature while camping.	□	□	□	□	□
6. I want to protect the environment when camping.	□	□	□	□	□
7. Most people who are important to me think that I should protect natural resources while camping.	□	□	□	□	□
8. The people in my life whose opinions I value would approve of my effort to protect nature during camping trips.	□	□	□	□	□
9. I intend to protect nature during my camping trips.	□	□	□	□	□
10. For me it is easy to protect nature during camping trips.	□	□	□	□	□
11. I believe I have complete control over protecting nature while camping.	□	□	□	□	□
12. I am willing to take good care of the environment while camping.	□	□	□	□	□

Section D: This section explores the different motivations you may have for protecting the natural environment.

I try to protect nature while camping . . .

	Strongly Disagree -2	Disagree	Neutral 0	Agree	Strongly Agree +2
1. Because protecting nature makes me feel good about myself.	□	□	□	□	□
2. Because caring about nature reflects who I am.	□	□	□	□	□
3. Because nature is part of who I am as a person.	□	□	□	□	□
4. Because that's what I'm supposed to do.	□	□	□	□	□
5. Because protecting nature is important in my life.	□	□	□	□	□
6. Because if I do it I feel proud of myself.	□	□	□	□	□
7. Because it reflects my personal values.	□	□	□	□	□
8. Because it is fun for me.	□	□	□	□	□
9. Because there are costs and penalties if I don't do it.	□	□	□	□	□
10. Because if I don't do it, I feel guilty.	□	□	□	□	□
11. Because it is interesting for me.	□	□	□	□	□
12. Because it makes others feel good about me.	□	□	□	□	□

Section E: In this section please tell us your opinions about factors that may encourage or prohibit your participation in environmentally-friendly camping activities. Please indicate how you feel about these statements:	Strongly Disagree -2	Disagree	Neutral 0	Agree	Strongly Agree +2
1. There are enough recycling facilities in the campground.	☐	☐	☐	☐	☐
2. My close friends and family do not care about nature while camping.	☐	☐	☐	☐	☐
3. I don't know how to engage in environmentally-friendly camping.	☐	☐	☐	☐	☐
4. Although I try to keep campfires small, my family and friends prefer larger ones.	☐	☐	☐	☐	☐
5. Environmentally-friendly camping is expensive.	☐	☐	☐	☐	☐
6. There are good waste water disposal facilities in the campground.	☐	☐	☐	☐	☐
7. Firewood is available to purchase so I don't need to use deadfall wood, cut live trees, or bring firewood into the park with me.	☐	☐	☐	☐	☐
8. I don't like to keep my campfire small.	☐	☐	☐	☐	☐
9. Physically, I'm not able to participate in environmentally-friendly behaviour.	☐	☐	☐	☐	☐
10. There is not enough space to park my vehicles in an environmentally-friendly manner.	☐	☐	☐	☐	☐
11. There is adequate storage space available in the campground to keep food out of reach of animals.	☐	☐	☐	☐	☐
12. I like to enjoy camping without thinking about environmental issues.	☐	☐	☐	☐	☐
13. Campground staff provide enough information about environmentally-friendly camping.	☐	☐	☐	☐	☐
14. My camping companions don't help me to recycle.	☐	☐	☐	☐	☐
15. **(For RVs only)** Long wait times at the dumping station deter me from emptying my waste water at the dumping station.	☐	☐	☐	☐	☐

Section F: Now you will see some statements about how you try to overcome constraints to engaging in environmentally-friendly camping activities. Please indicate how you feel about these statements:	Strongly Disagree -2	Disagree	Neutral 0	Agree	Strongly Agree +2
1. I try to learn about environmentally-friendly camping techniques.	☐	☐	☐	☐	☐
2. I have asked park staff to provide me with information about environmentally-friendly camping practices.	☐	☐	☐	☐	☐
3. I try to keep my campfire as small as possible.	☐	☐	☐	☐	☐
4. I travel with people who care about nature.	☐	☐	☐	☐	☐
5. I try to keep the fire as small as possible even though my friends and family don't like me to.	☐	☐	☐	☐	☐
6. I do my best to find recycling facilities in the campground.	☐	☐	☐	☐	☐
7. I teach my companions how to protect nature while camping.	☐	☐	☐	☐	☐
8. I try to recycle waste even when companions don't care about recycling.	☐	☐	☐	☐	☐
9. I purchase recreation equipment that uses as little electricity and petroleum-based fuel as possible when camping.	☐	☐	☐	☐	☐
10. I save money so that I can afford to buy camping equipment that is more environmentally-friendly.	☐	☐	☐	☐	☐

Section G: Management suggestions.

1. What should Alberta Parks do to enhance environmental protection at its campsites (e.g., LED lighting, improved waste management facilities)?

2. How can Alberta Parks encourage visitors to act in a more environmentally-friendly manner?

3. How can campsites and campgrounds be improved to make it easier for you to engagement in more environmentally-friendly camping practices?

Section H: In this part of the questionnaire please rate your knowledge about environmental actions. How do you rate your knowledge about the following topics	Not familiar at all 0	I know a little bit	Average 2	Familiar	Totally familiar 4
1. Environmentally-friendly use of my campsite (e.g., where to set up my tent, where to park).	☐	☐	☐	☐	☐
2. Appropriate disposal of garbage and recyclables at campgrounds.	☐	☐	☐	☐	☐
3. Reducing my impacts on the campground's natural spaces (e.g., staying on paths, parking in designated areas).	☐	☐	☐	☐	☐
4. Secure food storage that does not attract animals.	☐	☐	☐	☐	☐
5. Environmentally-friendly use of campfires.	☐	☐	☐	☐	☐
6. Disposal of waste water in designated locations.	☐	☐	☐	☐	☐
7. Green ways of camping such as the use of solar panels.	☐	☐	☐	☐	☐

Section I: This section explores specific camping behaviours.

1. What recreational equipment do you usually bring on a camping trip (please check all that apply)?

☐ ATV (all-terrain vehicle)	☐ Bicycle	☐ Motor bike	☐ Pontoon boat
☐ Electric boat motor	☐ 4-stroke boat motor	☐ 2-stroke boat motor	☐ Utility vehicle
☐ Canoe/Kayak	☐ Jet ski	☐ Off road vehicle	☐ Fishing equipment
☐ Hunting equipment	☐ Scuba diving equipment	☐ Other(s): _____	

2. What camping equipment do you usually bring on a camping trip (please check all that apply)?

☐ Electric toaster	☐ Electric oven	☐ Propane oven	☐ Electric heater
☐ Electric cooler	☐ Solar oven	☐ Phosphate free soap	☐ Refrigerator
☐ Hair dryer	☐ Solar panels	☐ Microwave oven	
☐ Portable generator (2-stroke)	☐ Portable generator (4-stroke –more quiet & fuel efficient than 2-stroke generator)		

☐ Other(s): _____

3. What are the 3 most important things you think about before purchasing you recreational vehicles and camping equipment? Place a 1, 2, or 3 beside your choices (with 1 being the most important).

— Cost
— Quality
— Environmental concerns
— Family/individual needs
— Recreation activity requirements
— Other(s): _____

Section J: This section explores specific camping behaviours that impact natural environments.	Never 0	Seldom	Sometimes 2	Often	Always 4
1. How often do you participate in environmental education programs when camping, (if available)?	☐	☐	☐	☐	☐
2. Does price of firewood at the campground encourage you to keep your campfires small?	☐	☐	☐	☐	☐
3. Do environmental considerations encourage you to keep you campfires small?	☐	☐	☐	☐	☐
4. Do you feed wild animals at your campsite?	☐	☐	☐	☐	☐
5. Do you try to conserve water in water-scarce areas of Alberta?	☐	☐	☐	☐	☐
6. How often do you burn garbage in your campfire?	☐	☐	☐	☐	☐
7. Do you leave your campfire unattended?	☐	☐	☐	☐	☐

Section K: Listed below are statements about the relationship between humans and the environment. Please indicate how you would feel about the these statements:	Strongly Disagree -2	Disagree	Neutral 0	Agree	Strongly Agree +2
1. We are approaching the limit of the number of people the earth can support.	☐	☐	☐	☐	☐
2. Humans have the right to modify the natural environment to suit their needs.	☐	☐	☐	☐	☐
3. When humans interfere with nature it often produces disastrous consequences.	☐	☐	☐	☐	☐
4. Human ingenuity will ensure that we do not make the earth unlivable.	☐	☐	☐	☐	☐
5. Humans are severely abusing the environment.	☐	☐	☐	☐	☐
6. The earth has plenty of natural resources if we just learn how to develop them.	☐	☐	☐	☐	☐
7. Plants and animals have as much right as humans to exist.	☐	☐	☐	☐	☐
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	☐	☐	☐	☐	☐
9. Despite their special abilities humans are still subject to the laws of nature.	☐	☐	☐	☐	☐
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	☐	☐	☐	☐	☐
11. The earth is like a closed system with very limited room and resources.	☐	☐	☐	☐	☐
12. Humans are meant to rule over the rest of nature.	☐	☐	☐	☐	☐
13. The balance of nature is very delicate and easily upset.	☐	☐	☐	☐	☐
14. Humans will eventually learn enough about how nature works to be able to control it.	☐	☐	☐	☐	☐
15. If things continue on their present course we will soon experience a major ecological catastrophe.	☐	☐	☐	☐	☐

Section L: This section will give us a better understanding of people who took part in this survey. Like all the other answers, this information will be kept strictly confidential.

1. **Where do you normally live?**

   □ Alberta □ Another Canadian province

   □ USA □ A country other than Canada or the US. Please name: _____

2. **What is your postal code or zip code?** (for US and Canadian respondents): _____

3. **Including you, how many people are in your travel party?** _____ Adults _____ Children

4. **Gender :** □ Male □ Female

5. **What year were you born in:** _____

6. **What is the highest level of education you have completed?** (*Check only one.*)

   □ Elementary school □ High School □ College/technical school diploma

   □ University bachelor degree □ University graduate degree

7. **What was your total household income, before tax, last year?**

   □ Under $50,000 □ $50,000 to $99,999 □ More than $100,000

8. **What is your occupation?** _____

Section M: Comments.

1. **Do you have any additional comments? Please elaborate here:**

Section N: Outdoor recreation.

2. **What do you think is positive and negative about how visitors engage in their favourite outdoor recreation activities when visiting Alberta's parks?**

- Positive:

- Negative:

3. **Do you have suggestions that Alberta Parks could implement to encourage more environmentally-friendly recreation activity practices?**

Thank you for your participation.