

# Personal norms and visitor compliance: A case study of wildlife tourism in Manuel Antonio National Park, Costa Rica

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI'I AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN GEOGRAPHY

MAY 2018

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## ACKNOWLEDGEMENTS

I would like to acknowledge several people who have supported me throughout this dissertation. First, I would like to thank my supervisor and dissertation chair, Dr. Brian Szuster for his guidance and patience as I have navigated through this degree and writing process. I doubt I could have found another advisor who would have taken my son to the zoo so I could study for comps! To my committee members, Camilo Mora, Mary Mostafanezhad, Dan Spencer, and Makena Coffman, thank you for your guidance and support during this process. I thank you for the growth I have gained because of working with each of you.

I would also like to thank the amazing support network of fellow students and friends that have helped keep me on track, keep me sane, listen to me ramble about something for 20 minutes so that I can answer my own question and leave you looking confused, and of course thank you for your invaluable friendship... Aurora, Desi, Will, Timmy, Brandon, Rollan, Emily, Ryan, Abby, Jenn, Wendy, Li, Borjana, and Keith Scott.

I am also grateful to my SPAM (Student Parents at Mānoa) community for the unconditional support and wealth of resources, both students and staff have provided in helping me navigate this process as a single mom. Moreover, we cannot forget the yummy hot lunches on Fridays! Also to my UHMCC community of families, friends and staff, I could not have done this without all of you! Not only is it the most amazing place for young children, but an unbelievable support network that I will forever cherish.

I am grateful to SINAC (Sistema Nacional de Areas de Conservación de Costa Rica), especially Julio Bustamante for helping with research permits and access to the site. Thank you to the Manuel Antonio National Park administrators, park rangers, naturalist guides and visitors that gave me their time to make this research possible. The writing of this research also would not have been possible without the generous financial support provided by the American Association of University Women (AAUW), and the continual support from the Department of Geography at University of Hawai'i at Mānoa.

I also wish to acknowledge my family and friends who have supported me throughout this process, most importantly, my parents, my grandparents, my brother, and Cherine.

Y gracias a Adrián por tu apoyo y paciencia. Me has ayudado recordar que hay que parar, respirar y disfrutar la vida. No podría haber terminado esto sin ti.

Most importantly, I am eternally grateful to Manu for being so flexible with our crazy life, traveling to field sites, accepting that mommy has to work, even on the weekends and late at night. You learned to fall asleep with the lights on while I continued to work at all hours of the night, probably ate more boxes of macaroni and cheese than a child should, and helped me maintain a healthy balance between work and life despite the never-ending demands of being a single student parent.

## ABSTRACT

What does it mean to be responsible? We are all responsible for our actions, but individuals' awareness and notions of responsibility can fail to correspond with their actions and behaviors. Understanding how environmental awareness forms and how it translates into responsible environmental behavior is a central question in this era of heightened environmental concern. These issues are particularly important in the case of tourism, which is often promoted as a form of economic development that supports biodiversity protection and conservation for fragile ecosystems and protected areas. This study proposes that the Norm Activation Model (Schwartz, 1977) is a valuable tool for understanding visitors' behavior. However, the majority of previous research that has employed the model has failed to include all proposed model variables. This study examines a more complete interpretation of the model, and findings support the role of personal norms in predicting visitors' behavior in Manuel Antonio National Park in Costa Rica. More importantly, these findings shed new light on the conceptualization of the model's variables, activator variables and their role in predicting environmentally friendly behavior in this context.

# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	iii
ABSTRACT .....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES .....	ix
LIST OF FIGURES .....	xi
LIST OF ABBREVIATIONS.....	xiii
CHAPTER 1 INTRODUCTION .....	1
1.1 Nature of the Problem .....	1
1.2 Visitor Management in Nature-Based Tourism.....	2
1.3 Understanding the Behavior of Nature-Based Tourists .....	6
1.4 Purpose of the Study and Research Questions.....	8
1.5 Study Site .....	9
1.6 Geographic Discipline.....	16
1.7 Organization of Dissertation .....	17
CHAPTER 2 LITERATURE REVIEW .....	18
2.1 Personal Norms and the Norm Activation Model.....	18
2.1.1 Evolution of Norm Activation Model Components.....	20
2.1.2 Differences between the Original and Extended Models .....	26
2.2 Norm Activation Model Studies beyond Schwartz .....	27
2.2.1 Norm Activation Model Interpretations.....	29
2.2.2 Missing Norm Activation Model Variables.....	32
2.3 From One Behavior Context to Another.....	35
2.4 Summary .....	40

CHAPTER 3	RESEARCH DESIGN .....	43
3.1	Survey Instrument .....	44
3.2	Measurement of Variables .....	46
3.2.1	Instrumentation .....	47
3.2.2	Questionnaire Layout and Sequence.....	48
3.2.3	Wording .....	50
3.2.4	Social Desirability Bias.....	51
3.3	Operationalization of Variables .....	53
3.3.1	Problem Awareness .....	55
3.3.2	Outcome Efficacy .....	56
3.3.3	Ability .....	57
3.3.4	Ascription of Responsibility .....	58
3.3.5	Personal Norm .....	59
3.3.6	Awareness of Consequences.....	61
3.3.7	Denial of Responsibility .....	67
3.4	Sample Selection, Size, and Procedure.....	69
3.5	Participant Observation.....	71
3.6	Data Analysis .....	74
3.6.1	Exploratory Factor Analysis .....	75
3.6.2	Reliability.....	76
3.6.3	Confirmatory Factor Analysis.....	76
3.6.4	Convergent and Discriminant Validities.....	77
3.6.5	Structural Equation Modeling.....	78
3.6.6	Competing Models Strategy .....	79
3.7	Use of Human Subjects.....	80

3.8	Summary .....	80
CHAPTER 4 DATA ANALYSIS AND RESULTS .....		82
4.1	Demographic Characteristics of the Population .....	82
4.2	Rule Awareness and Rule Knowledge.....	87
4.3	Validity and Reliability of NAM Constructs .....	91
4.3.1	Re-conceptualization of Outcome Efficacy .....	96
4.3.2	Re-conceptualization of Personal Norms.....	98
4.3.3	Reliability of the New NAM Concepts and Items .....	99
4.3.4	Convergent and Discriminant Validity .....	104
4.4	Structural Model .....	107
4.4.1	Structural Model Analysis of Partial NAM Interpretations.....	107
4.4.2	Full NAM Interpretations .....	119
4.4.3	Ability as a NAM Construct .....	127
4.4.4	Denial of Responsibility .....	132
4.5	Research Questions .....	132
4.5.1	Research Question 1: Which Variables are Significantly Associated with Personal Norms? .....	132
4.5.2	Research Question 2: Does a Full Norm Activation Model (NAM) Interpretation Improve the Strength of Personal Norms to Predict Compliance with Visitor Rules? .....	134
4.5.3	Research Question 3: What Mechanisms or Situational Factors Affect Personal Norms to Comply with Visitor Rules?.....	136
4.5.4	Research Question 4: What Factors Interfere with Personal Norms to Comply with Visitor Rules?.....	139
4.6	Social Desirability Bias.....	140
CHAPTER 5 CONCLUSION .....		143

5.1	Major Findings and Discussion .....	143
5.1.1	Reconceptualization of NAM Variables .....	144
5.1.2	Full versus Partial NAM Interpretation .....	146
5.2	Implications of Study .....	149
5.2.1	Theoretical Implications .....	149
5.2.2	Practical Implications.....	152
5.3	Limitations and Recommendations for Future Research.....	155
APPENDIX A	MANP Visitor Recommendations .....	158
APPENDIX B	IRB Approval Letter.....	160
APPENDIX C	Participant Observation Record Sheet.....	161
APPENDIX D	Participant Recruitment Script .....	162
APPENDIX E	Participant Consent Form .....	163
APPENDIX F	Questionnaire Instrument.....	165
References	.....	179



## LIST OF TABLES

Table 4.1. Demographic Characteristics of Respondents.....	84
Table 4.2 Visit Information of Respondents.....	86
Table 4.3. Visitor Exposure to Park Rules.....	89
Table 4.4. Visitor Rule Knowledge.....	90
Table 4.5. Reliability Analysis of Original NAM Concepts.....	93
Table 4.6. Factor Analysis of NAM Items.....	95
Table 4.7. Reliability Statistics for Original Items Representing Outcome Efficacy...97	97
Table 4.8. Reliability of NAM Activator Variables.....	101
Table 4.9. Model 5 Goodness-of-fit Indices.....	103
Table 4.10. Model Fit Indices for Confirmatory Factor Analysis of NAM Concepts.....	104
Table 4.11. Maximum Squared Shared Variance for NAM Constructs.....	105
Table 4.12. Convergent and Discriminant Validity of NAM Constructs.....	106
Table 4.13. PA → AR → PN Chi-square Difference Test and Goodness-of-fit Indices.....	111
Table 4.14. PA → OE → PN Chi-square difference test and goodness-of-fit indices.....	115
Table 4.15. OE → AR → PN Chi-square difference test and goodness-of-fit indices.....	116
Table 4.16. Goodness-of-fit Indices for Structural Model Represented in Figure 4.6.....	120

Table 4.17. Goodness-of-fit Indices for Alternate OE Determinant Models.....	121
Table 4.18. Goodness-of-fit Indices for Alternate AR Determinant Models.....	124
Table 4.19. Partial and Full Mediation Models Goodness-of-fit Index Comparisons.....	125
Table 4.20. Goodness-of-fit Indices for Models Including Ability.....	130
Table 4.21. Correlations between NAM Predictive Variables and Personal Norms.....	133
Table 4.22. Means for Biospheric Value Items and NAM Items.....	142

## LIST OF FIGURES

Figure 1.1.	Map of Costa Rica and Manuel Antonio National Park .....	10
Figure 1.2.	Aerial Photo of Manuel Antonio National Park .....	11
Figure 1.3.	Map of Manuel Antonio National Park .....	13
Figure 2.1.	Original NAM Model (Schwartz, 1968a, 1968b, 1973).....	19
Figure 2.2.	Original NAM Variables (Schwartz, 1968a, 1968b, 1973).....	21
Figure 2.3.	Extended NAM Model (Schwartz, 1977).....	22
Figure 2.4.	Extended NAM Model Variables (Schwartz, 1977).....	25
Figure 2.5.	Example of NAM Mediator and Moderator Models.....	33
Figure 3.1.	Conceptualization of NAM Variables.....	54
Figure 3.2.	Questionnaire Items for Problem Awareness.....	56
Figure 3.3.	Questionnaire Items for Outcome Efficacy.....	57
Figure 3.4.	Questionnaire Items for Ability.....	58
Figure 3.5.	Questionnaire Items for Ascription of Responsibility.....	59
Figure 3.6.	Questionnaire Items for Personal Norm.....	61
Figure 3.7.	Questionnaire Items for Awareness of Consequences.....	66
Figure 3.8.	Questionnaire Items for Denial of Responsibility.....	69
Figure 4.1.	Final Items for Outcome Efficacy .....	98
Figure 4.2.	Final Items for Personal Norms .....	99
Figure 4.3.	Structural Model of Problem Awareness, Ascription of Responsibility, and Personal Norms .....	108
Figure 4.4.	Beta Coefficient Comparisons for PA, OE, and PN .....	112
Figure 4.5.	Beta Coefficient Comparisons for OE, AR, and PN.....	113

Figure 4.6. SEM Full NAM Model.....	119
Figure 4.7. Alternate NAM Structural models with OE as Primary Determinant of Personal Norms.....	123
Figure 4.8. Alternate NAM Structural Models with AR as Primary Determinant of Personal Norms.....	126
Figure 4.9.a. NAM Models with the Construct Ability.....	128
Figure 4.9.b. NAM Models with the Construct Ability.....	129

## LIST OF ABBREVIATIONS

A – Ability

AC – Awareness of Consequences

ANOVA – Analysis of Variance

APA – American Psychology Association

AR – Ascription of Responsibility

ASV – Average shared variance

AVE – Average variance extracted

CFI – Comparative fit index

CR – Composite Reliability

DR – Denial of Responsibility

EQS – Structural Equation Modeling Software

ERB – Environmentally Responsible Behavior

GED – General Equivalency Diploma

IBM SPSS – Statistical Package for the Social Sciences

IFI – Incremental fit index

IRB – Institutional Review Board

MANP – Manuel Antonio National Park

MFI – MacDonalld fit index

MSV – Maximum Shared Variance

NAM – Norm Activation Model

NFI – Normed Fit Index

NNFI – Non-Normed Fit Index

OE – Outcome Efficacy

SINAC – Sistema Nacional de Áreas de Conservación – National System of  
Conservation Areas

PA – Problem Awareness

PN – Personal Norm

RMSEA – Root mean square error of approximation

SB – Satorra Bentler

SEM – Structural Equation Modeling

UHM – University of Hawai‘i at Mānoa

# CHAPTER 1

## INTRODUCTION

### 1.1 Nature of the Problem

Tourism is one of the largest and fastest growing industries in the modern globalized world. According to the U.N. World Tourism Organization, in 2015, there were nearly 1.2 billion international visitor arrivals, and for the sixth year in a row, a reported growth of over 4% (UNWTO, 2016). With constant and rapidly increasing numbers since the 1970s (Duffy, 2015) the nature-based and eco-tourism sectors of the industry are considered to be the fastest growing, with rates of growth far surpassing that of tourism in general (Blangy & Mehta, 2006; Hawkins & Lamoureux, 2001; Starmer-Smith, 2004). The trend for these increasingly popular tourism markets is to visit evermore remote destinations, untouched by the markings and remnants of mass-tourism, such as the Galapagos Islands, Antarctica, and the rainforests of the Amazon Basin. Many of such destinations were created for resource protection and scientific research and are unprepared for the often unchecked and intensive visitation that occurs (Farrel & Marion, 2002; McNeil, 1999). Allowing tourism in such areas can result in levels of recreation activity and visitor numbers that can imperil the ecosystem (Wielgus et al., 2009).

Tourism interacts with the environment in a paradoxical two-way process. On one hand, the environment provides the tourist product or attraction, the place or sites which visitors desire to see or experience. On the other hand, tourism produces a variety of unwanted environmental externalities, both intentional and unintentional, that modify

and affect the quantity and quality of environmental resources available for tourism purposes (Briassoulis & van der Straaten, 1999). Research has shown that even at low visitation levels, negative and irreversible impacts and resource degradation is inevitable (e.g., trampling, wildlife disturbance) (e.g., Hammit & Cole, 1998; Leung & Marion, 2000). Environmental consequences of tourism in protected areas can include changes in land cover and land use, biotic exchange, habituation of wildlife, extinction of wild species, trampling, erosion, amongst several other large-scale impacts (Gössling, 2002).

The tangible ecological devastation that can accompany tourism development has made tourism's role in such places a highly contentious debate (Das & Chatterjee, 2015).

Despite the potential negative impacts, many governments and protected area administrative bodies promote tourism to fund conservation projects and cover management costs (Baral & Dhungana, 2014; Dharmaratne, Sand, & Walling, 2000; Salerno et al., 2013). However, any social and economic benefits gained from accessing tourism markets (e.g., Stolton & Dudley, 2010), are met with multi-faceted issues and challenges of managing visitors and tourism activities in ecosystems often considered biologically unique and fragile. As a result, in order to prevent the negative impacts of tourism, management agencies are forced to broaden their responsibilities to include visitor management strategies (Pickering, 2010).

## **1.2 Visitor Management in Nature-Based Tourism**

Visitor management is an area of tourism studies that specifically aims to limit the negative impacts of visitors on destinations, while ensuring that visitors have an enjoyable experience (Inkson & Minnaert, 2012). Managing visitors is considered one of the most important ways to prevent and reduce the impacts of tourism (Hall &



McArthur, 1996; Mason, 2005). Commonly targeting the negative ecological impacts of tourism activities, nowadays visitor management can include social and economic impacts, as well as the needs and satisfaction of visitors. In many cases, visitor management has become one of the main jobs of protected area administrators and governing institutions. Due to the increasing number of visitors to sensitive natural areas, and the resulting impacts, visitor management is often considered an essential aspect of sustainable tourism development (Cooper, Fletcher, Gilbert, & Wanhill, 1998; Kim 2011; Kuo 2002).

A need for visitor management arises when visitors do or might do something that will result in unacceptable consequences to the environment, resource, to the user, or to other users (Peterson & Lime, 1979). Any management strategy has the potential to affect visitor behavior, but not always in the intended or expected way. In order to produce desired results, problems should be analyzed as a system, as the best management approach may depend more on addressing why people are engaging in the action, rather than address the action they are engaging in (Driver & Brown, 1975).

Visitor management strategies typically describe the ways in which management practices work rather than the management practices themselves (Manning & Anderson, 2012). A common classification system is “hard” versus “soft” approaches (Inkson & Minnaert, 2012; Mason, 2005; Richardson & Fluker, 2004). Hard approaches can be enforced, focus on physical restrictions and prohibitions, and hardening a site. These approaches include economic, physical, and regulatory strategies. Examples include charging user fees, limiting the number of visitors, hardening a site by building trails and other infrastructure, and zoning to restrict and limit access. Soft approaches, on the other

hand, cannot be as easily enforced, are more persuasive in nature, and attempt to deter rather than prohibit actions that cause impacts. Common soft approaches are codes of conduct, interpretation centers, and education programs.

Routinely, visitor management strategies focus on 'hard' or regulatory, physical and economic approaches that emphasize 'hardening' a site and controlling visitor numbers (Mason, 2005; Orams, 1996). Despite the merit of such management strategies, these approaches require enforcement, permanently alter the natural setting and can be costly to administer and enforce (Dawson & Hendee, 2008). Policing and enforcing regulations often presents a problem for protected areas (Shackley, 1998). Additionally, hard approaches require curtailing visitors' freedom and can generate a negative connotation for visitors by emphasizing prohibited actions and the potential for punitive actions and sanctions against visitors (Peterson & Lime, 1979). In some instances, this can create a rift and/or exacerbates sentiments of distrust between visitors and park personnel responsible for enforcing the rules. Regulation can antagonize visitors, rather than win their support (Marion & Reid, 2007). Moreover, these strategies fail to recognize that most impacts are not due to malicious acts, but primarily result from lack of knowledge, skill and insensitivity to the consequences of an individual's actions (Bradley, 1979).

On the other hand, soft approaches, such as environmental interpretation can be an effective visitor management strategy that encourages visitors to adopt conservation intentions and behaviors, and increases understanding and awareness (Christensen, Rowe, & Needham, 2007; Kuo, 2002). Effective soft approaches encourage visitors to consider the environmental and social repercussions of their actions, promote self-regulation, modification of behavior, and enhanced ethics (Marion & Reid, 2007).

Quality education programs are also often desired by nature-based tourism and protected area visitors (Hendee & Dawson, 2002; Littlejohn, Needham, Szuster, & Jordan, 2016). In contrast to hard or regulatory approaches, the objective of soft approaches is not to control visitor behavior, but provide a cognitive basis to encourage low impact and environmentally responsible behavior in recreation settings (Manning, 1999; Peterson & Lime, 1979; Roggenbuck, 1992).

Due to the multiple contexts and motivating forces behind individual visitors' behavior, effective management plans will employ multiple management strategies and even rely on multiple theoretical frameworks. Some management strategies and interventions will work for some people, some of the time, in some situations; therefore, combining methods into a holistic management plan should increase the overall effectiveness (Widner & Roggenbuck, 2000). 'Soft' visitor management approaches can only effectively prevent unskilled and uninformed actions, and to a lesser degree, careless actions (Hendee & Dawson, 2002; Manning, 2003; Roggenbuck, 1992). The inclusion of soft approaches in management plans is widely supported and encouraged by researchers and practitioners (e.g., Ballanytne, Packer, & Sutherland, 2011; Brown, Ham, & Hughes, 2010; Madin & Fenton, 2004; Peake, Innes, & Dyer, 2009; Reigner & Lawson, 2009). Yet, soft approaches tend to have a peripheral role in visitor management plans, are often used ineffectively, and seldom with behavior change as an explicit objective (McArthur, 1998; Marion & Reid, 2007). If long-term management of destinations and resources is reliant upon sustainable use by visitors, a better understanding of visitor behavior and related determinants (i.e., norms, intentions, attitudes) is required (Skibins, Powell, & Stern, 2012).

### **1.3 Understanding the Behavior of Nature-Based Tourists**

Undesirable visitor actions can be classified as careless, unskilled, uninformed, unavoidable and illegal (Hendee & Dawson, 2002). Careless actions are thoughtless actions performed without consideration of the impact they may have on the environment, resource or other visitors. Unskilled actions result from visitors not having the appropriate or adequate skills to perform the needed actions to minimize or prevent negative impacts. Uninformed actions occur when visitors do not have the knowledge and information to make informed or desired behavior decisions. Unavoidable actions are behaviors that cannot be avoided, regardless of visitors' knowledge, experience or awareness (e.g., erosion due to trampling on designated trails). Finally, illegal actions are deliberate actions that violate regulations and laws.

It is possible for single actions to fit more than one classification of behavior, as the factors surrounding the action could describe different motivations for the behavior. For example, a recreationist snorkeling in a marine ecosystem stops and stands on coral, an action that is deleterious to the coral and littoral marine ecosystem. If the snorkeler is unaware that standing on coral is harmful then the action is uninformed. If the snorkeler lacks the necessary swimming skills or physical stamina to continue the activity without a break, the individual might stop to stand on the coral out of necessity, and it is an unskilled action. If the snorkeler is aware that standing on coral can be harmful but is more interested in taking a picture of a nearby animal and oblivious to his or her actions, it is careless. If the snorkeler stops to assist another visitor and the only safe place to position him or herself is on the coral, then the action is unavoidable. If the person is

aware of the potential harm to the coral, yet chooses to stand on the coral, then the action is illegal.

One of the greatest challenges and barriers in changing human behavior is understanding how and why behavior occurs (Heimlich & Ardoin, 2008), and identifying the factors that translate into behavior change. Human behaviors are complex, involve many components (e.g., attitudes, norms, beliefs, emotions), and the role and importance of those components can change depending on the behavioral context, and relevant situational factors and cues (e.g., Biel & Thøgersen, 2007; Dolnicar & Grun, 2008; Ewing, 2001; Lindenberg & Steg, 2013; Mehmetoglu, 2010; Thøgersen, 2006). In an era of growing environmental concern, it is imperative to improve our understanding of visitors' behaviors and the motivational drivers of these behaviors.

Research suggests that most deleterious visitor actions are not due to malicious intent, but result from a lack of knowledge and skill, and unawareness and insensitivity to the consequences of one's actions (Bradley, 1979). Similar research has demonstrated that simply increasing visitors' knowledge is not a sufficient condition to influence behavior change (Bolderdijk, Gorsira, Keizer, & Steg, 2013; Kollmuss & Agyeman, 2002).

Therefore, understanding the factors that influence visitors' decision to comply with behavioral expectations, rules and enact environmentally responsible behaviors while visiting protected areas is imperative to increasing the effectiveness of visitor management strategies.

## **1.4 Purpose of the Study and Research Questions**

This dissertation investigates the formation of personal norms and their role in national park visitor decisions to engage in environmentally responsible behaviors (ERB). The purpose of this study is to provide a more comprehensive understanding of the Norm Activation Model (NAM); the leading model used to predict and explain the development of personal norms. Despite the relevance of NAM in explaining ERB, previous studies have only examined a partial interpretation of the model's variables. This study will measure and analyze all proposed variables, in order to examine the model's full potential to explain the development of personal norms. This research investigates the formation of personal norms and factors that inhibit tourists from acting on these feelings, drawing upon visitors to Manuel Antonio National Park (MANP) in Costa Rica as a case study. This information can then inform park management practices and visitor management strategies.

The primary focus of this study is the role of personal norms to comply with visitor rules at Manuel Antonio National Park in Costa Rica. Investigating this will involve examining the following research questions:

- (1) Which variables are significantly associated with personal norms to comply with visitor rules?
- (2) Does a full Norm Activation Model (NAM) interpretation improve the strength of personal norms to predict compliance with visitor rules?
- (3) What mechanisms or situational factors affect personal norms to comply with visitor rules?
- (4) What factors interfere with personal norms to comply with visitor rules?

## 1.5 Study Site

MANP is the smallest and most visited National park in Costa Rica (Evans, 1999; SINAC, 2016). Located on the central Pacific coast, the park is a protected area and consists of 682 hectares of terrestrial area, 5 km of coastline, 55,000 hectares of marine area, and 12 small islands a short distance off shore (Willis & Cortés, 2001). MANP is only three-square miles in size, but home to over 180 bird species and more than 100 mammal species. The annual mean temperature is 26 C, with an average of 3000mm of rainfall per year (Coen, 1991). The region experiences two seasons, a wet season from May to November, and a dry season from December to April. The original land cover of the area was humid tropical forest (Tosi, 1969), but the region saw much change during the 1950s as the government encouraged logging and cattle ranching, and eventually large areas surrounding the park were converted to African oil palm plantations and rice fields (Mattey, 1992). Today, MANP consists of a mix of natural primary forest and modified forests, is bordered by ocean on one side, and surrounded by oil palm plantations and cattle ranches on the remaining sides (Wong & Cahillo, 1996). Although there are remnants of original forest in MANP (Sierra et al., 2003), the legacy of land cover changes is visible through the scattering of ornamental and fruit plants and trees within the park.



**Figure 1.1. Map of Costa Rica and Manuel Antonio National Park (Google Earth, 2017)**

Tourism in the region began as early as 1960 when a road was built from San Jose to Quepos, the nearest town to MANP (Koens, Dieperink, & Miranda, 2009). The park was officially created in 1972, in response to community pressure objecting to foreign ownership and potential development. The private owners were interested in developing a tourist center and resort and began prohibiting local residents from entering the area. In response, the national government took ownership of the contested land and created Manuel Antonio Beaches National Recreation Park. This action was also part of a larger national movement to create a comprehensive protected area system, in response to rapid land cover change during the first part of the 20<sup>th</sup> century (Sánchez-Azofeifa, Viviano, Manfredi, & Busch 2003). The seizure of such land from private owners later



became legalized in 1994 when Costa Rica's Supreme Court ruled in favor of the government, with the condition that private owners be fairly compensated. As a result of these efforts, today Costa Rica has an impressive system of protected areas that covers approximately 25% of the country; however, only 5.4% of the acquired land had been paid for by 2000 (Busch, Sathaye, & Sanchez-Azofeifa, 2000), and as of 2016 an estimated \$1.5 billion USD was still owed (UNDP, 2016). In 1980, the Manuel Antonio Beaches National Recreation Park was slightly expanded and reclassified as a national park, in an attempt to protect it from tourism growth (Koens, Dieperink, & Miranda, 2009). MANP is one of 166 Protected Areas in Costa Rica, all under supervision of SINAC (System of Conservation Areas/Sistema Nacional de Areas de Conservación de Costa Rica). It is one of 59 Protected Areas that border a marine area, and one of 20 with protected marine areas (Alvarado, Cortes, Esquivel, & Salas, 2012).



**Figure 1.2. Aerial Photo of Manuel Antonio National Park (Travel Excellence, 2016)**

MANP has experienced rapid growth in visitor numbers, from 25,000 in 1982 to 192,000 in 1992 (Wong & Cahillo, 1996), and has seen an annual rate of increase of almost 6% since 2011 (Soto, 2015). For the past several years, MANP has been the most visited protected wilderness area in Central America (Rachowiecki, 1997; SINAC, 2016) with nearly 380,000 registered visitors in 2015. In 1994, high demand to visit the park resulted in the administration limiting the number of visitors to 600 on weekdays, and 800 on weekends and holidays. However, as visitors leave the park, more are allowed to enter and the total number of visitors often exceeds 1,000 daily, with higher numbers seen on weekends and holidays. Since there is no system to count visitors exiting the park, the exact number of visitors inside the park at any given time is only an estimate. In 2015, SINAC changed the park's operating hours to exclude Mondays as a stated preventative measure for the conservation, restoration, recovery and rehabilitation of the ecosystems of Manuel Antonio (Arias, 2015). Under normal conditions, the park is open Tuesday to Sunday from 7:00 a.m. to 4:00 p.m.

The park is a popular tourist destination for its renowned beaches, which have contributed to its ranking as one of the world's most beautiful national parks (Leveré, 2011). MANP consists of a system of hiking trails through rainforest that arrives at various beaches for swimming and snorkeling. The park offers a unique visitor experience due to its accessibility to both terrestrial and marine biodiversity and is often referenced as one of the most biodiverse parks on the planet (Myers et al., 2000).



**Figure 1.3. Map of Manuel Antonio National Park (Villascr, 2017)**

Another popular visitor attraction is the park's reputation for wildlife viewing, particularly multiple species of monkeys (Wong & Cahillo, 1996). MANP is home to three of the four monkey species found in Costa Rica and is reported to hold the single largest population of squirrel monkey (Arauz, 1993; Boinski, 1987; Wong, 1990; Wong & Carhillo, 1996). Moreover, MANP is the only protected area in Costa Rica that is within the natural habitat range of the endemic grey-crowned Central American squirrel monkey (*Saimiri oerstedii citrinellus*), a sub-species of the Central American squirrel monkey (Blair & Melnick, 2012).

Visitors are allowed to explore the park independently with limited supervision, which permits ample opportunities to interact with wildlife. Guided tours are available; however, the majority of visitors explore the park independently. Noncompliance of park rules and regulations are a recurrent problem and the limited park budget and personnel cannot adequately monitor and control depreciative behaviors. Park rangers are stationed at the main entrance to the park, at the old entrance to prevent illegal

entrance, leaving only a few to patrol the inside of the park. Communication of park rules is inconsistent and environmental interpretation is limited. Park rules are posted throughout the grounds, and at the entrance, but rules are often referred to as “recommendations” and largely only communicated via posted signage. At the Coopealianza office, where entrance tickets to the park are sold, many visitors receive bilingual (Spanish/English) brochures that include general information about the park, a map, and visitor “recommendations.” However, park rules (i.e., recommendations) are inconsistent from one language to the other. See Appendix A for a list of the brochure’s recommendations in English and translated to English from Spanish.

Due to decades of visitors viewing, feeding and interacting with wildlife, the park now faces several related management issues. Few quantitative studies have examined the ecological effects of tourism and development on animals in protected areas in tropical regions; however, one study in MANP found that white-faced capuchin monkeys’ interactions with humans had contributed to changes in their social and foraging behavior (Van Hulle & Vaughan, 2009). Similar to other Costa Rican parks, white-faced capuchins in MANP have become highly habituated and unafraid of humans, resulting in aggression towards humans, and theft of unattended objects (Hall, 2000). Other observed changes in MANP’s white-faced capuchin populations include changes in diet, activity patterns and ranging behaviors, all of which can have consequences for their population and the park’s ecosystem. Kauffman (2014) observed that approximately 46% of the species diet consists of human food. White-faced capuchins play an important ecological role in the region as seed dispersers and predators of insects, and changes in their diet and ranging behaviors could have direct impacts on the ecosystem

as a result (Wehncke, Hubbell, Foster, & Dalling, 2003).

Feeding wildlife in MANP officially became illegal in December 1992 with the passing of Law No. 7317 (Wildlife Conservation Law). However, little was done to impede feeding wildlife until April 2016, when new rules restricted the type of food allowed in the park. The new regulations only permit pre-made, individual packaged sandwiches, individual portions of fruit, and water. Exceptions are made for small children and individuals that require special diets (e.g., have medical conditions). Park rangers inspect visitors' bags and personal items at the park entrance, yet it is common to see prohibited items consumed by visitors and wildlife inside the park. See Appendix A for a list of MANP visitor rules.

A multivariate analysis regarding visitors' decisions and perspectives has never been conducted in MANP, nor Costa Rica (SINAC, 2016). However, an extensive literature review found one study conducted in 1998 (Kauffman, 2014) that examined the effects of tourism on one troop of white-faced capuchin monkeys in MANP and related those changes to visitor perceptions of the same species of monkey in the park. The same study reported that local residents and actors who had been involved with the park for a number of years reported significant changes in MANP and the surrounding areas in terms of development and population. These changes are most likely related to the exponential rate of growth in tourism infrastructure (e.g. restaurants, hotels) and local population (Wong & Cahillo, 1996). Because of the expansion of the built environment, the surrounding natural forests have become increasingly fragmented and reduced, and despite reforestation efforts in the area, the expansion of oil palm plantations and cattle

ranching means MANP is rapidly becoming more isolated with decreased ecological connectivity (Broadbent et al., 2012).

In addition to MANP's rich levels of biodiversity and being the only protected area within the natural range and habitat of the endemic squirrel monkey, MANP is economically important for Costa Rica's other protected areas. According to SINAC, MANP generates 60% of the funding provided to the institution, which partly ensures the economic sustainability of the institution and provides funding for country's national park system. This revenue is generated through a visitor fee system that charges \$16.00 USD for foreign visitors over the age of 12, and \$1,600.00 Colones, or approximately \$3 USD for domestic visitors over the age of 12. Therefore, there is increased pressure to ensure the ecological quality and protection of the park's natural resources and beauty to continue attracting visitors to the park, and subsequently help finance the country's national park system.

## **1.6 Geographic Discipline**

This dissertation falls within the specific field of behavioral geography. Behavioral geography is an approach to human geography that considers and incorporates cognitive processes underlying human behavior. Research typically focuses on behavior at the individual level, rather than a societal or group level. This is an approach in human geography that considers individuals' perceptions and interactions with the environment in regards to their behavior, giving it similarities to other interdisciplinary fields of study such as environmental psychology.

## **1.7 Organization of Dissertation**

This dissertation contains five chapters. Following this introductory chapter, Chapter 2 reviews Schwartz' (1977) Norm Activation Model (NAM) and will synthesize existing research that has employed NAM and the role of personal norms in predicting and influencing ERB. Chapter 3 will detail the methods utilized in the research, and Chapter 4 provides an analysis of the data collected. Chapter 5 presents a discussion of the results, summarizes the research, and provides an outline of implications and recommendations for future research.

## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter summarizes the key theoretical literature and research that supports this study of personal norms and antecedents of environmentally responsible behaviors (ERB) of visitors in Manuel Antonio National Park, Costa Rica. To accomplish this purpose, the research examined concepts proposed by the Norm Activation Model (Schwartz, 1977) and perceptions of visitors to the park. This literature review describes the interrelated facets of this research project. This chapter is divided into three sections. Section one describes the Norm Activation Model (NAM), discusses its components and examines how the model changed overtime. The second section examines the evolution of research that has utilized NAM in the context of environmental behaviors, and summarizes important findings and gaps in research. The third section presents the general paradigms of ERB and justifies how compliance of park rules should be considered an ERB in this study.

#### **2.1 Personal Norms and the Norm Activation Model**

Under the title Theory of Personal Norms, Schwartz (1968a, 1973) proposed a theory to explain why people choose to help others in some situations and fail to do so at other times. Emerging at a juncture where research questioned the role of social norms in explaining individual behavior, Schwartz (1968b) proposed that personal norms were the best predictor of behavior when an individual construes a decision to be a moral choice situation. A moral choice situation involves a decision regarding a behavior perceived to be right or wrong.



According to his theory, when an individual perceives a behavioral decision to be a moral choice situation two necessary conditions are required for the activation of personal norms. The first condition is that the individual has some awareness of the potential consequences (*awareness of consequences*) of his or her actions on others. The second condition is that the individual ascribes to him or herself some responsibility (*ascription of responsibility*) for the consequences of these actions. A person is more likely to feel an obligation to engage in behaviors or actions that would prevent or ameliorate the associated consequences when these two conditions are met. These feelings of obligation are referred to as *personal norms* (Figure 2.1).



**Figure 2.1. Original NAM Model (Schwartz, 1968a, 1968b, 1973)**

Also known as moral norms, personal norms are internalized norms that act as standards for behavior. While there is often an overlap between personal norms and predominant social norms, what distinguishes them is that sanctions attached to personal norms are tied to the self-concept and are self-sanctioning (Schwartz, 1977). Personal norms are not considered to be stable, but reconstructed and can change depending on the situational and emotional factors and cues that are present. From this perspective, every person has a unique structure of values, beliefs, attitudes, and experiences that influence their expectations and situational feelings of obligation (Leventhal, 1974). The activation of personal norms entails behavioral expectations coming into the decision making process, but does not require conscious awareness of their consideration (Schwartz, 1977). According to Schwartz (1968, 1973), when the two conditions are not

met, there is no expectation that the individual's personal norms will be activated, or that personal norms will influence behavior. When the two conditions are met, it is posited that individuals will have activated personal norms, and these may influence overt behavior.

### ***2.1.1 Evolution of Norm Activation Model Components***

In a later publication, Schwartz proposed an extended model entitled Personal Normative Influences on Altruism, more commonly known as the Norm Activation Model (NAM). Expanding on his earlier theory, the proposed changes in components and predictive variables were outwardly sensible, but also convoluted and characterized by a lack of clarity. Although seemingly irrelevant, the evolution of the model's components and its application in research has led to several interpretations of the model and potentially undervaluing the role of personal norms in explaining ERB. This section will explain the evolution of NAM components to justify these claims.

The original model's proposed components (Figure 2.2) were *Awareness of Consequences* (Schwartz, 1968a) and *Ascription of Responsibility* (Schwartz, 1968b). Although *awareness of consequences* was defined as the level of awareness of potential consequences of one's actions on others, it was measured as a person's disposition to become aware of the potential consequences of one's actions for the welfare of others. To measure *awareness of consequences*, respondents were presented with multiple short stories in which the main character faces a decision that has consequences for the welfare of others. Questions regarding the character and respondent's thoughts and feelings were coded for the extent of awareness of potential consequences of behaviors on the welfare of others.

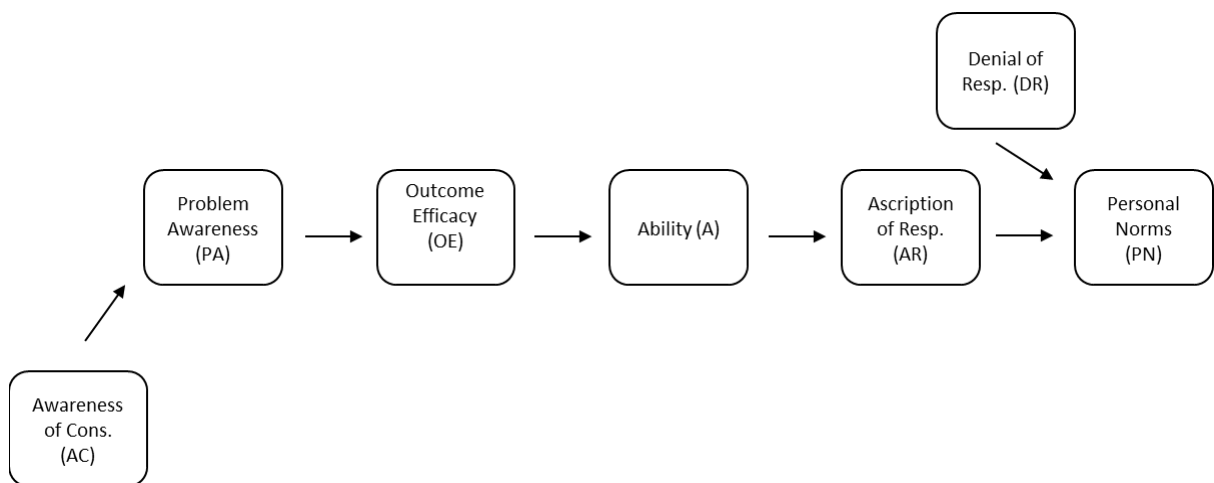
*Ascription of responsibility*, defined as ascribing some degree of responsibility to oneself for personal actions and their respective consequences (Schwartz, 1968b), was actually operationalized as a personal tendency to ascribe responsibility towards or away from oneself. *Ascription of responsibility* was measured through a set of items that referred to actions with interpersonal consequences and a rationale for ascribing responsibility away from the actor. In a later publication, Schwartz (1973) used the same scale to measure *Ascription of responsibility*, but more accurately indicated that *ascription of responsibility* measures the tendency to use a mode of defense to deny responsibility. In the extended NAM, Schwartz (1977) changes the location and role of this variable entirely within the model.

Variable	Acronym	Definition	Role
Awareness of Consequences	AC	A person's disposition to become aware of the potential consequences of one's actions for the welfare of others	Activator/ Independent
Ascription of Responsibility	AR	The tendency to use a mode of defense to deny responsibility	Activator/ Independent
Personal Norm	PN	Feeling of obligation to engage in a behavior or action that would relieve the needs or consequences	Dependent Variable

**Figure 2.2. Original NAM Variables (Schwartz, 1968a, 1968b, 1973)**

Building on his previous research, Schwartz's extended theoretical model again proposed to explain the generation of personal norms. However, the extended model involved four 'steps' in the activation process of personal norms, and two external variables (Figure 2.3 and Figure 2.4). The first step, *Problem Awareness*, refers to the extent to which the individual is aware of any potential or actual need of another

individual or group. While this variable is conceptualized the same as the original model's variable *awareness of consequences*, its operationalization differs significantly from Schwartz's (1968a, 1973) original variable. In the extended model, *Awareness of Consequences* becomes an external variable, not a necessary condition as previously proposed. It should be noted that many studies applying NAM have mistakenly used the label *Awareness of Consequences* in lieu of *Problem Awareness* (e.g., Blamey, 1998; Hopper & Nielsen, 1991; Hunecke, Blobaum, Matthies, & Hoger, 2001; Jacobs & Harms, 2014; Onwezen, Antonides, & Bartels, 2013; Schultz & Zelezny, 1998; Vaske & Whittaker, 2004). *Problem awareness* has also been referred to as *Awareness of Others' Need* (Schwartz, 1977), *Awareness of a person in a state of need* (Schwartz & Howard, 1980), and *Adverse consequences for valued objects* (Stern, 2000).



**Figure 2.3. Extended NAM Model (Schwartz, 1977)**

The second step is 'Perception that there are actions which could relieve the need.' It appears Schwartz never specifically labeled this variable, nor empirically measured or examined its effect on personal norms. The few studies that have acknowledged this variable have labelled it *Outcome Efficacy* and measured it as the extent to which an

individual is aware of actions that can relieve or ameliorate the need or perceived consequences (Harland, Staats, & Wilke, 2007; Steg & de Groot, 2010). Steg and de Groot (2010) proposed that in the context of environmental problems, due to the inherent large scale and collective nature of causes and solutions, this variable should also include the extent to which a person feels that his or her contribution will have any significance.

The third step involves the individual recognizing his or her *ability* to take one or more of the identified actions. This was the first time Schwartz explicitly included *ability* as an individual step in the norm activation process. Previous discussion of ability was limited to acknowledging that for activated personal norms to translate into overt behavior the individual would have to have the ability and opportunity to do so (Schwartz, 1968a). Similarly, it was proposed that individuals could only evaluate a decision as a moral choice when they perceive that they have some control over their actions (1968b), but a formal inclusion of such a concept was omitted from the previous model.

The fourth step is to ascribe some responsibility to become involved. These feelings of responsibility are distinct from personal norms. In this fourth step, the individual feels responsibility towards the consequences that the person or object of need faces. In contrast, personal norms are feelings of moral obligation to perform the acts that would relieve the need. In the extended model (1977), this interpretation replaces the previous definition of *Ascription of Responsibility*. The previous conceptualization of *Ascription of Responsibility* is re-assigned as a defense step and under a different label (i.e., *Denial of Responsibility*) in the extended model.

Once personal norms are activated, Schwartz proposes a series of defense steps where individuals consider potential costs of necessary actions and evaluate probable outcomes. Depending on the individual's evaluations and perceptions, if there is conflict (i.e., between one's personal norms and perceptions of costs and outcomes) individuals might attempt to neutralize feelings of obligation or the perceived seriousness of need. Schwartz proposes this denial step as an external variable, *Denial of Responsibility*. *Denial of Responsibility* is proposed to moderate the impact of personal norms on behavior through deactivating personal norms (Schwartz, 1977). This variable, as it is operationalized, was labeled *Ascription of Responsibility* in the original model.

The second external variable, *Awareness of Consequences*, is defined and measured the same as in Schwartz's previous studies (1968, 1968b, 1973). However, *Awareness of Consequences* is no longer posited to be a necessary condition for the norm activation process. Instead, it is presented as a personality variable representing the tendency to become aware of others' needs. When indications of need are clear and obvious, individuals are more likely to be aware of these needs, but when there is a low prominence of need, Schwartz (1977) posits that individuals with high *Awareness of Consequences* are more likely to become aware and experience activated personal norms.

<b>Variable</b>	<b>Acronym</b>	<b>Definition</b>	<b>Role</b>
Problem Awareness	PA	The extent to which an individual is aware of any potential or actual need of another individual or group	Activator / Independent
Outcome Efficacy	OE	Perception that there are actions which could relieve the need	Activator / Independent
Ability	A	Perception of the individual's own ability to take one or more of the identified action	Activator / Independent
Ascription of Responsibility	AR	Feelings of personal responsibility towards the consequences of one's actions (that are creating the need identified in PA)	Activator / Independent
Awareness of Consequences	AC	A person's disposition to become aware of the potential consequences of one's actions for the welfare of others	External/ Independent
Denial of Responsibility	DR	The tendency to use a mode of defense to deny responsibility	External/ Independent
Personal Norm	PN	Feeling of obligation to engage in a behavior or action that would relieve the needs or consequences	Dependent Variable

**Figure 2.4. Extended NAM Model Variables (Schwartz, 1977)**

### ***2.1.2 Differences between the Original and Extended Models***

There are a few important and notable differences between the early NAM model (Schwartz, 1968a, 1968b, 1973) and the extended model (1977). First, is the model's shift in focus regarding the level of specificity (Figure 2.1. and 2.2.). The extended model requires measuring antecedent variables on the same level of specificity as behaviors presented in the moral choice situation. This means when measuring an individual's personal norms for enacting a specific behavior, the antecedent variables should also correspond to the specific behavior. For example, when measuring personal norms for household recycling, *problem awareness* also needs to measure awareness of problems directly related to household recycling, and not measure awareness of larger scale environmental issues. This change is in conformity with the principle of compatibility, which advocates that the predictive power of concepts, such as attitudes, norms and beliefs are maximized when they are measured at the same level of specificity as the behavior (Ajzen, 2005; Ajzen & Fishbein, 2005).

Another change is the relocation of the two variables from the original model (i.e., *Awareness of Consequences* and *Ascription of Responsibility*). These variables are measures of personality traits unrelated to specific behaviors. The extended NAM maintains this conceptualization, but re-locates them as external, dispositional variables, and presents four situational variables in their place (i.e., PA, AR, OE, ability).

Dispositional variables are based on one's past experiences and are unique and individual in their nature. Although personality variables can influence individual's decisions to enact specific ERB, they are not the sole factor as proposed in Schwartz's



original model (1968, 1973). Additionally, in the extended model, the operationalization of these variables matches their conceptualizations.

This shift in focus from personality variables to situational variables is a pragmatic change since individuals are likely to engage in ERB and/or altruistic behaviors in one context and not another. Research indicates that ERB participation in one domain or context does not guarantee spillover to another (Thorgersen, 2006). Based on the premise of NAM, an individual will only form personal norms if he or she feels that the ERB corresponds to a moral choice situation. This implies that the factors contributing towards the activation of personal norms should also be relevant to the situation. The new variables in the extended NAM are more depictive of the theoretical underpinnings of personal norms proposed by Schwartz.

## **2.2 Norm Activation Model Studies beyond Schwartz**

Two foundational studies that utilized NAM to explain ERB were conducted before the extended NAM was published (Heberlein, 1971, 1977; Van Liere & Dunlap, 1978).

Heberlein (1971) was the first to apply NAM to study an ERB (i.e., littering). He concluded that when individuals are aware of the consequences of their actions (i.e., *Problem Awareness*) and feel responsible for those consequences (i.e., *Ascription of Responsibility*) they will behave according to moral norms rather than rational choice.

The details of his findings and the data collection procedures are available only in his unpublished dissertation. However, from published secondary sources it appears that the variables included in the study (AC and AR) were operationalized as *problem awareness* and *ascription of responsibility* from the extended model. Meaning, they were

operationalized to the same level of specificity as the dependent variable (i.e., littering behavior) and they were measured as situational variables, not personality traits.

Using a similar interpretation of NAM, Van Liere and Dunlap (1978) examined the relationship of *problem awareness* and *ascription of responsibility* on burning yard debris. Their results support the hypothesis that *problem awareness* and *ascription of responsibility* interact with each other in activating moral norms. They found that *ascription of responsibility* was the best predictor of behavior, and that *problem awareness* only had minimal influence on behavior. This is supported by other research, which indicates that knowledge and/or awareness of problems is not a sufficient condition to influence ERB (Bolderdijk, Gorsira, Keizer, & Steg, 2013; Kollmus & Agyeman, 2002). Although Van Liere and Dunlap (1978) operationalized their variables according to the compatibility principle (i.e., at the same level of specificity), they neglected to measure personal norms. Furthermore, they only used one item to measure *problem awareness*, and two items to measure *ascription of responsibility*.

Under the assumption that individuals would hold moral norms against behaviors that could present a threat to others, the authors included a pre-test question posing a hypothetical situation of whether or not the respondent would burn yard waste knowing that a neighbor had a severe asthma problem. Since only three of 38 respondents indicated they would burn, the authors concluded that there was sufficient evidence a moral norm was widely held, and the item was removed from the final interview. The practice of omitting the measurement of personal norms was relatively standard at the time (Heberlein, 1971; Schwartz, 1968a; Schwartz & Clausen, 1970). However, this

omission of personal norms from the study, failed to clarify the relationship between the model's activator variables, personal norms and behaviors.

Although these initial NAM studies only examined a partial interpretation of the model, they established a precedent for the use of NAM to explain ERB. Granting Schwartz (Schwartz, 1977; Schwartz & Howard, 1980) proposed that NAM could be used to explain the activation of personal norms in any moral choice situation, previous research had only focused on pro-social behaviors (i.e., bone marrow donation, volunteering behavior, and interpersonal behavior). These studies supported the model's ability to predict ERB and accordingly, that ERB could be considered a moral choice situation or an altruistic behavior (Ebreo, Hershey, & Vining, 1999; Hopper & Nielsen, 1991).

### ***2.2.1 Norm Activation Model Interpretations***

Although Schwartz described the four norm activation steps in the extended model (1977), he never empirically examined their role in activating personal norms. His studies only examined the earlier model's proposed necessary conditions (i.e., *Awareness of Consequences* and *Ascription of Responsibility*) and personal norms. Moreover, in further theoretical discussion, Schwartz (1977) does not mention *outcome efficacy* or *ability*, and no explanations for operationalizing the four activator variables are provided. These omissions, along with the change in names and placement of variables within the extended model, appear to have led to various interpretations of the model and the frequent exclusion of multiple variables in studies examining NAM (e.g., Bamberg & Möser, 2007; Ebreo et al., 1999; Milfont, Sibley, & Duckitt, 2009; Vaske, Jacobs, & Espinosa, 2015; Wynveen, Kyle, & Sutton, 2013).

The majority of studies that reference NAM largely interpret the model to include a minimal set of variables; only a handful of studies reference the missing proposed variables (Harland et al., 2007; Steg & de Groot, 2010). The NAM variables commonly accounted for are *problem awareness* and *ascription of responsibility* (e.g., Eriksson, Garvill, & Nordlund, 2006; Hopper & Nielsen, 1991; Stern, Dietz, Abel, Guagnano, & Kalof, 1999), typically measured and defined according to the extended model, though *problem awareness* is habitually mislabeled as *awareness of consequences*. The limited focus on *problem awareness* and *ascription of responsibility* has undeniably led many researchers to question the ‘completeness’ of NAM and therefore, several independent ‘extended’ models have been proposed (e.g., Bamberg & Moser, 2007; Blamey, 1998; Ebreo, 1999; Hopper & Nielsen, 1991; Stern, 2000; Stern et al., 1999).

Some of these studies report a positive correlation between NAM components and a specific ERB domain, such as recycling and waste reduction (e.g., Ebreo, Vining, & Cristancho, 2003; Hopper & Nielsen, 1991), reducing personal car use (e.g., Abrahamse, Steg, Gifford, & Vlek, 2009; Hunecke, et al., 2001; Nordlund & Garvill, 2003), support for environmental policy and environmental activism (Stern et al., 1999), and household energy use (Black, Stern & Elworth, 1985). Others report a positive correlation between personal norms and an index of environmental behaviors (e.g., Garling, Fujii, & Garling, 2003; Kaiser & Shimoda, 1999; Karp, 1996; Nordlund & Garvill, 2002; Stern, Dietz, Kalof, & Guagnano, 1995).

These studies support the use of NAM and personal norms in explaining a variety of ERB contexts, yet the relationships between the key concepts of NAM remain unclear (de Ruyter & Wetzels, 2000; de Groot & Steg, 2009). Not only do the number of

variables included in the model differ, but how they are defined, their proposed relationships, and their placement within the model. Some scholars define *ascription of responsibility* as feelings of responsibility for the consequences of actions (e.g., Bamberg & Schmidt, 2003; Hopper & Nielsen, 1991; Schwartz, 1977), while others define *ascription of responsibility* as *outcome efficacy*, the extent to which an individual perceives that his or her contribution will have an impact (e.g., Montada & Kals, 2000; Stern et al., 1999; Van Liere & Dunlap, 1978). Others have used the New Environmental Paradigm, a scale designed to measure general environmental concern, in lieu of *problem awareness* of a specific problem or need (Widegren, 1998).

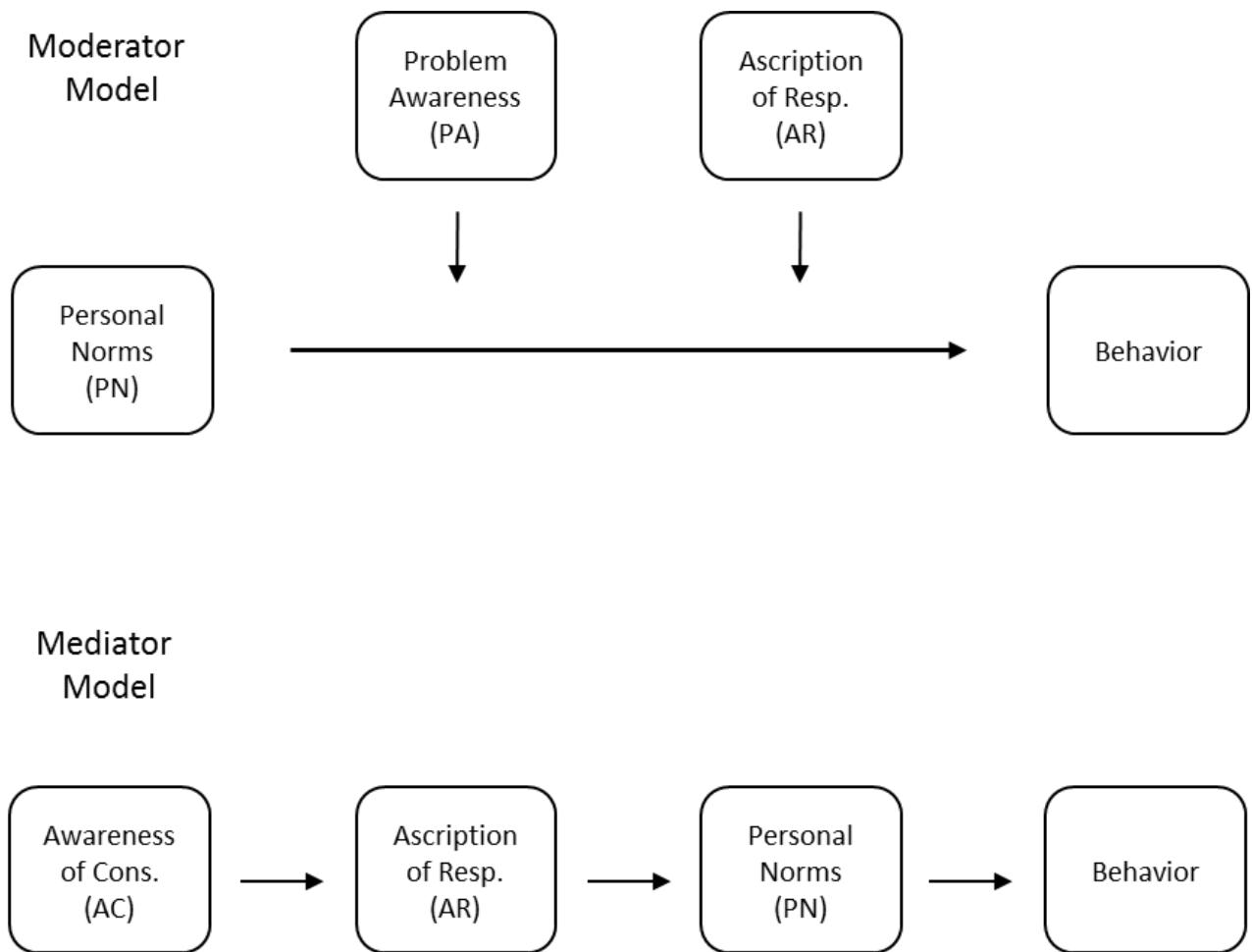
Some scholars interpret NAM as a moderator model, (Figure 2.5) where the relationship between personal norms and behavior is moderated by the activator variables (e.g., PA and AR) (e.g., Hopper & Nielsen, 1991; Schultz & Zelezny, 1999; Vining & Ebreo, 1992). Others interpret NAM as a mediator model where *problem awareness* influences *ascription of responsibility*, which influences personal norms, and personal norms influence behavior (e.g., Garling et al., 2003; Nordlund & Garvill, 2002, 2003; Steg, Dreijerink, & Abrahamse, 2005; Stern et al., 1999). Alternate interpretations of a mediator model have proposed that both *problem awareness* and *ascription of responsibility* influence personal norms, which then influences behavior (e.g., Bamberg & Schmidt, 2003; Harland et al., 2007).

Other scholars include social norms in their interpretation of NAM, proposing that personal norms are directly influenced by social norms (e.g., Black, Stern, & Elworth, 1985; Ebreo et al., 1999; Hopper & Nielsen, 1991). In contrast, Schwartz (1977) argues that social norms add little to the explanation of individual differences in helping

behavior provided by personal norms. Research suggests that at least in some behavior domains, social norms are not a significant predictor of behavior or personal norms (Ebreo, et al., 1999; Thorgersen, 2006). Nevertheless, social norms can have a role in influencing ERB. Ewing (2001) found that social norms were associated with whether or not individuals recycle in a neighborhood recycle study, but only personal norms were associated with how much and what kind of materials were recycled.

### ***2.2.2 Missing Norm Activation Model Variables***

Only three published studies have acknowledged the missing NAM variables, meaning much of NAM research has only tested limited and simplified versions of the model (de Groot & Steg, 2009; Harland, et al., 2007; Steg and de Groot, 2010). Harland et al. (2007) were the first to acknowledge all six NAM variables and present them in the same way as Schwartz (1977).



**Figure 2.5. Example of NAM Mediator and Moderator Models**

Despite some research design issues (i.e., low Cronbach Alpha scores, insufficient number of items for some constructs), their results suggested that *problem awareness* and *ascription of responsibility* do not provide a complete account of personal norm activation. In both of their described studies, the effects of *problem awareness* and *ascription of responsibility* were significantly reduced when *outcome efficacy* and *ability* were added to the regression models. Their results suggest that *outcome efficacy* and *ability* are not strictly facilitative, but do play a role in the moral reasoning process that leads to the activation of personal norms (Harland et al., 2007).

In addition to examining all four activator variables, Harland et al. (2007) conducted a separate study to measure *awareness of consequences* and *denial of responsibility* as proposed by Schwartz. They found that *denial of responsibility* was significantly related to their dependent variable (i.e., volunteering for an unknown environmental agency), but *awareness of consequences* was only marginally significant. Although this study did not include all four NAM activator variables, it was the first time the external variables were both tested together and in conjunction with any of the four extended NAM activator variables. In regards to the marginal level of significance found for *awareness of consequences*, the authors discuss the low reliability numbers obtained for this variable. Unfortunately, reliability scores for *awareness of consequences* have never been reported elsewhere to compare results.

De Groot and Steg (2009) also mention missing variables, specifically *outcome efficacy*, stating that it is often ambiguously defined as *ascription of responsibility*. Later Steg and de Groot (2010) acknowledge *ability* as a NAM construct, but fail to mention the external personality traits (i.e., *awareness of consequences* and *ascription of*



*responsibility*). The authors operationalized *ascription of responsibility* according to conceptualizations of both *outcome efficacy* and *ascription of responsibility*; however, both conceptualizations were never measured simultaneously. Their multi study findings suggest the need to distinguish between feelings of responsibility (i.e., *ascription of responsibility*) and perceptions of being able to control the outcomes of behavioral choices (i.e., *outcome efficacy*) as posited by Schwartz (1977). One of their experiments also support the argument that *ascription of responsibility* needs to focus on feelings of responsibility towards causing the problem, not engaging in the solution. The later results in a high correlation with personal norms, which are feelings of obligation to engage in perceived solutions to the problem.

### **2.3 From One Behavior Context to Another**

Although NAM was originally conceived to explain pro-social and altruistic behaviors, this literature review demonstrates its value in ERB contexts as well. ERB is a term describing any action, individual or group, directed toward remediation and prevention of environmental issues or problems (Sivek & Hungerford, 1990; Steg & Vlek, 2009). ERB can be motivated by a combination of self-interest and concern for other people, species, or ecosystems (Bamberg & Möser, 2007). Motivations to engage in ERB can be intrinsic and extrinsic, and involve economic, altruistic/moral, and social incentives and sanctions (Taberner & Hernandez, 2012). ERB can include general actions such as encouraging others to behave responsibly and supporting environmental conservation efforts, as well as specific actions such as recycling, purchasing environmentally friendly consumer goods, conserving energy and using alternate forms of transportation (e.g., Cottrell, 2003; Thogerson, 2006; Vaske & Kobrin, 2001). Other common terms for

ERB include pro-environmental behavior, environmentally friendly behavior and eco-conscious behavior.

A growing wealth of knowledge and understanding concerning situational and personality factors associated with ERB participation continues to emerge; however facilitating the adoption of such behaviors remains a key challenge for the behavioral and social sciences (Kollmuss & Agyeman, 2002; Lindenberg & Steg, 2007; McKenzie-Mohr, 2011). The literature on ERB is huge and addresses the issue from a variety of perspectives. While there are many factors that can actuate and influence individual ERB decisions, there exist two major research paradigms that differ largely by their attention on select antecedents and the origin of motivations.

The first paradigm takes a social-economic approach, on the assumption that individuals make behavior decisions based on perceived social and economic costs and benefits. Stemming from rational-choice theory, this perspective proposes that individuals make choices that maximize personal advantage (Friedman, 1953). Rational choice does not denote the colloquial definition of rationality (i.e., sensible, thoughtful or predictable), but refers to goal-oriented and consistent behaviors based on reasoned choices and alternatives with the highest benefits and lowest costs (Steg & Vlek, 2009). The Theory of Planned Behavior is a well-known theoretical framework stemming from this paradigm.

The second paradigm focuses on the role of internalized and moral factors posited to influence behavior. Research following this paradigm largely focuses on the role of individual values and value orientations (e.g., de Groot & Steg, 2007; Nordlund &

Garvill, 2002, 2003; Schultz & Zeleny, 1999; Stern & Dietz, 1994), environmental concern (e.g., Bamberg, 2003; Dietz, Stern & Guagnano, 1998; Fransson & Garling, 1999; Van Liere & Dunlap, 1980), and feelings of moral obligation (e.g., Schwartz 1977; Schwartz & Howard, 1984; Steg & Vlek, 2009; Stern, 2000; Stern et al., 1999) to predict and influence behavior. Theoretical models under the second paradigm differ largely from rational choice models by the internalized and personal orientation of antecedents and determinants of behavior. This research focuses on components from the second paradigm—internalized personal and moral norms of ERB. It defines ERB as behaviors that minimize, prevent and ameliorate the impact of tourist activities in Manuel Antonio National Park.

Behaviors that minimize and prevent negative impacts of tourism in MANP are synonymous with many of the MANP visitor rules. Although enacting these behaviors could be considered rule compliance rather than voluntary behavior, this study argues that under conditions current at the time of this study, rule compliance in the park is comparable to voluntarily behaving in an environmentally responsible manner. Compliance can be defined as performing an act or action that one has been asked or ordered to do. This study reasons that a combination of factors such as lack of communication of park rules, minimal enforcement of rules, and negligible use of sanctions for rule violations has resulted in a very low cost for both compliance and non-compliance. As a result, the threat of sanctions for failing to comply with park rules is minimal, many visitors are unaware of potential sanctions, and awareness of park rules varies greatly among visitors. Thus, with minimal or no threat of potential sanctions for not complying with park rules, and the general lack of awareness of rules creates a

situation where non-compliance poses little costs for visitors. Moreover, voluntarily obeying rules, regardless of any temptation to disobey them, is a voluntary action (Gramann, Bonifield, & Kim, 1995; Gramann & Vander Stoep, 1987); and in outdoor recreation settings the probability of being detected and punished for violating regulations is often very small (Christensen, Istvan, & Sharpe, 1992).

In addition, there exists much theoretical overlap in explaining motivations for both ERB and compliance behaviors. Literature on compliance of environmental regulation suggests there are three general motivations to comply: calculated, social and normative (Burby & Paterson 1993; Levi, 1989; Tyler, 2006). The first two motivations are similar to the first ERB research paradigm. Calculated motivations, which have been studied the most, include perceived costs of compliance, likelihood of detection, and likelihood of fine (Peterson & Diss-Torrance, 2014). The second general motivation is social; the desire of individuals to enact behaviors or actions that will gain the approval of other people (i.e., significant others) they consider to be important (Cochran, Chamlin, Wood, & Sellers, 1999; Grasmick & Bursick, 1990). Significant others can include family, friends, co-workers, peers, advocacy groups, and others. Social motivation is commonly referred to as subjective or social norms in ERB research (e.g., Ajzen, 2005; Cialdini 2007; Fishbein & Azjen, 2010).

Social motivations and norms are postulated to become internalized over time, resulting in the normative motivation for compliance. The normative motivation derives from a combined sense of moral duty and agreement with regulation importance (Peterson & Diss-Torrance, 2014). In compliance literature the normative motivation is also labelled normative commitment (Burby & Paterson, 1993), moral or ideological compliance

(Levi, 1997, 1989; McGraw & Scholz, 1991), commitment based on civic duty (Scholz & Lubell, 1998; Scholz & Pinney, 1995), and perceived obligation to comply (Tyler, 2006). The normative motivation follows the second ERB research paradigm. In ERB literature, normative motivation is often labelled personal or moral norms, and conceptualized as feelings of personal or moral obligation to engage in a particular action or behavior.

Similar to ERB, persuading compliance is not an easy task; in many cases, the main reason for non-compliance is a lack of knowledge (Lancaster, Dearden, & Ban, 2015), yet, knowledge and awareness is not sufficient to ensure compliance (Campbell, et al., 2012). Both visitor management and compliance research support the use of normative motivation strategies that strengthen the moral incentive to comply rather than strictly focus on the regulatory process that can create feelings of oppression and lack of control (e.g., Braithwaite, Murphy, & Reinhart, 2007). Earlier studies found that knowledge of sanctions, anti-litter propaganda, and plentiful trash receptacles had no impact on reducing littering (Burgess, Clark, & Hendee, 1971; Clark, Burgess, & Hendee, 1972; Heberlein, 1971). Kim (1990) found that potential park visitors who were provided information regarding the reasoning behind regulations for an outdoor recreation setting had higher intentions to comply than other participants that were only informed of potential sanctions, and participants that were exposed to both treatments (i.e., reasoning behind regulations and potential sanctions).

There is also direct support for the inclusion of normative messages and appeals to encourage visitors to behave in an environmentally responsible way and comply with protected area and/or national park rules (Brown, Ham, & Hughes, 2010; Jacobs &

Harms, 2013; van Riper & Kyle, 2014). Hockett and Hall (2007) found that moral appeals to visitors at Shenandoah National Park reduced self-reported frequencies of deer feeding. Shelton and Rogers (1981) found people responded more strongly to anti-whaling messages that depicted suffering than ones that did not. Ham and Weiler (2005) found signs focusing on moral norms were superior to most other treatments to persuade national park visitors to stay on designated trails. Ballantyne, Packer and Hughes (2009) found that communicating the reasons behind regulations, presenting consistent messages regarding responsible actions and treating visitors as conservation partners were more likely to be successful.

Research supports the inclusion of visitor management strategies that utilize and incorporate normative motivations and personal/moral norms, thus creating a necessity to understand the variables and factors that contribute to the development and activation of internalized motivations and norms. Drawing from social psychology models used to explain pro-social behaviors, multiple theories have emerged over the last several decades to explain the development of personal/moral norms, and their ability to predict ERB. One of the most predominant theories used to explain and predict the activation of such norms is the Norm Activation Model (NAM) (Schwartz, 1968a, 1968b, 1973, 1977).

## **2.4 Summary**

Research supports the association between personal norms and altruistic behaviors in both a social and environmental context (i.e., ERB) when the individual considers the behavior to be a moral choice situation, as is proposed in Schwartz's NAM (1977).

NAM has been successfully used to explain the activation of personal norms and their

role in predicting and explaining a wide range of ERB. Many of these studies support the role of *problem awareness* and *ascription of responsibility* in activating personal norms; however, a lack of theoretical clarity has resulted in various interpretations of the model's proposed variables and their relationships.

As a result, it remains unclear how personal norms are formed and which factors contribute to their activation. Schwartz (1977) proposed an extended version of NAM, making many logical adaptations to his earlier model (1968a, 1968b, 1973), however no empirical examination of the full extended model has yet to be performed. One study included OE and ability alongside *problem awareness* and *ascription of responsibility*, with results supporting the inclusion of the missing variables in the activation of personal norms (Harland et al., 2007). Yet, the role of NAM's two external variables, *awareness of consequences* and *denial of responsibility*, remains unclear. The same project included these external variables in an ERB context but with an incomplete set of activator variables (Harland et al., 2007). Further research is needed to better understand the role of these variables, and their relationship with personal norms and activator variables. Furthermore, additional research is needed to improve the understanding and development of methods and tools to measure the two external variables.

Commonly, research that has failed to find a significant association between personal norms and ERB, and therefore reject Schwartz' NAM, has employed problematic research methods. These issues involve examining an incomplete NAM interpretation, lack of construct reliability and validity (e.g., insufficient items for creating composite variables, low Cronbach alpha coefficients), ambiguous interpretation and operationalization of the model's concepts. Another common research issue is the

measurement of ERB. The best indicator is observation of overt behavior (Corral-Verdugo, 1997; Ebreo & Vining, 2002), however, this remains a major logistical challenge. Most studies rely on self-reported behavior (e.g., Vaske & Kobrin, 2001), behavior intentions (e.g., de Groot & Steg, 2009), and behavioral commitment (e.g., Cottrell, 2003) in lieu of overt behavior as a measurement of the dependent variable.

Thus, while there is overwhelming support for the use of NAM to explain and predict personal norms and their association with ERB, there remain many gaps in research in order to improve our understanding of the activation of personal norms, identify the strongest activator variables, and understand which variables support the activation of personal norms, and which prevent the translation of activated personal norms into overt behavior. As the literature review supports, empirical studies that have utilized NAM provide some initial guidance on variables that motivate individuals to act in an environmentally responsible manner, but further research is necessary to provide the key to promoting behavioral change.



## CHAPTER 3

### RESEARCH DESIGN

The focus of this research is to empirically examine variables from the extended NAM model to clarify their role in the norm activation process. This includes the measurement of activator variables *problem awareness*, *ascription of responsibility*, *outcome efficacy*, *ability*, and external variables, *denial of responsibility* and *awareness of consequences*. Conceptualization of all variables will be based on research and findings from seminal studies in the field of ERB research, as well as Schwartz' (1977, 1980) proposed conceptualizations. Operationalization of variables will be based on current standards in the field of survey research and statistical analysis. This study also aims to use observed behavior as a measurement of the dependent variable in lieu of less reliable measurements (e.g., self-reported behavior, behavior intentions). A preliminary study was conducted over a three-week period during March and April of 2016 and the collection of data used in this study was completed between August 23 and September 10 of 2016.

The purpose of this chapter is to provide a detailed overview of the research tools used in the data collection process of this study. This study utilized a survey and participant observation. This chapter will first detail the survey instrument that was used as the primary source of data collection. This section describes the instrumentation process, questionnaire layout, item sequence and wording choice, as well as specific measures taken to prevent social desirability bias. Second, a comprehensive description of the operationalization of each NAM variable is provided. Justification for the

conceptualization and operationalization of variables is included and based on empirical results from previous studies. The third section describes the participant selection process, size and procedure. This is followed by a description of the participant observation methods used in this study, which is followed by a brief description of the use of human subjects.

### **3.1 Survey Instrument**

A survey was considered the most appropriate form of data capture for this study.

Surveys can be used in a scientific way to realize the great benefits of interviewing a representative sample instead of the whole population (Salant & Dillman, 1994).

Advantages of using a survey as the primary data collection tool for this study include being cost efficient to collect data from a larger sample size (i.e., over 400 participants), no interviewer present meaning respondents tend to be more willing to answer honestly and share information, allows real-time access to respondents (e.g., immediately after a human-wildlife interaction or rule violation) when personal norms are proposed to be activated, less time needed to gather information from respondents, good response rates, low levels of inconvenience and burden on respondents, and participant anonymity.

Self-administered questionnaires included items to measure all NAM components, self-reported behaviors, personal values, rule awareness, ecological worldview (i.e., New Environmental Paradigm), visitor data (e.g., with whom visiting, expectations) and visitor demographics (e.g. age, sex, education, residence). Respondents were identified through a participant identification number, not by personal identifying information. The hard copies of questionnaires are stored in the researcher's office and will be destroyed after five years. The entered data from the questionnaires are stored on the researcher's

personal computer and protected with a password. Questionnaires follow a standard format for onsite self-administered questionnaire (Salant & Dillman, 1994; Vaske, 2008), printed on an 11 x 17 (ledger size) sheet of paper, and folded once in a booklet format. Each side has one column of questions/items.

Likert-type scale items are a common measurement tool in tourism and ERB research. Likert (1932) proposed a summated scale for the assessment of respondent's attitudes. Likert's sample scale had five response options: strongly approve, approve, undecided, disapprove, and strongly disapprove (Clason & Dormody, 1994). The fixed choice response format is designed to measure attitudes or opinions as an ordinal scale that measures the respondent's level of agreement/disagreement with a statement (Bowling, 1997). These scales are based on the assumption that the respondent's strength or intensity of experience is linearly located on a continuum (i.e., level of agreement/disagreement), and that latent concepts (i.e., attitudes and norms) can be measured. The numerical scale used in Likert-type scales is arbitrary, but is familiar to respondents, works well in practice, is conventional to score responses, and has the advantage that responses can be summed to obtain a score (Cramer & Howitt, 2004).

Indicators are an observed value of a variable and specify how a concept is measured (Vogt & Johnson, 2015); there can be single-item (i.e., one survey question) or multiple-item indicators (i.e., multiple questions or variables). Although single-item indicators can be advantageous in certain situations, there are many advantages to using multiple-item indicators when measuring psychological attributes (Gliem & Gliem, 2003). First, single-item indicators tend to have considerable random measurement error, and therefore are less reliable. With multiple-item indicators, measurement error averages

out when individual scores are summed to obtain a total score (Nunnally & Bernstein, 1994). Second, a single-item indicator cannot discriminate among fine degrees of an attribute or concept (Gliem & Gliem, 2003). Third, measuring a concept with only one question does not always reflect the full meaning and depth of most concepts (Vaske, 2008). Multiple indicators are necessary to contribute to a more sophisticated and comprehensive representation of concepts. This also facilitates the tasks of measuring abstract concepts as empirical indicators (Vaske, 2008). McIver and Carmines (1981) conclude that the most fundamental problem with single-item indicators is not their tendency to be less valid, less accurate, and less reliable, but that they rarely provide sufficient information for scientists to estimate their measurement properties. Therefore, in reality, the degree of validity, reliability, and accuracy of single-item indicators is often unknown. Additionally, a summated scale such as the Likert-type scale, implies that multiple items will be combined or summed (Spector, 1992).

In this study, Likert's scales were used when applicable in the questionnaire, and for all NAM constructs. All scaled items included a 7-point range, except for personal values, which followed the standard 9-point range. Scale items with more response categories are increasingly likely to produce response distributions with a wider spread than those with fewer categories (Miller, Chepp, & Padilla, 2014). All batteries of items in the questionnaire used in this study were multiple-item indicators, with a minimum of four items.

### **3.2 Measurement of Variables**

For this study, variable refers to the indicators or empirical measures of concepts.

Concepts are the latent constructs that are being measured, and can be considered the

building blocks of theories. Concepts are abstract elements, or mental images of reality, for example, norms, attitudes, perceptions, and beliefs. Variables, or items, are the questions that are included in a survey. In order to accurately measure concepts, they must be accurately conceptualized and operationalized. Conceptualization is the process of specifying precisely what is meant by the use of particular concepts (Vaske, 2008). Once the proposed concepts are conceptualized they can be operationalized, which is the process of defining how to measure the concepts. When operationalizing latent concepts, that cannot be observed or directly measured, it is important to design items that accurately measure the conceptualization of the concept. During the data analysis process various steps will be taken to test for the reliability and validity of the items used to measure the proposed theoretical concepts.

### ***3.2.1 Instrumentation***

The questionnaire and measurement scales were developed on the basis of the literature review, the objectives of this study, and from previously empirically tested scales. Variables were conceptualized and operationalized on the basis of existing research across ERB, compliance, and tourism research. For most of the items, a 7-point Likert scale (i.e., very strongly disagree to very strongly agree) was used. As mentioned, this scale is a common way to measure social concepts (Singleton & Straits, 2005), as simple yes/no items do not provide sufficient information to account for precision and reliability (Spector, 1992). For reliability and validity purposes, survey items were adapted from empirically tested items reported in literature. To ensure reliability and validity, items should be clear, easily readable, with appropriate vocabulary, (e.g., 8<sup>th</sup>

grade level), brief and understandable (O'Sullivan, Russel, & Berner, 2003; Salant & Dillman, 1994).

To develop the items and scales used in this study, all efforts were made to follow the current best practices in scale development research. Those practices include determine and define clearly what will be measured; generate pool of items; determine the format of the items; peer review of items; consider inclusion of validation items; pre-test of items; item evaluation; and optimize scale and questionnaire length (Worthington & Whittaker, 2006). Each item included in the questionnaire was carefully chosen and worded to ensure the items reflected how the concept was conceptualized (i.e., measurement accuracy), they contributed to the overall content validity of the concept being measured, and were intelligible to the intended audience. Every effort was made in drafting items to ensure they were clear, concise and distinct, as is the objective and end goal of items used to measure scales (Anastasi, 1988; DeVellis, 2003). A good scale is valid, reliable and precisely measured (Nunnally & Bernstein, 1994).

### ***3.2.2 Questionnaire Layout and Sequence***

The format of a questionnaire is very important as it can heavily influence the quality of the data (Sanchez, 1992), the ease with which respondents are able to complete the questionnaire (Bradburn, 2004), and the respondent's motivation to complete the questionnaire (Aaker et al., 2012). Questionnaires should also minimize respondent burden by keeping the time required to complete questionnaires to a minimum, offer clear directions, and decrease the time that respondents need to think about questions (Salant & Dillman, 1994). The use of simple and direct questions also can help build the respondent's confidence in their ability to complete the questionnaire. The questionnaire

for this study utilized several empirically tested strategies to minimize respondent burden and improve the quality of data collected. These include (1) start with an interesting, easy, and relevant question; (2) never start with demographic questions; (3) segment the questionnaire by logical sections of groupings of similar questions; (4) use transitions and clear directions to guide respondents; (5) minimize the use of skip patterns; (6) use of sequential numbering of questions; (7) and use consistent formatting (Vaske, 2008).

The questionnaire used in this study began with an Institutional Review Board (IRB) approved text to the respondent that indicated the purpose of the study, the significance of the participant's contribution, a guarantee of their anonymity, and that participation is voluntary. The purpose of the study communicated to participants was to "learn about nature-based tourism experiences in MANP." IRB at University of Hawai'i Mānoa (UHM) authorized the use of a less descriptive purpose, as informing participants that the underlying objective of the study was to examine the psychological antecedents of visitor compliance with park rules, would have most likely guaranteed a high level of social desirability bias in responses.

After the initial text, the questionnaire began with broad questions regarding the participant's visit that required little effort to complete. This section was followed by self-reported behaviors, which was placed early in the questionnaire in attempt to prevent social desirability bias. This section was followed with more detailed and focused items related to the different NAM components. The following section included items to measure visitor awareness and knowledge of MANP rules. Knowledge can be measured in four ways: (1) true-false questions, (2) multiple choice questions, (3) open-

ended questions, (4) and self-reported knowledge (Fowler, 1995). This questionnaire used a type of true-false questions (i.e., with an unsure option) about park rules, and a series of close-ended items with unordered response choices used to obtain when and where respondents learned about park rules.

Demographic questions were included in the last section of the questionnaire. Due to the personal nature of demographic questions, some questions can be considered embarrassing and sensitive (Malhotra, 2009), and should be included at the end to increase respondent participation (Burns & Bush, 2014; Robertson & Sundstrom, 1990; Vaske, 2008). More sensitive demographic questions, such as income, were entirely avoided as they were considered dispensable for the purposes of this study.

### ***3.2.3 Wording***

Questionnaire sections that included items regarding park rules were prefaced with a brief text informing the respondent that MANP has visitor rules “in order to not put wildlife at risk, and prevent environmental impacts of tourism activities.” Throughout the park, rules are inconsistently referred to as recommendations, regulations and rules on various maps, interpretation signs and information brochures available to visitors. In order to prevent confusion, ambiguity, and potential bias in questionnaire responses and data, the questionnaire consistently utilized the phrase “park’s visitor rules.”

Technical jargon was avoided to ensure comprehension and facilitate completion (Burns & Bush, 2014; Vaske, 2008). All items consisted of no more than 20 words, except for one item with 21 words, to prevent respondent fatigue and facilitate comprehension (Aaker et al, 2012; Dillman, 2000; Vaske, 2008). Additionally, several other wording situations were avoided to facilitate comprehension and reduce respondent confusion,



such as the use of double negatives, vague quantifiers, and double-barreled questions (Bradburn, 2004; Groves et al., 2009; Vaske, 2008). Furthermore, items and directions were not written in a leading or loaded manner to influence bias by suggesting certain answers were preferred (Aaker et al., 2012). For example, directions were presented as “to what extent to you agree or disagree with the following statements” rather than “to what extent do you agree with the following statements.” Similarly, Likert’s scaling included a middle category of “Neither Agree Nor Disagree,” in recognition that using “neither” can signify something different than “no opinion” (Blasius & Thiessen, 2001).

#### ***3.2.4 Social Desirability Bias***

Social desirability bias can be a significant problem in survey research (Bradburn, 2004). Social desirability bias is when participants respond to questions in a way that is not reflective of their true feelings or ideas, but in a manner that they view to be more culturally acceptable. This form of response bias is believed to occur for a few reasons, such as respondents distorting answers to make themselves look better or avoid making themselves look bad (Fowler, 1995). In addition, questions could pose a threat to respondents (e.g., inquire about illegal drug use) (Fowler & Cosenza, 2009), and response distortion may stem from the participant not wanting to view him or herself in association with the most accurate answer. It is fundamental to understand that social desirability bias is not influenced by sensitive questions, but with perceived sensitive responses (Fowler & Cosenza, 2009).

This study included a variety of empirically proven strategies to reduce participants’ social desirability bias. The researcher verbally assured each participant that their participation was voluntary and completely anonymous, in addition the introductory text

on the questionnaires offered a guarantee of complete anonymity of participants.

Similarly, the researcher did not remain in the immediate vicinity or presence of the participants while they completed the questionnaire (Brener et al., 2006; Turner et al., 1998). Assuring participant anonymity and confidentiality has been demonstrated to lower the effects of social desirability bias (Paulhus, 1991).

The use of questions and items that elicit sensitive answers is known to increase social desirability bias (Fowler, 1995). This study omitted sensitive demographic questions there were considered irrelevant for data analysis purposes. Questions regarding self-reported rule violations were presented early in the questionnaire, before respondents were presented with other questions regarding opinions, perceptions and knowledge of the park visitor's rules. Wording was also chosen carefully, as wording and order of items is known to affect social desirability bias (Groves et al., 2009).

There also exist specific scales that can be utilized to measure the likelihood of social desirability bias in respondents. This study did not select to utilize such a scale. To use the scales, it would have been necessary to include many additional items, often more than one or two dozen depending on the scale used. This would have added considerably to the length of the questionnaire instrument and presented an additional time burden on the respondents, which might have negatively affected response rates.

Another strategy is to emphasize the importance of accuracy (Fowler, 1995). The researcher clearly expressed to participants that the project was independent from the National Park Service, the Government of Costa Rica, and was an independent project as part of the researcher's program of study at the University of Hawai'i; however, their

responses would contribute to improving the management of the park via recommendations produced from the study, and therefore, their most honest and accurate responses were a priority. Other strategies used included avoid asking for information respondents might not have by offering an answer response option of “not knowing” (Bradburn, 2004). The use of leading, loaded or slanted questions and introductory texts were also avoided (Vaske, 2008). The participant observation requirement of this study also served as a measure of social desirability bias as self-reported behaviors are able to be compared to observed behaviors.

Additionally, every effort was made for the researcher to blend in with other park visitors, and a limited explanation of the study’s objectives was provided. For example, visitors were told that the objective was to improve visitor experiences and park management practices. Visitors were also not informed of the participant observation component of this study, per IRB permission.

### **3.3 Operationalization of Variables**

This study includes multiple latent concepts (Figure 3.1). The dependent variable changes depending on the specific analysis and research questions/hypotheses addressed, and include overt behavior, self-reported behaviors, and personal norms. Independent variables include problem awareness (PA), ascription of responsibility (AR), outcome efficacy (OE), ability (A), awareness of consequences (AC), denial of responsibility (DR), personal values, value orientations, rule awareness and knowledge, visitor expectations, demographics, and visit characteristics. The following section details the conceptualization and operationalization of the key concepts included in this study.

<b>Concept</b>		<b>Conceptualization</b>	<b>Role in NAM</b>
Problem Awareness	(PA)	The extent to which an individual is aware of potential adverse consequences of visitor behaviors in MANP	Activator variable / Situational variable
Outcome Efficacy	(OE)	The extent to which an individual perceives there are actions that can prevent/ameliorate the consequences of visitor behavior in MANP, and whether or not his or her actions will have any significance	Activator variable / Situational variable
Ability	(A)	The extent to which an individual perceives he or she is able to take one or more actions identified in OE	Activator variable / Situational variable
Ascription of Responsibility	(AR)	The extent to which the individual has feelings of personal responsibility towards the consequences of adverse consequences of visitor behavior/tourism in MANP	Activator variable / Situational variable
Personal Norm	(PN)	The extent to which an individual has feelings of personal (moral) obligation to engage in actions that can prevent or ameliorate impacts of visitors in MANP	Dependent Variable
Awareness of Consequences	(AC)	Individual tendency to become aware of the consequences of one's actions, on others, wildlife and the environment	External variable/ Personality variable
Denial of Responsibility	(DR)	Individual tendency to accept rationales for denying responsibility for the consequences of one's actions/behavior	External variable/ Personality variable

**Figure 3.1. Conceptualization of NAM Variables**

All proposed NAM components posited to influence the activation of personal norms were measured at the same level of specificity. This was measured as behaviors that will reduce, prevent and/or ameliorate negative impacts of tourist behaviors in MANP, with a focus on problems associated with feeding and interacting with wildlife, which are considered by park personnel to be the most problematic behaviors in the park. Table 3.1 provides a visual summary of the concepts included in this study.

### ***3.3.1 Problem Awareness***

Problem awareness measures the extent to which an individual is aware of potential adverse consequences of visitor behaviors in MANP. This concept did not measure to what extent visitors feel that these impacts exist, but whether or not visitor behaviors have the potential to result in adverse impacts. Adverse consequences can range from erosion from walking off established trails, disease and health problems in wildlife due to the illegal feeding of wildlife, habituation of wildlife from feeding and/or interacting with wildlife, and consequences that can impact the perceived aesthetic beauty of the site (e.g., littering, smoking, removing natural artifacts such as shells). Items were measured on a Likert's 7-point scale. Respondents were asked to indicate to what extent they disagree or agree with each of the following statements (Figure 3.2).

<b>Variable</b>	<b>Item Statement</b>
PA 1	It can be harmful to feed wildlife
PA 2	It can be harmful to touch wildlife
PA 3	Visitors can contribute to changes in wildlife behavior
PA 4	Feeding wildlife can be dangerous for humans
PA 5	Making noise to attract wildlife can be dangerous for humans
PA 6	Visitors can harm the park's natural environment

**Figure 3.2. Questionnaire Items for Problem Awareness**

### ***3.3.2 Outcome Efficacy***

Outcome efficacy is defined as the perception that there are actions that could relieve the need. Specifically, it is the identification of effective solutions to the problem (i.e., adverse consequences of visitor behavior), and the perceived potential contribution of personal behavioral decisions. In other words, it is the extent to which individuals are aware of actions which could ameliorate, prevent or reduce negative consequences of visitor activities and behaviors in MANP. This study is incorporating a proposed element (Steg & de Groot, 2010) in this conceptualization, which is the extent to which a person feels that his or her contribution, or engagement in the identified actions, will have any significance in reducing the perceived adverse consequences. In this study, the desired perceived actions were following the park's visitor rules, which could include following park rangers' recommendations. This concept was measured with a 7-point Likert's scale, and respondents were asked to what extent they disagree or agree with the following statements (Figure 3.3).

<b>Variable</b>	<b>Item Statement</b>
OE 1	Following the park's visitor rules protects the natural environment
OE 2	Following the park's visitor rules helps protect wildlife
OE 3	My personal actions are too small to make any significant impact on the park's environment
OE 4	The actions of one person can reduce the negative impacts of tourism in the park
OE 5	Following park ranger recommendations helps to minimize the negative impacts of tourism in the park
OE 6	I think we can prevent the negative impacts of tourism in this park

**Figure 3.3. Questionnaire Items for Outcome Efficacy**

### ***3.3.3 Ability***

Schwartz referred to ability as the extent to which an individual is able to take one or more of the identified actions (i.e., from outcome efficacy) perceived to ameliorate the need(s) identified in the problem awareness step. This concept was challenging to operationalize because the desired perceived actions were to follow the park's visitor rules. In reality, unless confronted with an exceptional situation, such as a visitor leaving the trail to avoid walking on an animal, all visitors should have the ability to refrain from engaging in action that would violate any park rule, such as feeding wildlife, touching wildlife, taking natural artifacts (i.e., shells, rocks), and staying on the trail. However, to improve data quality and statistical analysis a multiple-item indicator is necessary. In an effort to improve the operationalization of this concept, the conceptualization in this study expanded the definition to include an individual's perception of their ability to decide whether or not they comply with the park's visitor rules. Items were measured on a Likert's 7-point scale. Respondents were asked to indicate to what extent they disagree or agree with the following statements (Figure 3.4).

<b>Variable</b>	<b>Item Statement</b>
A 1	I can decide which of the park's visitor rules I follow
A 2	The park's visitor rules are only recommendations and visitors are not required to follow them
A 3	It is impossible to follow all of the park's visitor rules
A 4	I could follow the park's visitor rules if I wanted to

**Figure 3.4. Questionnaire Items for Ability**

### ***3.3.4 Ascription of Responsibility***

Schwartz (1977) defined ascription of responsibility as feelings of personal responsibility towards the consequences of one's actions, those that are creating the need identified in problem awareness, but also refers to a sense of connection or relatedness with the need or impacts. This study conceptualizes ascription of responsibility as the extent to which a person feels responsible for the adverse consequences of visitor behaviors. The items made every effort to clearly measure feelings of responsibility towards the problem or adverse consequences, and not responsibility to engage in actions that would ameliorate or relieve the problem(s). This concept was measured with a 7-point Likert's scale, and respondents were asked to what extent they disagree or agree with the following statements (Figure 3.5).



<b>Variable</b>	<b>Item Statement</b>
AR 1	Visitors should be held responsible for their actions in the park
AR 2	I would feel responsible if any animal was harmed by my actions in the park
AR 3	I do not feel personally responsible for any problems created by tourism in the park because my individual contribution is very small
AR 4	I personally contribute to animal health or behavior problems by visiting the park
AR 5	Visitors who feed wildlife should recognize the animal health problems this might create
AR 6	Visitors who feed wildlife should recognize the animal stress or aggression problems this might create

**Figure 3.5. Questionnaire Items for Ascription of Responsibility**

### ***3.3.5 Personal Norm***

Schwartz (1977) stated personal norms are experienced as feelings of moral obligation to engage in an intended action or behavior, not as intentions. As such, anticipation of or conforming to one's personal norms can result in feelings of pride, and failing to perform the action would produce guilt or potentially self-deprecation or loss of self-esteem (Schwartz, 1977). He also discussed the logistical challenges of measuring personal norms since they are posited to be generated in specific choice situations, and are not necessarily a stable cognitive structure. Therefore, in order to make assertions about the ability of personal norms to influence behavior, personal norms must measure the intensity of moral obligation that an individual feels during or immediately after a moral choice situation is presented, when personal norms are posited to be activated.

Regarding operationalizing personal norms, Schwartz (1977) suggested that the term obligation be present in the item as it refers to action. He also suggested that the term moral or personal be included to suggest to the respondent that the obligation and sanctions related to performing the action are tied to the individual's value system and stem from the individual, not from other sources. He suggested that the words moral and personal could be interchangeable and equally suitable. Schwartz (1977) cautioned against including anticipated feelings of pride and/or guilt as a measure of personal norms, as these anticipated feelings measure a response to an action, rather than feelings felt directly prior to an action or behavior. Items referencing anticipated feelings of guilt have been widely used in NAM research as an indicator of personal norms (e.g., de Groot & Steg, 2009; Harland et al., 1999; Vining & Ebreo, 1992; Widegren, 1998). However, Thorgersen (2006) found that guilt appeals may not always be the best way to measure moral norms since moral norms are not always enforced by guilt. Furthermore, some evidence suggests that moral norms that are enforced by guilt tend to be less stable and weaker (Koestner, Houlihan, Paquet, & Knight, 2001). Other findings support the assumption that anticipated guilt does influence behavior, but that personal norms (i.e., feelings of obligation) mediate this influence (Judd, Kenny, & McClelland, 2001). Hence, these findings support the notion that part of the motivational content of personal norms is anticipated guilt, but how it is involved is unclear (Onwezen, Antonides, & Bartels, 2013).

Based on these findings and conceptualizations, this study conceptualized personal norms as feelings of personal and/or moral obligation to engage in behaviors/actions that will ameliorate and/or prevent the problem (i.e., identified in problem awareness). The

items for this concept made references to complying with the park’s visitor rules and relevant actions. All items included references to obligation (e.g., obligated, should). One item that referenced feelings of guilt was also included. This concept was measured with a 7-point Likert’s scale, and respondents were asked to what extent they disagree or agree with the following statements (Figure 3.6).

<b>Variable</b>	<b>Item Statement</b>
PN 1	I feel personally obligated to follow the park’s visitor rules
PN 2	I feel morally obligated to help protect the park’s wildlife
PN 3	Visitors like me should comply with the park’s visitor rules
PN 4	Visitors should do what they can to avoid disturbing the environmental while in the park
PN 5	I would feel guilty if I didn’t follow the park’s visitor rules
PN 6	I should do everything possible to avoid harming the park’s wildlife

**Figure 3.6. Questionnaire Items for Personal Norm**

### ***3.3.6 Awareness of Consequences***

While NAM’s proposed activator variables are all situational variables, awareness of consequences is a personality variable. The inclusion of both kinds of variables is supported by the premise that behavior is often best explained by an individual’s personality, and how one reacts to the environment and circumstances present (Bordens & Horowitz, 2013). Situational variables tend to be best suited to predict behavior in specific situations, while personality variables are more relevant to patterns of behavior that are constant across situations, relationships and settings (Bandura, 1999).

Situational variables present a view of personality when the individual is affronted with

a particular situation, while personality variables are measures of personality traits that are relatively stable over time.

According to the American Psychology Association (APA, 2016), personality refers to reoccurring patterns of thinking, feeling and behaving. Particular personality characteristics, such as sociable, optimistic, and independent are considered personality traits. In psychology, dispositions are commonly used to refer to enduring traits that tend to be relatively constant; although they can be temporary and reversible, they are then referred to as states rather than traits (Snyder & Lopez, 2002). The colloquial definition of disposition is synonymous with tendency, or an inclination towards a particular type of behavior or characteristics. For example, an individual that is more likely to help others could be considered to have an altruistic personality, which includes a cluster of personality traits such as empathy (Bordens & Horowitz, 2013).

Schwartz (1977) defined awareness of consequences as a disposition to become aware of the potential consequences of one's action on the welfare of others during the decision-making process. Schwartz (1968a, 1973, 1977) observed that an individual with high AC was more likely to act on personal norms, regardless of whether a person's norms favor or oppose helping another person. He also mentioned that AC appeared to primarily tap an individual's tendency to perceive and define moral choice situations, rather than their actual tendency to be concerned for the welfare of others. Schwartz never reported any reliability scores for his measure of AC, and the only study to attempt to replicate his scale reported low reliability scores and a marginal level of significance in its association with personal norms (Harland et al., 2007).

Schwartz's studies looked at interpersonal pro-social behavior, and the object of the helping behavior was always another person. The context of this study differs significantly as the object of the outcomes of the desired behaviors (i.e., follow MANP visitor rules) is the ecological wellbeing of MANP, the park's wildlife, and, albeit indirectly, other visitors via the park's environment and wildlife. With these considerations, this study conceptualizes *awareness of consequences* as the individual tendency to become aware of the consequences of one's actions, and can include consequences for other individuals, wildlife and the environment. From this perspective, and due to the low reliability of Schwartz's *awareness of consequences* scale, this study proposes the use of personal values and value orientations as a more appropriate measure of *awareness of consequences*.

Researchers have often emphasized the importance of values as determinants of altruistic and pro-social behavior (Schwartz, 1992; Staub, 1989; Steg & de Groot, 2010; Stern, 2000). Values are enduring beliefs that a specific manner of conduct or end-state of existence is preferred, socially or personally, to an opposite end-state or manner of conduct (Rokeach, 1973). Values about manner of conduct refer to beliefs about actions that lead to desired outcomes, for example, honesty, authority, courageous, and helpful. Values about end-states of existence refer to desirable outcomes in life, such as a world at peace, equality, and environmental justice. In other words, a value is a belief upon which an individual acts by preference (Allport, 1963). Values serve as guiding principles for the evaluation or selection of behaviors, people, and events; as such, values are posited to influence how people evaluate various aspects of a situation, what

they attend to, what knowledge becomes most cognitively accessible, and what behaviors and alternatives are considered (Steg & de Groot, 2012).

Values are postulated to be shared by most people within a culture, and therefore not likely to explain much variance in specific attitudes and behaviors (Fulton, Manfredo, & Lipscomb, 1996). Although values are commonly shared, they may be translated into different beliefs and other higher order concepts, because individuals will differ in their prioritization of values (Steg & de Groot, 2012). This means that when individuals are faced with differing values that compete or conflict with each other in a given situation, behavioral decisions will be influenced by the values that are considered most important to the individual (de Groot & Steg, 2007; Lindberg & Steg, 2013). The prioritized values will affect the way an individual perceives a situation, in a way that certain actions and potential outcomes can be viewed as attractive and others aversive (Feather, 1995). As such values have been empirically linked to influencing behavior through their impact on attitudes, norms, and intentions (e.g., Gärling, Fujii, Gärling, & Jakobsson, 2003; Oskamp, 2000; Steg & de Groot, 2012; Stern & Dietz, 1994).

Values are often grouped into clusters of interrelated and prioritized values (Figure 3.7), and referred to as value orientations (Homer & Kahle, 1988; Schwartz, 1992; Stern & Dietz, 1994; Stern, Kalof, Dietz, & Guagnano, 1995). Value orientations provide more consistency and organization among the broad spectrum of beliefs, attitudes, and behavior (Fulton, Manfredo, & Lipscomb, 1996). NAM assumes there is a common value orientation toward the welfare of others, meaning individuals value outcomes that benefit others, and therefore can be motivated to engage in behaviors or actions that will

benefit or prevent harm to others (Stern, Dietz, & Kalof, 2005). This value orientation is known as altruistic value orientation. ERB are often considered a type of altruism.

Other value orientations that have been linked to explain and/or influence ERB include biospheric, egotistic and hedonistic value orientations (Stern, Dietz, & Kalof, 2005; Steg & de Groot, 2012; Lindenberg & Steg, 2013). Biospheric values emphasize the inherent value of the environment and nature and reflect a concern for the welfare of nature for its own sake and for the sake of humanity (Steg & de Groot, 2012). Although biospheric values transcend from the same base values as the altruistic value orientation, and they are often correlated, studies have indicated that they can in fact be considered two distinct value orientations (e.g., Steg & de Groot, 2012). Expectedly, in many cases, individuals who prioritize and endorse altruistic values also prioritize biospheric values, and conversely (Stern, Dietz, & Kalof, 2005). Egotistic values concern the evaluation of individual outcomes, those most likely to impact oneself. Egotistic values are often placed on a spectrum between concern for oneself and concern for others. People who prioritize egoistic values will especially consider personal costs and benefits of ERB (de Groot & Steg, 2007). Hedonistic values are the most recent addition to ERB research and represent pleasure and gratification for oneself. Egotistic and hedonistic values are important because self-interest can crowd out and undermine altruism, moral sentiments and feelings of a duty to comply (Bowles, 2008; McGraw & Sholz, 1991).

<b>Variable</b>	<b>Value Item Statement</b>
<b>Egotistic Values</b>	
EGO 1	Social Power: status, prestige, dominance
EGO 2	Wealth: material possessions, money
EGO 3	Authority: ability to control events or people
EGO 4	Influence: ability to make decisions, leadership
<b>Altruistic Values</b>	
ALT 1	Equality: equal opportunities, fairness
ALT 2	Peace: absence of war and conflict
ALT 3	Social justice: correcting injustice, care for the disadvantaged
ALT 4	Helpfulness: assistance, aid to those in need
<b>Biospheric Values</b>	
BIO 1	Preventing Pollution: recycling, limiting waste
BIO 2	Protecting the Environment: natural resources
BIO 3	Unity with Nature: feeling connected, in harmony
BIO 4	Protecting Other Species: wildlife conservation
<b>Hedonistic Values</b>	
HED 1	Pleasure: food, activities, relaxation
HED 2	Fun: entertainment, amusement, recreation
HED 3	Indulgence: pampering yourself, luxury
HED 4	Excitement: stimulating experiences, thrills

**Figure 3.7. Questionnaire Items for Awareness of Consequences**



Standard scales measuring value orientations ask respondents to evaluate values based on their level of importance as guiding principles in their life. Respondents are provided a 9-point scale. The lowest point on the scale represents the value is opposed to the respondent's values, and the remaining points range from not important to extremely important. Respondents were asked to indicate how important the following were as 'guiding principles' in their lives on the standard 9-point scale (see Figure 3.7).

### ***3.3.7 Denial of Responsibility***

One problem that continues to plague ERB scholars is understanding why determinants of behavior, such as intentions and personal norms, fail to translate into overt behavior, and how these norms and intentions appear to collapse in certain situations (Cialdini, 2003). There can be many factors that act as barriers and lead to this value-action gap (Kollmuss & Agyeman, 2002). Schwartz (1977) proposed a defensive step in his model to explain the deactivation of personal norms in individuals. He posited that individuals experience conflict when they anticipate high moral costs for an action that are opposed by high non-moral costs. In efforts to escape this conflict, individuals were predicted to neutralize their feelings of obligation (i.e., deactivate personal norms) by reassessing and redefining the situation via three different modes.

The first mode is denying the state of the need. This requires the individual to reassess the situation presented in the problem awareness step and deny the seriousness of the problem. It is also possible to neutralize feelings of obligation by increasing the perceived seriousness of the problem and reinterpret the situation as beyond hope (Schwartz, 1977). The second mode is to deny the responsibility to respond. One way

this can be done is by diffusing the responsibility on to others. Finally, an individual can neutralize feelings of obligation by viewing different actions, outcomes, or their implications as appropriate.

In NAM, denial of responsibility is conceptualized as an individual's tendency to deny responsibility for the consequences of action, and hence neutralize moral obligation (Schwartz, 1977). This original operationalization of this concept included a scale with 28 items that referenced actions with interpersonal consequences and rationales for ascribing responsibility for the actions and/or their consequences away from the actor (Schwartz & Howard, 1980). An example item is "When a person is nasty to me, I feel very little responsibility to treat him well." From a theoretical perspective, denial of responsibility should moderate the impact of personal norms on behavior. A full list of Schwartz's original scale items has not been published and only a minimum number of items are available in his publications as exemplary items. One additional study has utilized the original items and obtained acceptable reliability coefficients (Harland et al., 2007).

This study adopted a similar strategy as that utilized by Schwartz. Denial of responsibility is conceptualized as the tendency of an individual to accept rationales for denying responsibility for the consequences of one's actions/behavior. This concept was measured with a 7-point Likert's scale, and respondents were asked to what extent they disagree or agree with the following statements (Figure 3.8).

<b>Variable</b>	<b>Item Statement</b>
DR 1	Visitors do not need to worry about problems in the park
DR 2	Park rangers should do a better job of educating visitors so they follow the park's visitor rules
DR 3	I would feel guilty if I unintentionally hurt an animal in the park
DR 4	Feeding healthy food to wildlife in the park is acceptable
DR 5	Park visitors should not be blamed if wildlife steal their food
DR 6	It is acceptable to attract wildlife in the park by making noise

**Figure 3.8. Questionnaire Items for Denial of Responsibility**

### **3.4 Sample Selection, Size, and Procedure**

This study included park visitors aged 18 years or older, regardless of nationality, gender or race. A final population of 425 participants was obtained for this case study. 94.7 percent of the 452 visitors invited to participate in this study agreed to complete a questionnaire.

Data collection activities took place at the main beach (Manuel Antonio Beach) and surrounding areas, where an estimated 90% of visitors spend time during their visit. The surrounding areas are directly adjacent to the beach and include an area with picnic tables, trails, and several resting areas. This area is also frequented by the park's most habituated wildlife and where the highest rates of noncompliance of park rules occur. Data collection activities took place during normal park operating hours between 8:00 a.m. to 4:00 p.m., Tuesday to Sunday. However, the majority of questionnaires were completed between 9:30 a.m. and 2 p.m., when the park's wildlife was most active and visitor numbers were highest.

Prior to this study, there were no data available on the statistics of park visitors beyond the total number of visitors per day. This study employed convenience sampling. Convenience sampling, a type of non-probability sampling, is acceptable when it is not possible to determine the probabilities of the possible sample (Agresti & Finlay, 2009). Since no data on park visitors were available, it was impossible to project estimates of a representative sample. Although this sampling strategy can result in the data not being representative of all park visitors, it was necessary based on the study's participant observation requirements. Additionally, the aim of the study was to measure personal norms of rule compliance, specifically rules regarding feeding and interacting with wildlife. Therefore, only individuals who were observed in a human-wildlife encounter were invited to participate. Since this research aims to include observation of actual behavior as a dependent variable, the observation component of the study was indispensable.

To prevent selection bias, every effort was made to include any and all visitors present during the observed interaction between visitors and wildlife. The researcher immediately approached all visitors that had met the eligibility requirements that corresponded to the participant observation component. The research did not approach the visitors if they appeared to be in the process of packing their belongings to leave, if it was one adult with more than one young child (under the age of ten), or if the visitor had previously participated or been invited to participate in the study.

After an observed human-wildlife encounter, the researcher approached park visitors regardless of the individual's response and actions in the encounter. Prospective participants were asked in both English and Spanish if they understood either language.

If a positive response was received, the researcher used the IRB approved script (Appendix D) in the corresponding language to invite the visitor to participate in the study. In an encounter involving a large group of visitors, the recruitment script addressed all members of the group. In attempt to prevent bias, all visitors that met the observation requirement were invited to participate in the study, regardless of age (unless under the age of 18), sex, race, nationality, or response behavior. Visitors were not approached and invited to participate if they were the only adult accompanying young children, immediately proceeded to pack their belongings and leave the area after the encounter, or had previously been approached to participate in the study.

Visitors that agreed to participate in the study were given the self-administered questionnaire and allowed unlimited time to complete it. The researcher did not assist participants in completing the questionnaire, and returned to retrieve the questionnaires after approximately 15 minutes. If participants needed or wanted more time to complete the questionnaire the researcher returned later. Visitors were asked to complete the questionnaire individually and not in pairs.

### **3.5 Participant Observation**

Participant observation in the form of behavioral observation is a data collection strategy commonly used by human geographers; behavior observation involves listening to and watching the behaviors of individuals or groups (Emerson, Fretz, & Shaw, 2011).

Behaviors are coded for data analysis based on an objective and planned strategy that is void of inferences about the meaning or intention of the behavior (Montello & Sutton, 2006). Due to the logistics and safety of both the researcher and park visitors, the safest place to conduct the participant observation and questionnaire component of the study

was in the main beach area of the park (i.e., Manuel Antonio Beach). Therefore, the study was limited to only this area of the park. However, park visitors could engage in prohibited actions or behaviors that violated park rules while in other areas of the park, which were not included in this study.

Participant observation involved the researcher observing visitors on the beach area (Manuel Antonio Beach) and adjacent areas. The exact spot of observation depended on where the incidents were observed. Dressed in similar clothing as other park visitors, the researcher moved within the areas of the beach “Manuel Antonio” and adjacent paths observing park visitors. When wildlife was active and out in the research areas, the researcher would follow the wildlife to observe visitors’ interactions and actions with wildlife. ERBs were considered compliance with park rules, which prohibit feeding, touching, and interacting with wildlife, removing natural artifacts from the park, walking off the trails, smoking, using flash photography on wildlife, and entering with prohibited food items. Although all rules are problematic for park personnel, the most problematic and frequently observed behaviors in this section of the park include feeding, touching and interacting with wildlife. Nevertheless, the study included visitors violating any of the park rules, not just rules regarding wildlife.

According to UHM IRB regulations, and as agreed upon in the research permit, the researcher did not have to inform participants that they are being observed, either before or after participation in the study. This was due to the high levels of anonymity being employed in the study and the observation sites being classified as public spaces. This form of behavior observation is referred to as covert observation because the researcher does not inform the members of the community being studied that they are watching

what they do for research (Cook, 2005).

Every effort was made to ensure that visitors were not aware they were being observed, in order to observe nonreactive and natural behavior. Nonreactive behavior mostly depends on whether people are aware or not that they are being observed (Montello & Sutton, 2006). Some of the effort utilized in this study to ensure nonreactive behavior include the dress and appearance of the researcher, which was purposefully as similar as possible to other MANP visitors. The researcher divided the study site into quadrants and moved throughout the study site's quadrants on a rotating schedule so to not remain in any specific area too long and avoid the potential to repeatedly approach the same visitors. The researcher also hid all research materials (i.e., clipboards and questionnaires) in bags to add to the disguise and retreated from the study site to prepare the clipboards between questionnaire administration sessions.

All observations were recorded on a participant observation sheet (Appendix C) that included an assigned participant identification number, time of incident, number of people involved, type and number of animal involved (if applicable), action of the visitor (i.e., rule violated). After beginning data collection activities, additional columns were added to the sheet based on observed changes in the nature of visitors' experiences, primarily due to changes in animal behavior related to weather conditions (i.e., between the preliminary study and time of data collection). These additional columns included visitor response to an interaction instigated by wildlife, and in the case of human-wildlife interactions whether the interactions were initiated by the visitor or wildlife. The participant identification number from each observation was recorded onto the physical copy of questionnaires to later match questionnaires with the corresponding

observation during data entry.

After observing visitors and recording the details of the incident on the observation record sheet, the researcher approached the visitors following the IRB approved protocol to invite the visitors to participate in the study. Preliminary fieldwork previously conducted demonstrated that non-compliance is less common than compliance. To ensure that the study included visitors that have both complied and not complied with park regulations, the researcher attempted to first approach the visitor(s) who failed to comply with park rules. Other visitors were then approached to participate.

Self-reported behavior violations were included in the visitor questionnaire; however, it was not expected that many rule violators would voluntarily admit to having violated a park rule. While several visitors did indicate on the questionnaire that they violated a park rule, the number of self-reported rule violations was not large enough for statistical analysis. Anecdotally, multiple visitors voiced intentions to feed the white-faced capuchin monkeys in the park, and went as far as to bring specific food items to feed the monkeys; however, these omissions of honesty were normally expressed as frustrations because these items were often stolen by raccoons before the visitors got a chance to feed them to the monkeys.

### **3.6 Data Analysis**

All data was entered into IBM SPSS Statistics 23.0 for Windows, which was also used for data analysis along with EQS 6.3 for Windows. Significance was set at 0.05 for all statistical analyses and effect sizes were included when appropriate. All NAM concepts were represented as scales. The word scale refers to a composite scale comprised of a



collection of items intended to measure each latent concept. All items used to measure NAM concepts were measured on a Likert's 7-point scale (i.e., very strongly disagree to very strongly agree). Because no single item is a sufficient measure of a concept, multiple items were used, with a minimum of 3 items per concept, which is considered the acceptable minimum number of items for such scales (Groves et al., 2009). In order to develop the latent variable scales, each scale had to be tested for reliability and validity. These analyses were based on various statistical measures such as item total correlation, Cronbach's alpha reliability, confirmatory factor analysis, and average variance extracted. Structural equation modeling of survey data was used to determine the strength and type of relationships between independent and dependent NAM variables. Full and partial mediation models were examined to explore which model best fit the data. Potential interaction effects were also analyzed.

Other statistical analysis strategies such as Chi-square, t-tests and ANOVA were utilized to examine the relationships between additional situational and participant observation variables and relevant NAM concepts according to the research questions presented in chapter one. Demographic variables were included to provide a baseline data source of the visitor population. While ad-hoc analysis was conducted using demographic variables, they are not hypothesized to be significant factors in predicting ERB behavioral decisions.

### ***3.6.1 Exploratory Factor Analysis***

Following initial item analysis, exploratory factor analysis was conducted for further scale analysis. Although exploratory factor analysis is often used as a data reduction procedure, it can also be used to analyze the theoretical and underlying structure of

psychological constructs (Russell, 2002). Since this study was based on an a priori research design, exploratory factor analysis was strictly used to analyze and confirm the underlying structure of the NAM concepts. Proposed items were subjected to a principal component analysis with VARIMAX rotation in order to reduce the set of observed variables to the smallest, most parsimonious set of items. Factor loadings should be at least 0.40, and items exhibiting low factor loadings should be considered for deletion. Items with low communalities of less than or equal to 0.50 are also candidates for deletion (Hair, Black, Babin, & Anderson, 2010).

### ***3.6.2 Reliability***

Reliability requires that items are inter-correlated, indicating they measure the same concept. The first diagnostic measure used to measure reliability is item total correlation, which is the correlation of the item to the summated scale score. A minimum item total correlation score of 0.50 is a conservative rule of thumb, with others suggesting a minimum of 0.40 (Hair et al., 2010). The second diagnostic measure used to determine reliability is Cronbach's alpha reliability coefficient, to test for internal consistency of each scale (Cronbach, 1951). A Cronbach alpha coefficient greater than or equal to 0.65 indicates that items are inter-correlated and therefore justifies combining them into a single composite index (Nunnally & Bernstein, 1994).

### ***3.6.3 Confirmatory Factor Analysis***

Confirmatory factor analysis is the first step of structural equation modeling, and tests how well measured variables represent a smaller number of constructs (Hair et al., 2010). Confirmatory factor analysis produces factor loadings for items and model goodness-of-fit indices. Similar to exploratory factor analysis, factor loadings should be

great than or equal to 0.40 (Vaske, 2008), with more conservative recommendations of 0.50 (Hair et al., 2010; Kline, 2011). The validity of the proposed measurement model is reflected in the multiple goodness-of-fit indices, such as Chi-square, comparative fit index (CFI), normed fit index (NFI), and root mean square error of approximation (RMSEA). Multiple fit indices should be used to assess the goodness-of-fit of the model, with a minimum of 0.90 for most indices, and an RMSEA of less than or equal to 0.08.

For standard confirmatory factor analysis models that specify unidimensional measurement, meaning every item loads on just one factor and there are no measurement error correlations, there are restrictions concerning the minimum number of indicators that can be used per factor (Kline, 2011). The most fundamental is that a model with two or more factors must have at least two items (i.e., indicators) per factor for identification purposes. However, a minimum of three items is preferable and ultimately necessary to prevent data analysis issues (Kline, 2011). Models with only two items per factor are more prone to data analysis problems such as difficulty estimating the measurement error correlation, and are empirically underidentified, which means that concepts have to consider covariance information from other concepts (Kenny, 1979; Kline, 2011). Therefore, although it is a technical requirement to have at least two items per concept, a minimum of three items is necessary to obtain more statistically accurate results.

#### ***3.6.4 Convergent and Discriminant Validities***

Confirmatory factor analysis eliminates the need to summate scales as would be done in multiple regression analysis, and instead computes latent construct scores (Hair et al., 2010). While this simultaneously assesses the construct validity of the proposed latent concepts, additional steps can be taken to provide evidence of construct validity.

Construct validity is the extent to which a set of items accurately represents the latent theoretical concept they are proposed to represent. Convergent and discriminant validities are often used to provide evidence for construct validity in confirmatory factor analysis and structural equation modeling. Convergent validity is the extent to which a set of items measures what it purports to measure, based on their shared proportion of variance (Hair et al., 2010). Convergent validity can be verified using average variance extracted (AVE) which is the mean variance extracted for each concept's item loadings. AVE is the average amount of variance in the items that the latent concept manages to explain and scores equal to or greater than 0.50 are considered acceptable (Hair et al., 2010). Composite reliability is also an indicator of convergent validity. Similar to Cronbach's alpha reliability coefficient for summated scales, composite reliability scores above 0.60 are considered acceptable. Composite reliability is often used in conjunction with confirmatory factor analysis and structural equation modeling.

Discriminant validity is the mirror image of convergent validity and measures the extent to which a set of concepts are truly distinct from one another in terms of how much a concept correlates with others (Henseler, Ringle, & Sarstedt, 2015). Discriminant validity is assessed by comparing the AVE of each concept to the squared correlation between the two latent variables. If the AVE is higher than the squared correlation then there is evidence of discriminant validity (Fornell & Larcker, 1981).

### ***3.6.5 Structural Equation Modeling***

Structural equation modeling (SEM) of latent variables was performed using EQS 6.3 for Windows to determine the adequacy of the NAM concepts in predicting personal norms and test the hypotheses related to the research questions presented in chapter one.

Structural equation modeling is a collection of statistical techniques (e.g., factor analysis and path analysis) used to test hypotheses about relationships among latent and observed variables (Hoyle, 1995; Ullman, 2006). In lieu of simply combining items into a composite scale based on the sum or average of item scores, SEM creates a composite scale that contains the measurement error, which allows for a more powerful analysis due to the estimation and removal of the measurement error associated with the observed variables. SEM provides an improved way to empirically examine a theoretical model since it takes into account the measurement properties of the multi-item concepts when estimating the relationships between the concepts themselves (Hair et al., 2010). SEM consists of two components: the measurement model which is performed with confirmatory factor analysis, and the structural model. The structural model is the second step of SEM and prescribes relationships between latent and observed variables (Hoyle, 1995). The primary purpose of the structural model is to examine the relationships between the latent constructs (Byrne, 2006).

### ***3.6.6 Competing Models Strategy***

As SEM is based on an a priori approach to data analysis and theory testing, it allows for specific relationships between concepts to be analyzed. However, achieving acceptable goodness-of-fit indices for the intended original model is not sufficient to guarantee that it is the best fitting model for the data. It is necessary to examine alternative models with the original proposed model to examine whether a better-fitting model exists. The strongest test of a proposed model is to identify and examine competing models that represent different and highly plausible hypothesized structural relationships between the concepts (Hair et al., 2010). When competing models contain the same number of

variables and are formed by adding or deleting paths, they are referred to as nested models. The competing models can then be compared by using the Chi-square difference (Bentler & Satorra, 2010).

### **3.7 Use of Human Subjects**

Per requirements for research that involves human subjects, this project received approval from the Institutional Review Board (IRB) at the University of Hawai‘i at Mānoa. IRB approval was secured before any data reported in this study was collected. A copy of the approval letter is provided in Appendix B. All necessary and recommended protocol were utilized to ensure complete anonymity of research participants. Such measures included use of a participant identification number system in lieu of personal descriptors, and participants were not asked to provide any identifying information. All IRB approved documents such as recruitment script, survey questions and consent forms can be found in the appendices section of this report.

### **3.8 Summary**

To answer the research questions outlined in Chapter 1, this study utilized a literature review, survey instrument, and participant observation. A literature review of existing research on ERB, compliance and NAM was conducted to support the development of the self-administered questionnaire utilized in the survey component of this study. Items used to construct NAM scales were based upon existing research and valid scale items used in previous studies. However, this research aimed to clarify and advance the understanding of these theoretical concepts. The self-administered questionnaire was conducted during late August thru early September of 2016 at Manuel Antonio National Park in Costa Rica. Park visitors that had been observed by the researcher to have the

opportunity to comply or not comply with park rules were invited to participate in the study by completing the questionnaire.

## CHAPTER 4

### DATA ANALYSIS AND RESULTS

This chapter presents the results of the data analysis and findings of the research hypotheses formulated from the research questions presented in chapter 1. First, a discussion of the demographic and visitor information of the participants is presented. The second section presents the validity and reliability of the NAM constructs, including the findings of the confirmatory factor analysis. The third section presents the findings for the structural equation modeling used to analyze the relationships between NAM concepts. Finally, the research questions are answered based on the data collected and findings from analysis.

All data was entered into IBM SPSS Statistics 23.0 for Windows. In total, 94.7 percent of the 452 visitors invited to participate in this study agreed to complete a questionnaire. Of the 425 that agreed to participate, 13 provided incomplete answers on the questionnaire. Of those who declined to participate 10 did so for linguistic reasons (e.g., not native speakers of English or Spanish). The remaining 17 that declined to participate stated reasons such as not having their reading glasses, or inconvenient timing. Of those that declined, only one had been observed to have violated a park rule.

#### **4.1 Demographic Characteristics of the Population**

This section describes the demographic and visitor characteristics of the population of visitors who participated in this study. There are no other data sources available to describe the demographics of visitors to MANP. Table 4.1 summarizes the demographic information of respondents. Of all respondents, the proportion of females (60%) was



higher than that of males (36.9%). This difference could be reflective of an actual imbalance in the visitor population or could be a consequence of the questionnaire administration procedure. While visitors were indiscriminately approached following the participant observation requirement of the study, 54.4% of the participants reported visiting the park with a spouse or partner and it is possible that the female member of the group completed the questionnaire more frequently than the male member. Some demographic information such as occupation, income and race were not included in the questionnaire to avoid sensitive questions that might influence participants' willingness to participate in the study.

The majority of respondents were between the ages of 18-29 (50.4%), with the next largest group being 30-39 years old (21.2%). The third largest group was 40-49 years old (12.7%), followed by 50-59 years old (9.6%), and finally 60-67 years old (2.6%). The majority of the population being under the age of 30 could be representative of the MANP general visitor population, or could be limited to this specific group, which only included visitors that were unaccompanied by a naturalist or tour guide at the time of participation in this study. Approximately 81% of the respondents visited the park on their own, without a hired guide, while a naturalist or tour guide accompanied the remaining participants earlier in the day, before they participated in this study. Since this study excluded visitors accompanied by a hired guide at the time of the observation, it is possible that age, as well as other factors, potentially associated with age, such as visitor preferences for visiting the park with a hired guide, and/or income were secondary factors that limited the age ranges of this specific population.

**Table 4.1. Demographic Characteristics of Respondents**

<b>Variable</b>	<b>Frequenc y</b>	<b>Percen t</b>
<b>Gender</b>		
Male	157	36.9
Female	255	60
No response	13	3.1
<b>Age</b>		
18-29	214	50.4
30-39	90	21.2
40-49	54	12.7
50-59	41	9.6
60 -67	11	2.6
No response	15	3.5
<b>Education Level</b>		
Less than high school diploma	3	0.7
High school diploma or GED	56	13.2
2-year associates degree or trade school	36	8.5
4-year college degree	205	48.2
Advanced degree	106	24.9
No response	19	4.5
<b>Language</b>		
English	199	46.8
Spanish	226	53.2
<b>Country of residency (most of the year)</b>		
Costa Rica	95	22.4
Spain	84	19.8
United States	71	16.7
Mexico	20	4.7
England	30	7.1
Canada	17	4.0
South America	18	4.2
Germany	24	5.6
Other Western Europe	41	9.6
Israel	6	1.4
Other	3	0.7
No response	16	3.8

The majority of respondents reported tertiary education levels, with 48.2% holding a 4-year college degree and 24.9% holding an advanced degree. This was followed by 13.2% with a secondary level education (e.g., high school diploma or G.E.D.), and 8.5% having some college or a technical degree. Only 0.7% reported having less than a high school diploma, and 4.5% declined to respond.

Participants were also asked to indicate their country of residence, defined as the country where they spent the majority of the year, not based on ethnicity or nationality. The largest group of respondents were from Costa Rica (22.4%), followed by 19.8 from Spain, and 16.7% from the United States. Other notable countries of residence were largely European; United Kingdom had 7.1%, Germany 5.6%, and 9.6% from other Western European countries. Only 4.7% reported coming from Mexico, and 4.2% from South American countries, indicating that the visitor population was largely local, from North America or Western Europe. Of all respondents, 53.2% opted to complete the questionnaire in Spanish, with 46.8% preferring English. It is possible that the majority preferring Spanish, and the countries of residence of visitors was characteristic of this specific season and could vary during other times of the year.

Specific visit information was included to measure the visitor statistics of the population, and is reported in Table 4.2. Most respondents (79%) reported that it was their first time visiting MANP, and most did so without a guide (80.9%). Visitors that were accompanied by a naturalist guide at the time of the observation were not invited to participate, however, many visitors choose to stay longer than the guided tour and were included in the study as long as they weren't actively accompanied by a naturalist guide. Most participants visited MANP on a Wednesday (21.4%) and the least amount on a

**Table 4.2. Visit Information of Respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Day of the Week Visited</b>		
Tuesday	84	19.8
Wednesday	91	21.4
Thursday	76	17.9
Friday	67	15.8
Saturday	71	16.7
Sunday	36	8.5
<b>First Visit to MANP</b>		
Yes	336	79.1
No	87	20.5
No response	2	.5
<b>Visit with a guide</b>		
Yes	77	18.1
No	344	80.9
No response	4	.9
<b>Number of people in respondent's group</b>		
1 (alone)	11	2.6
2	203	47.8
3-5	160	37.6
6-10	29	6.8
11-20	14	3.3
21-40	8	1.9
<b>Who respondent is visiting the park with</b>		
Friends	170	40.0
Partner	158	37.2
Spouse	73	17.2
Children	55	12.9
Other family	55	12.9
Alone	13	3.1
Tour Group	36	8.5
Other	4	1.0
No response	2	0.5

Sunday (8.5%); however, it should be noted that only on two occurrences were the questionnaires administered on a Sunday, and from Tuesday to Saturday the questionnaires were administered over three occurrences.

#### **4.2 Rule Awareness and Rule Knowledge**

One situational factor included in this study was visitor knowledge of park rules.

Visitors were asked if they had learned about visitor rules prior to entering the park that day, after entering the park that day, and where they learned about rules (e.g., signs, information brochures, park rangers, tour agencies, etc.) both prior to and during their visit (Table 4.3). Visitors were then provided with a list of rules and asked to indicate whether they believed each rule was a rule, was not a rule, or whether they were uncertain about its status as a rule. It was hypothesized that visitors with more awareness and knowledge of park rules would have stronger personal norms, as well as higher levels of other NAM activator variables.

Slightly more than half of all participants (52.7%) reported learning about rules prior to arriving at the park that day. Of those, the largest groups reported learning about rules from the ticket office or brochure provided by the office (23%), 12% from unidentified online sources, 11.4% from an unspecified source, 12.8% from a tour operator or agency, and 4.6% from staff at their hotel. A much smaller proportion (32%) reported learning about the park rules after arriving at the park. Of those that did, 14.6% learned from a naturalist guide, 14% from a park ranger, and only 3% from another visitor while in the park. There is substantial signage throughout the park with posted visitor rules. However, park rules are often referred to as recommendations on signs, as well as in the informative brochures handed out by the ticket office. Most visitors (69.9%) reported

seeing posted signs in the park with visitor rules. With 58% of those indicating seeing signs at the entrance, 32.7% along the park's hiking trails/paths, and 25.9% at the beach areas.

A large percentage of visitors were unable to correctly identify park rules in the questionnaire, despite the widespread signage and accessibility of visitor rules throughout the park (Table 4.4).

**Table 4.3. Visitor Exposure to Park Rules**

<b>Items Measuring Park Rule Exposure</b>	<b>Yes</b>		<b>No</b>	
	<b>Freq.</b>	<b>%</b>	<b>Freq.</b>	<b>%</b>
<b>Did you learn about the park's visitor rules before arriving today?</b>	218	52.7%	195	47.2%
I learned about the rules online	50	12%	363	88%
I learned about the rules in my hotel	19	4.6%	394	95.4%
I learned about the rule from the tour operator/agency	53	12.8%	360	87.2%
I learned about the rules from the map from the ticket office	95	23%	318	77%
I learned about the rules somewhere else	47	11.4%	366	88.6%
<b>Have you seen signs in the park with visitor rules?</b>	297	72.6%	112	27.4%
I saw signs at the park entrance	247	60.4%	162	39.6%
I saw signs along the paths	139	34%	270	66%
I saw signs at the beach areas	110	27%	299	73%
<b>Did anyone tell you about the visitor rules after arriving to the park?</b>	141	32%	279	68%
I learned about the rules from a naturalist guide	60	14.6%	350	85.4%
I learned about the rules from a park ranger	58	14%	352	86%
I learned about the rules from someone in my group	12	3%	398	97%
I learned about the rules from another group	4	1%	406	99%

While most visitors reported knowing they should remain on trails (75.7%), not feed wildlife (90.3%), and not leave traces of their visit, such as vandalism and litter (77.3%), most visitors were not aware or were uncertain of the remaining park rules. For example, only 20.4% of visitors were aware that they should not imitate bird calls, 45.4% were aware that there were restrictions on food entering the park, 48.3% were aware that it was not allowed to remove natural artifacts and souvenirs such as rocks, sand, and shells. Only 31.6% were aware that it was prohibited to make noises to attract the attention of wildlife, and only 40.5% knew it was prohibited to use flash photography.

**Table 4.4. Visitor Rule Knowledge**

<b>Items Measuring Park Rule Knowledge and Awareness</b>	<b>Yes</b>		<b>No</b>		<b>Unsure</b>	
	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>
Stay on the trails	312	75.7	19	4.6	81	19.7
Do not feed wildlife	372	90.3	5	1.2	35	8.5
Do not leave traces of your visit	317	77.3	27	6.6	66	16.1
Do not imitate bird calls	84	20.4	146	35.5	181	44
Do not bring food in to the park	187	45.4	153	37.1	72	17.5
Do not remove natural artifacts	199	48.3	79	19.2	134	32.5
Do not make noise to attract the attention of wildlife	130	31.6	108	26.2	174	42.2
Do not use a flash to photograph wildlife	167	40.5	94	22.8	151	36.7

Findings also showed that rule awareness, knowledge of rules before arriving to the park, and learning about park rules after arriving to the park were not significantly associated with personal norms. There was one exception to this finding, visitors who confirmed ‘stay on trails’ was a park rule were more likely to have activated personal norms, but the effect size of this relationship was very minimal ( $\eta^2 = 0.017$ ). A few



other rule awareness categories also had a significant relationship with select NAM activator variables, but the effect size was so minimal (less than 0.02) that these relationships were not included for further analysis.

From an applied perspective, it appears there is a general lack of rule awareness amongst park visitors, despite the majority of visitors (72.6%) seeing rules posted on signs throughout the park (see Table 5.2); thus leading one to question the effectiveness of the signs to relay information to visitors in this context. From a theoretical perspective, in this study rule awareness is not an important factor in the norm activation process, due to the lack of significant relationships between rule awareness, reported learning about rules and personal norms. There are some potential explanations for the lack of observed significance. First, in MANP rules are often referred to as recommendations, implying that the action or behavior is more suggestive than required of visitors. Second, there is a substantial amount of evidence regarding the ineffectiveness of signs to capture and hold the attention of visitors in similar contexts (e.g., Boon, Fluker, & Wilson, 2008; Benton & Sinha, 2011; Hockett & Hall, 2007). While this study included rule awareness and knowledge as a potential situational variable, it was not a primary focus of the study, and more relevant information could be gained by asking visitors about their perceptions of rules (i.e., are they recommendations or requirements). An experiment controlling for rule exposure and wording could also provide valuable information about the relationships between rule knowledge and the norm activation process.

### **4.3 Validity and Reliability of NAM Constructs**

Initial tests of reliability of the proposed items, for NAM construct conceptualizations presented in chapter three, were conducted to identify the items that best represented and

measured each concept. Items were deleted based on item-total correlation scores and Cronbach's alpha reliability coefficients. Items that had a minimum item-total correlation of 0.40 were retained for scale construction. Item selection for scale construction was also dependent upon a minimum Cronbach alpha reliability coefficient of 0.65. Final items used for NAM concept scales with item-total correlation and Cronbach's alpha coefficients are presented in Table 4.5.

EQS 6.3 Software for Windows and the Satorra-Bentler robust estimation to correct for multivariate non-normality was used for the confirmatory factor analysis of the presented data. Skewness and kurtosis indicated violations of the normal distribution assumption, assessed using Mardia's coefficient, as such the Satorra-Bentler robust estimation and corrected indices were used to assess model fit (Byrne, 2006).

Confirmatory factor analysis produces factor loadings for items and model goodness-of-fit indices. Factor loadings should be greater than or equal to 0.40 (Vaske, 2008), with more conservative loading recommendations of 0.50 (Hair et al., 2010; Kline, 2011).

Confirmatory factor analysis of the original proposed items indicated issues with goodness-of-fit, despite acceptable factor loadings ( $\geq 0.40$ ). Although sample size and kurtosis can present problems for goodness-of-fit indices in confirmatory factor analysis, the size for the present data set was sufficient, and the Satorra-Bentler non-normal robust corrected indices made necessary adjustments for the non-normal distribution of the data.

**Table 4.5. Reliability Analysis of Original NAM Concepts**

Variable Items	Mean (M) <sup>1</sup>	Std. dev.	Item total correlation <sup>2</sup>	Alpha if deleted <sup>3</sup>	Cronbach alpha <sup>4</sup>
<b>Problem Awareness</b>					<b>0.82</b>
It can be harmful to feed wildlife	5.90	1.39	0.68	0.78	
It can be harmful to touch wildlife	5.81	1.37	0.69	0.77	
Visitors can contribute to changes in wildlife	6.07	1.17	0.58	0.80	
Feeding wildlife can be dangerous for humans	5.42	1.45	0.60	0.80	
Making noise to attract wildlife can be dangerous for humans	5.01	1.42	0.57	0.80	
Visitors can harm the park's natural environment	5.88	1.34	0.44	0.83	
<b>Ascription of Responsibility</b>					<b>0.80</b>
Visitors who feed wildlife should recognize the animal health problems this might create	6.12	1.14	0.59	0.76	
I would feel responsible if any animal was harmed by my actions in the park	5.95	1.23	0.52	0.80	
Visitors should be held responsible for their actions in the park	6.18	1.01	0.66	0.73	
Visitors who feed wildlife should recognize the animal stress and aggression problems this might create	6.12	1.08	0.69	0.71	
<b>Outcome Efficacy</b>					<b>0.83</b>
Following park ranger recommendations helps minimize the negative impacts of tourism in the park	6.00	1.01	0.65	0.79	
I think we can prevent the negative impacts of tourism in the park	5.74	1.14	0.54	0.84	
Following the park's visitor rules protects the natural environment	6.15	1.06	0.71	0.76	
Following the park's visitor rules helps protect wildlife	6.21	1.02	0.74	0.75	
<b>Ability</b>					<b>0.71</b>
I can decide which of the park's visitor rules I follow	5.56	1.63	0.45	0.71	
It is impossible to follow all of the park's visitor rules	5.27	1.81	0.53	0.62	
The park's visitor rules are only recommendations are visitors are not required to follow them	5.87	1.42	0.62	0.52	
<b>Personal Norms</b>					<b>0.82</b>
Visitors should do what they can to avoid disturbing the environment while in the park	6.38	0.92	0.57	0.80	
I should do everything possible to avoid harming the park's wildlife	6.30	0.97	0.58	0.80	
I feel morally obligated to help protect the park's wildlife	5.56	1.29	0.52	0.81	
I feel personally obligated to follow the park's visitor rules	6.08	1.14	0.70	0.77	
Visitors like me should comply with the park's visitor rules	6.20	1.10	0.63	0.79	
I would feel guilty if I didn't follow the park's visitor rules	5.76	1.36	0.60	0.80	

<sup>1</sup> Cell entries are means from 1 “very strongly disagree” to 7 “very strongly agree.”

<sup>2</sup> Pearson correlation coefficient between score on individual variable and sum of scores on remaining variables.

<sup>3</sup> Cronbach alpha when variable removed from scale.

<sup>4</sup> Reliability coefficient for how well a set of variables measures a single unidimensional latent construct.

Without adequate goodness-of-fit indices for confirmatory factor analysis, the second step of structural equation modeling (i.e., structural modeling) cannot be completed. As a result, exploratory factor analysis was conducted for further item analysis. Similar to confirmatory factor analysis, factor loadings should be at least 0.40, and items exhibiting low factor loadings should be considered for deletion. Factor loadings for the exploratory factor analysis, presented in Table 4.6, indicated adequate factor loadings for five distinct factors, indicating that the items met the fundamental requirements for further analysis of the data. Unlike confirmatory factor analysis where an a priori approach is taken and items are pre-assigned to specific factors, exploratory factor analysis allows the items to be freely assigned to different factors based on covariance. The exploratory factor analysis indicated that not all items loaded onto their original proposed concepts.

As indicated in Table 4.6, five of the six items for *problem awareness* loaded under the same factor, and all items for *ascription of responsibility* and *ability* loaded under their corresponding factors. However, the items for *outcome efficacy* and *personal norms* were split between two separate factors. Therefore, before further reliability analysis was performed, the new sets of items for *outcome efficacy* and *personal norms* identified from the exploratory factor analysis were examined for content validity (i.e., ensure the items accurately represented the NAM concepts under which they loaded).

**Table 4.6. Factor Analysis of NAM Items**

Variable	Item	Component				
		F1	F2	F3	F4	F5
AR	heldresp	.704				
AR	feedproblems	.671				
PA	visharmenv	.658				
AR	vishealthprob	.657				
PN	shouldavoid	.643				
AR	respharm	.635				
OE	ruleswldlfe		.871			
OE	rulesenvrn		.868			
PN	shouldcomply		.723			
PN	persoblig		.572			
PN	guiltyrules		.493			
PA	harmfultouch			.824		
PA	harmfulfeed			.796		
PA	feeddang			.775		
PA	noisedang			.652		
PA	vischangewldlf	.457		.476		
OE	thinkprevent				.738	
PN	morallyobl				.730	
PN	shoulddo	.447			.618	
OE	followranger				.598	
A	rulesrecom					.803
A	rulesimpossible					.791
A	deciderules					.721
		Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
		a. Rotation converged in 6 iterations.				

#### ***4.3.1 Re-conceptualization of Outcome Efficacy***

Outcome efficacy was originally conceptualized as the extent to which an individual can identify effective solutions to the problem(s) identified in the problem awareness stage, and the perception that personal behavioral decisions will contribute to relieving the problem. Reliability analysis of the original set of proposed items did not support the inclusion of two items representing the belief that personal behavioral decisions would make an overall contribution, therefore these two items were eliminated. Item total correlations for these two items were less than 0.40 and the scale's Cronbach's alpha reliability coefficient increased significantly when the two items were removed, further supporting their removal from the scale. Table 4.7 shows the reliability statistics for the original set of items representing outcome efficacy.

The results of the exploratory factor analysis suggested an alternate conceptualization of outcome efficacy based on an underlying pattern in the items that loaded together. First, all items under this factor included references to the park's visitor rules (Figure 4.1). Content analysis of the items indicated that the concept is oriented around the identification of effective solutions to the problem presented in the problem awareness step; however, there is also an element of propriety associated with engaging in the identified solutions. In other words, the identified actions are viewed as being conventionally accepted or morally correct standards of behavior. This is supported by the basic premise of NAM that personal norms are only activated when individuals identify the decision to engage in the intended behavior or action as a moral choice situation. Below are the final items that loaded under outcome efficacy based on the exploratory factor analysis and reliability analysis.

**Table 4.7. Reliability Statistics for Original Items Representing Outcome Efficacy**

<b>Variable Items</b>	<b>Mean (<i>M</i>)<sup>1</sup></b>	<b>Std. dev.</b>	<b>Item total correlation<sup>2</sup></b>	<b>Alpha if deleted<sup>3</sup></b>
My personal actions are too small to make any significant impact on the park's environment	5.90	1.39	0.11	0.78
The actions of one person can reduce the negative impacts of tourism in the park	5.81	1.37	0.31	0.69
Following park ranger recommendations helps minimize the negative impacts of tourism in the park	6.07	1.17	0.65	0.59
I think we can prevent the negative impacts of tourism in the park	5.42	1.45	0.55	0.61
Following the park's visitor rules protects the natural environment	5.01	1.42	0.56	0.61
Following the park's visitor rules helps protect wildlife	5.88	1.34	0.61	0.60

<sup>1</sup> Cell entries are means from 1 "very strongly disagree" to 7 "very strongly agree."

<sup>2</sup> Pearson correlation coefficient between score on individual variable and sum of scores on remaining variables.

<sup>3</sup> Cronbach alpha when variable removed from scale.

**Figure 4.1. Final Items for Outcome Efficacy**

<b>Variable</b>	<b>Item Statement</b>
OE 1	Following the park’s visitor rules protects the natural environment
OE 2	Following the park’s visitor rules helps protect wildlife
OE 3	Visitors like me should comply with the park’s visitor rules

#### ***4.3.2 Re-conceptualization of Personal Norms***

Personal norms were originally conceptualized as feelings of personal and/or moral obligation to engage in the behaviors or actions that will ameliorate or prevent the problem identified in the problem awareness step. Analysis of the items from the exploratory factor analysis suggested that the feelings of personal/moral obligation were not oriented towards the specific target behavior or action, but instead at ameliorating and/or preventing the problem itself. For example, personal norms weren’t feelings of personal obligation to follow the park rules, but instead, feelings of personal obligation to relieve the problems of tourism in the park. Additionally, item analysis suggested there was an additional element of perception that the problem could be ameliorated. The items that loaded under this factor indicated that personal norms, therefore, are best conceptualized as feelings of personal/moral obligation to relieve the problem/need and the perception that amelioration is possible. Below are the final items that loaded under personal norms based on the exploratory factor analysis and reliability analysis (Figure 4.2).



**Figure 4.2. Final Items for Personal Norms**

<b>Variable</b>	<b>Item Statement</b>
PN 1	I feel morally obligated to help protect the park's wildlife
PN 2	I should do everything possible to avoid harming the park's wildlife
PN 3	I think we can prevent the negative impacts of tourism in this park

#### ***4.3.3 Reliability of the New NAM Concepts and Items***

Reliability of the new sets of items from the exploratory factor analysis was measured using Cronbach's alpha reliability coefficients. All alpha coefficients were greater than or equal to 0.65 and item total correlations were greater than or equal to 0.50, indicating that the variables reliably measured their respective concepts, thus justifying further analysis (Cortina, 1993; Nunnally & Bernstein, 1994). Reliability coefficients indicated high internal consistency for each concept: 0.81 for problem awareness, 0.86 for outcome efficacy, 0.71 for ability, 0.80 for ascription of responsibility, and 0.74 for personal norm. Item total correlations and Cronbach alpha coefficients for NAM concepts are presented in Table 4.8.

Next confirmatory factor analysis was conducted to assess the adequacy of the measurement components of the proposed model with the updated sets of items from the exploratory factor analysis. The confirmatory factor analysis demonstrated that the data provided an acceptable fit for the latent NAM constructs, after a few select items were removed due to low factor loadings, or cross-loadings onto two separate factors. Multiple models were compared to identify the model that best fit the data. It was decided at this point in the analysis to reconsider the inclusion of the latent concept

*ability*, due to the specific context of the behavior of this study (i.e., compliance with MANP visitor rules). The park rules were not physically challenging, and mostly involved the self-control of visitors to adhere to staying on the trails, refrain from feeding, touching, and interacting with wildlife. Therefore, it was considered that all visitors should inherently have the ability to adhere to the park rules, and in this behavioral context ability was an unnecessary addition to the proposed model. Hence, the confirmatory factor analysis models omitted the items for *ability*, except for one model for comparison purposes.

**Table 4.8. Reliability of NAM Activator Variables**

Variable Items	Item Code	Mean (M) <sup>1</sup>	Item total correlation <sup>2</sup>	Alpha if item deleted <sup>3</sup>	Cronbach alpha <sup>4</sup>
<b>Problem awareness</b>					<b>.81</b>
It can be harmful to feed wildlife	V21	5.91	.72	.67	
It can be harmful to touch wildlife	V22	5.81	.75	.64	
Feeding wildlife can be dangerous for humans	V24	5.43	.51	.88	
<b>Ascription of responsibility</b>					<b>.80</b>
Visitors who feed wildlife should recognize the animal health problems this might create	V27	6.13	.59	.76	
I would feel responsible if any animal was harmed by my actions in the park	V30	5.95	.52	.79	
Visitors should be held responsible for their actions in the park	V31	6.17	.66	.73	
Visitors who feed wildlife should recognize the animal stress and aggression problems this might create	V32	6.11	.69	.71	
<b>Outcome Efficacy</b>					<b>.86</b>
Following the park's visitor rules protects the natural environment	V47	6.16	.79	.75	
Following the park's visitor rules helps protect wildlife	V46	6.21	.85	.70	
Visitors like me should comply with the park's visitor rules	V52	6.19	.59	.94	
<b>Ability</b>					<b>.71</b>
I can decide which of the park's visitor rules I follow	V45	5.56	.50	.71	
It is impossible to follow all of the park's visitor rules	V49	5.27	.53	.62	
The park's visitor rules are only recommendations and visitors are not required to follow them	V48	5.87	.62	.52	
<b>Personal Norm</b>					<b>.74</b>
I should do everything possible to avoid harming the park's wildlife	V39	6.29	.61	.63	
I feel morally obligated to help protect the park's wildlife	V44	5.54	.52	.73	
I think we can prevent the negative impacts of tourism in the park	V38	5.73	.60	.62	

<sup>1</sup> Cell entries are means from 1 "very strongly disagree" to 7 "very strongly agree."

<sup>2</sup> Pearson correlation coefficient between score on individual variable and sum of scores on remaining variables.

<sup>3</sup> Cronbach alpha when variable removed from scale.

<sup>4</sup> Reliability coefficient for how well a set of variables measures a single unidimensional latent construct.

To evaluate the validity of the proposed measurement models, overall model fit as well as additional information such as path estimates, standardized residuals and multiple fit indices were measured (Hair et al., 2010). The first model included all items from the exploratory factor analysis. The second, third, and fourth models included sub-sets of the original list of items, proceeding through a step-wise process of elimination of items with the lowest factor loadings and/or items that cross loaded onto more than one factor. The fifth model was chosen as the best model to fit the data and retained for further analysis (i.e., structural equation modeling). The sixth model included only two items for outcome efficacy and personal norms, which were the items from the original lists, and excluded the additional items identified from the exploratory factor analysis. The seventh model included the same sets of items as model five, and included the concept *ability* for comparison purposes.

The model fit indices for all seven models are presented in Table 4.9. Only for models five, six, and seven were the model goodness-of-fit indices all acceptable. For all three models the factor loadings met the criterion of being equal to or greater than 0.40 (Hair et al., 2010). Goodness-of-fit indices were slightly better for model six and seven, than for model five; however, the differences were marginal, and model five was chosen as the best measurement model for the data. Model five was chosen over the alternate models because model six only included two items for both outcome efficacy and personal norms and model seven was intended for comparison purposes only (i.e., included the latent concept ability).

For the fifth model (Table 4.10), the model fit for the measurement model was good ( $\chi^2 = 104.83$ ,  $df = 59$ , comparative fit index [CFI] = .96; non-normed fit index [NNFI] = .95;

root mean square error of approximation [RMSEA] = .046; normed fit index [NFI] = .92).

As shown in Table 4.10, the fit indices showed the measurement model with all of the variables to have a good fit.

**Table 4.9. Model 5 Goodness-of-fit Indices**

<b>Goodness-of-fit Indices</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>	<b>Model 7</b>
SB Chi-square	402.5541	230.2546	289.7635	219.0546	104.8316	61.9714	145.8935
df	113	84	84	71	59	38	94
X <sup>2</sup> /df	3.56	2.74	3.45	3.09	1.78	1.63	1.55
p value	.000	.000	.000	.000	.000	.008	.000
SB NFI	.779	.850	.818	.846	.918	.939	.915
SB NNFI	.794	.872	.827	.857	.950	.964	.959
CFI	.829	.898	.862	.889	.962	.975	.968
IFI	.831	.899	.864	.890	.963	.975	.968
MFI	.677	.821	.748	.819	.940	.967	.932
RMSEA	.083	.069	.083	.075	.046	.042	.039

**Table 4.10. Model Fit Indices for Confirmatory Factor Analysis of NAM Concepts**

<b>Goodness-of-fit index</b>	<b>Model output</b>	<b>Fit Guidelines</b>
X <sup>2</sup> /df	1.78	1 to 3
SB NFI	.918	≥ 0.9
SB NNFI	.950	≥ 0.9
CFI	.962	≥ 0.9
IFI	.963	≥ 0.9
MFI	.940	≥ 0.9
RMSEA	.046	≤ 0.5

#### ***4.3.4 Convergent and Discriminant Validity***

Once the measurement model was determined to have an acceptable fit, convergent and discriminant validity were evaluated for each latent construct. The loadings of all items were statistically significant for the proposed constructs which supports their assignment as indicators of their respective latent concept. All factor loadings ranged from 0.59 to 0.98, exceeding the conservative threshold of 0.50. The composite reliability for each NAM construct surpassed the minimum recommended threshold of 0.70. The average variance extracted (AVE) for each construct also surpassed the minimum threshold of 0.50. Finally, convergent validity is demonstrated when the composite reliability for each construct exceeds the respective AVE score (Trinkle & Lam, 2014), which was the case for all of the model constructs. To measure discriminant validity, the maximum squared shared variance (MSV) was compared with the AVE scores; an indicator of discriminant validity is MSV scores lower than respective AVE scores. MSV values were lower than the AVE scores for all constructs except for ascription of responsibility;

which indicates there could be some shared correlation between ascription of responsibility and personal norms. Two additional measures were utilized to further assess the discriminant validity of the constructs. Average squared shared variance (ASV), was calculated for each construct, and all ASV values were lower than the respective AVE values, which is an indicator of discriminant validity (Trinkle & Lam, 2014). Finally, the squared AVE for each of the constructs was greater than their correlation with other constructs, also indicating discriminant validity (Hair et al., 2010). In conclusion, the assessment of the measurement model suggested that the validity and reliability of the measured latent variables was acceptable. Table 4.11 presents the MSV scores for each NAM construct. Table 4.12 presents the factor loadings, composite validity, ASV, AVE<sup>2</sup> and AVE scores supporting the convergent and discriminant validity of the NAM constructs.

**Table 4.11. Maximum Squared Shared Variance for NAM Constructs**

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Problem Awareness	1			
Ascription of Responsibility	0.281	1		
Outcome Efficacy	0.092	0.239	1	
Personal Norms	0.164	0.609	0.314	1

**Table 4.12. Convergent and Discriminant Validity of NAM Constructs**

Variable	Num.	Factor Loading	ASV	AVE <sup>2</sup>	AVE	CR
<b>Problem Awareness</b>			<b>0.18</b>	<b>0.41</b>	<b>0.64</b>	<b>0.77</b>
It can be harmful to feed wildlife	PA1	0.88				
It can be harmful to touch wildlife	PA2	0.90				
Feeding wildlife can be dangerous for humans	PA3	0.59				
<b>Ascription of Responsibility</b>			<b>0.38</b>	<b>0.28</b>	<b>0.53</b>	<b>0.75</b>
Visitors who feed wildlife should recognize the animal health problems this might create	AR1	0.70				
I would feel responsible if any animal was harmed by my actions in the park	AR2	0.60				
Visitors should be held responsible for their actions in the park	AR3	0.76				
Visitors who feed wildlife should recognize the animal stress or aggression problems this might create	AR4	0.83				
<b>Outcome Efficacy</b>			<b>0.21</b>	<b>0.55</b>	<b>0.74</b>	<b>0.83</b>
Following the park's visitor rules helps protect wildlife	OE1	0.98				
Following the park's visitor rules protects the natural environment	OE2	0.92				
Visitors like me should comply with the park's visitor rules	OE3	0.63				
<b>Personal Norm</b>			<b>0.36</b>	<b>0.50</b>	<b>0.70</b>	<b>0.80</b>
I think we can prevent the negative impacts of tourism in this park	PN1	0.72				
I should do everything possible to avoid harming the park's wildlife	PN2	0.84				
I feel morally obligated to help protect the park's wildlife	PN3	0.93				

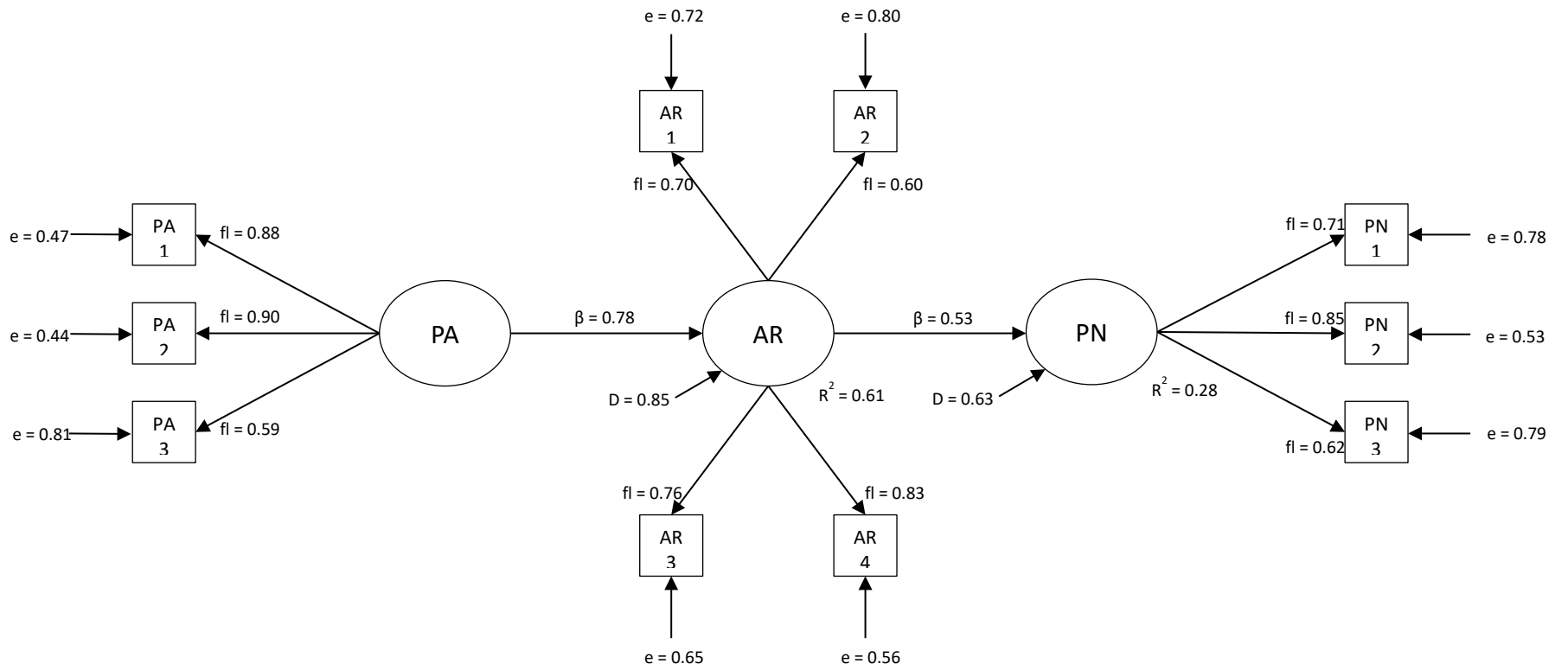


## **4.4 Structural Model**

Once a satisfactory measurement model was obtained and identified, structural equation modeling (SEM) analysis followed to evaluate the model's overall goodness-of-fit for the data. The purpose of SEM is to determine whether the proposed theoretical relationships between the NAM constructs are supported by the data. As in confirmatory factor analysis, multiple fit indices are used to evaluate the statistical significance of each identified path and the overall fit of the proposed relationships. Multiple models were tested to explore hypothesized relationships between the model constructs and determine the best model that fit the data. Model variations were generated based on the proposed NAM theory, previous empirical findings from relevant NAM studies, and logical explanations of relationships between NAM constructs.

### ***4.4.1 Structural Model Analysis of Partial NAM Interpretations***

The first model tested included only problem awareness, ascription of responsibility, and personal norms (Figure 4.3). As discussed in chapter 2, the majority of studies that have examined the potential of NAM to predict ERB has been limited to examining only problem awareness and ascription of responsibility. As predicted, there was a significant positive relationship between problem awareness and ascription of responsibility in relation to personal norms. Visitors with higher levels of problem awareness and ascription of responsibility were more likely to have activated personal norms to prevent and/or ameliorate the impacts of tourism in MANP.



**Figure 4.3. Structural Model of Problem Awareness, Ascription of Responsibility, and Personal Norms**

The next step in the analysis was to examine whether ascription of responsibility mediates the relationship between problem awareness and personal norms. The hypothesized relationship between the variables was that ascription of responsibility would fully mediate the effects of problem awareness on the activation of personal norms. In the direct effects model, problem awareness had a significant positive effect on personal norms ( $\beta = 0.401, p < 0.05$ ). In the partial mediation model, the path coefficient between problem awareness and ascription of responsibility was positive and significant ( $\beta = 0.78, p < 0.05$ ), and the path between ascription of responsibility and personal norms was also positive and significant ( $\beta = 0.53, p < 0.05$ ). The direct path coefficient between problem awareness and personal norms, however, became negative and was not statistically significant ( $\beta = -0.01, p > 0.05$ ). These findings support the full mediation model. Beta coefficients, factor loadings, and other relevant path statistics for the full mediation model are shown in Figure 4.3. The equations for the partial NAM model represented in Figure 4.3 are:

$$AR = \beta_{PA.AR} * PA + d_{AR}$$

$$PN = \beta_{PN.AR} * AR + d_{PN}$$

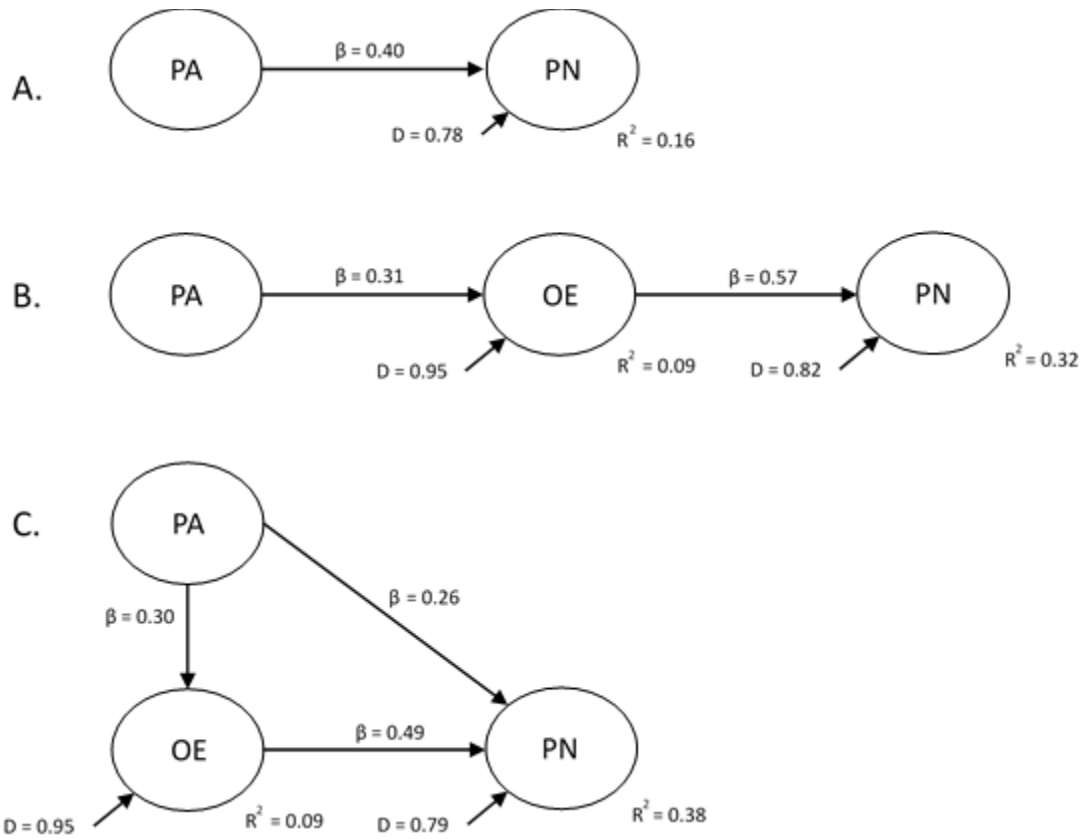
Additional support for the full mediation model was evident in the chi-square statistic difference test (Table 4.13). The full mediation model had a significantly better fit than the direct effects model ( $\Delta\chi^2 = 41.53, \Delta df = 25, p < 0.05$ ), but was statistically equivalent to the partial mediation model ( $\Delta\chi^2 = 0.0735, \Delta df = 1, p = 0.786$ ). Structural model fit for the full mediation model was acceptable and strong (S-B  $\chi^2 = 53.01, p < 0.05$ , CFI = 0.973, NFI = 0.932, NNFI = 0.963, RMSEA = 0.04). The goodness of fit statistics for these comparative models are shown in Table 4.13. These results suggest that ascription

of responsibility mediates the effects of problem awareness on the activation of personal norms. Complete mediation means that problem awareness no longer effects personal norms once ascription of responsibility is controlled for.

Additional analyses were performed to test for mediation between other NAM variables; however, only evidence of partial mediation was found. Specifically, results suggested that outcome efficacy partially mediates the effects of problem awareness on personal norms (Figure 4.4), and ascription of responsibility partially mediates the effects of outcome efficacy on personal norms (Figure 4.5). That is, visitors with higher levels of problem awareness and outcome efficacy were more likely to have activated personal norms, yet the effect of problem awareness was mediated through outcome efficacy. Likewise, visitors with higher levels of outcome efficacy and ascription of responsibility were more likely to have activated personal norms to prevent and/or ameliorate the impacts of tourism in MANP; yet again, the effect of outcome efficacy on personal norms was mediated by ascription of responsibility. All beta coefficients were positive and significant for all paths, and the Chi-square difference test for each model did not support full mediation.

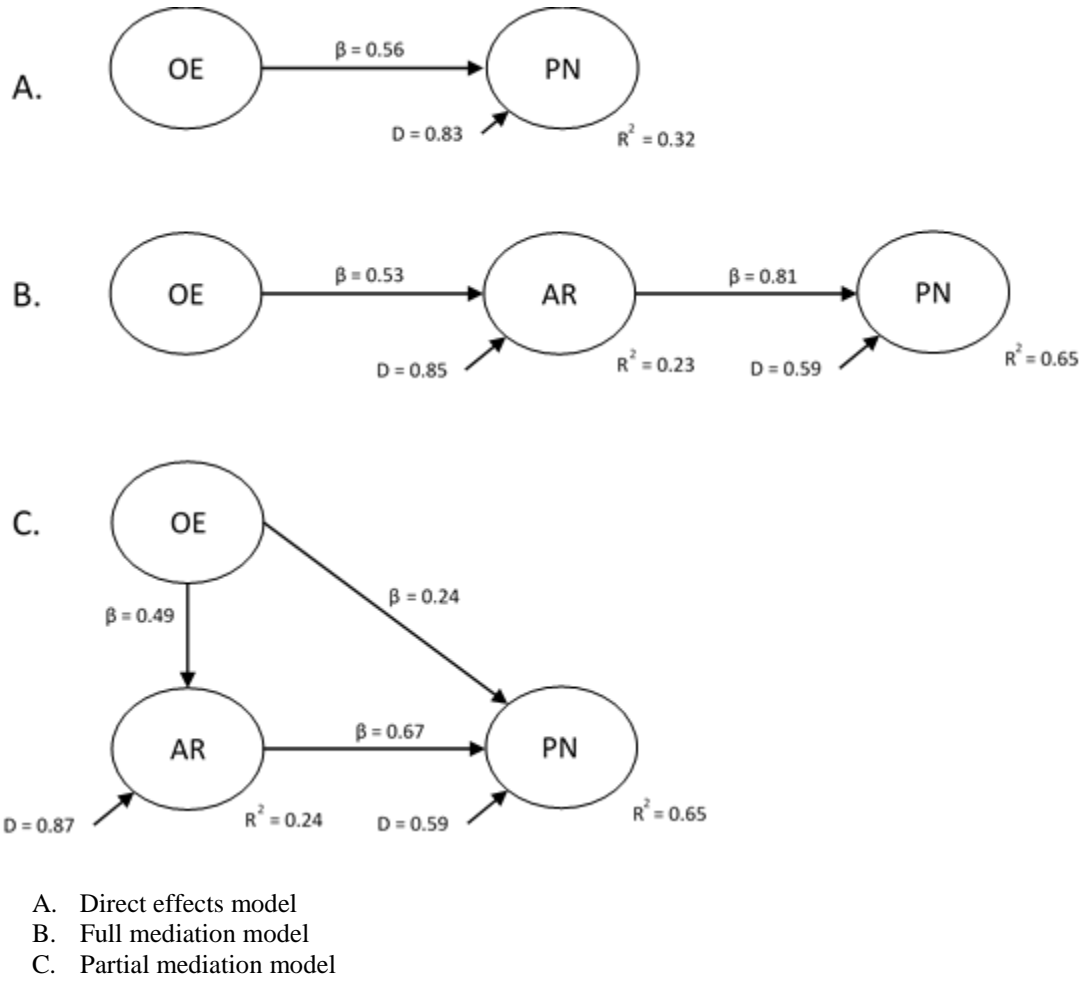
**Table 4.13. PA → AR → PN Chi-square Difference Test and Goodness-of-fit Indices**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b>df</b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>RMSEA</b>	<b>Comparison</b>	<b><math>\Delta\chi^2</math></b>	<b><math>\Delta df</math></b>	<b><i>p</i></b>
Direct effects	11.55	8	0.991	0.972	0.983	0.035				
Full mediation	53.0839	33	0.973	0.932	0.963	0.041	Direct vs. Full	41.53	25	<.05
Partial mediation	53.0104	32	0.971	0.932	0.96	0.042	Full vs. Partial	0.0735	1	0.7863



- A. Direct effects model
- B. Full mediation model
- C. Partial mediation model

**Figure 4.4. Beta Coefficient Comparisons for PA, OE, and PN**



**Figure 4.5. Beta Coefficient Comparisons for OE, AR, and PN**

The data indicates that the effect of the predictor variable on the outcome variable for both models was reduced when including the mediator variable, which suggests partial mediation (Baron & Kenny, 1986). Partial mediation means that the effect of the predictor variable on the outcome variable is reduced when the mediator variable is introduced. That is, the effects of problem awareness on personal norms are partially reduced when outcome efficacy is added to the model. The effects of outcome efficacy on personal norms are also reduced when ascription of responsibility is added to the model. Partial mediation was further supported by the Chi-square difference test for both models (Table 4.14 and Table 4.15).



**Table 4.14. PA → OE → PN Chi-square difference test and goodness-of-fit indices**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>RMSEA</b>	<b>Comparison</b>	<b><math>\Delta\chi^2</math></b>	<b><math>\Delta df</math></b>	<b><i>p</i></b>
Direct effects	11.55	8	0.991	0.972	0.983	0.035				
Full mediation	55.8	25	0.964	0.937	0.95	0.058	Direct vs. Full	44.25	17	< 0.01
Partial mediation	39.34	24	0.982	0.955	0.97	0.042	Full vs. Partial	16.46	1	< 0.01

**Table 4.15. OE → AR → PN Chi-square difference test and goodness-of-fit indices**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>RMSEA</b>	<b>Comparison</b>	<b><math>\Delta\chi^2</math></b>	<b><math>\Delta df</math></b>	<b><i>p</i></b>
Direct effects	13.05	8	0.99	0.974	0.981	0.041				
Full mediation	74.53	33	0.952	0.918	0.934	0.058	Direct vs. Full	61.5	17	< 0.01
Partial mediation	66.5	32	0.982	0.966	0.975	0.054	Full vs. Partial	8.03	1	< 0.01

#### ***4.4.2 Full NAM Interpretations***

Once structural model analysis was conducted for partial NAM interpretations, structural model analysis for the complete proposed model was conducted (Figure 4.6). Hypotheses regarding the relationship between the proposed NAM constructs were based on the structural model analyses of the partial models, previous NAM research and a priori assumptions posited from the originally proposed model (Schwartz, 1977). It was predicted that the strongest determinant of personal norms is ascription of responsibility, and that ascription of responsibility partially mediates the effects of outcome efficacy on personal norms, while it fully mediates the effects of problem awareness on personal norms.

As predicted, there was a significant positive relationship between the NAM predictor variables and personal norms, with the strongest predictor being ascription of responsibility. Park visitors with higher levels of problem awareness were more likely to ascribe responsibility to themselves for tourism related problems in the park (i.e., ascription of responsibility). The standardized path coefficient between problem awareness and ascription of responsibility was positive and significant ( $\beta = 0.42, p < 0.05$ ). Park visitors with higher levels of problem awareness were also more likely to be able to identify potential solutions to the problems (i.e., outcome efficacy). The standardized path coefficient between problem awareness and outcome efficacy was positive and significant ( $\beta = 0.36, p < 0.05$ ). Problem awareness and outcome efficacy explained 40% of the variance in ascription of responsibility.

As predicted and based on the partial model structural analysis, park visitors who ascribed more responsibility to themselves for the negative impacts of tourism on the park and its wildlife were more likely to feel a personal obligation to do something to relieve or prevent those negative impacts (i.e., activated personal norms). The standardized path coefficient between ascription of responsibility and personal norms was positive and statistically significant ( $\beta = 0.66, p < 0.05$ ). Visitors with activated personal norms were also more likely to identify effective solutions to relieve or prevent the impacts of tourism (i.e., outcome efficacy). The standardized path coefficient between outcome efficacy and personal norms was positive and significant ( $\beta = 0.24, p < 0.05$ ). Outcome efficacy and ascription of responsibility explained 65% of the variance in personal norms.

The equations for the full NAM model represented in Figure 4.6 are:

$$OE = \beta_{OE.PA} * PA + d_{OE}$$

$$AR = \beta_{AR.OE} * OE + \beta_{AR.PA} * PA + d_{AR}$$

$$PN = \beta_{PN.AR} * AR + \beta_{PN.OE} * OE + d_{PN}$$

Figure 4.6 presents the structural model that best represents the relationships of the proposed NAM variables of this data. All model goodness-of-fit indices were acceptable and surpassed the minimum thresholds and requirements (Table 4.16). CFI, a more conservative index was .963, exceeding the 0.90 minimum and the even more conservative threshold of 0.95. RMSEA was 0.045, sufficiently below the maximum threshold of 0.10 and below the more conservative limit of 0.08

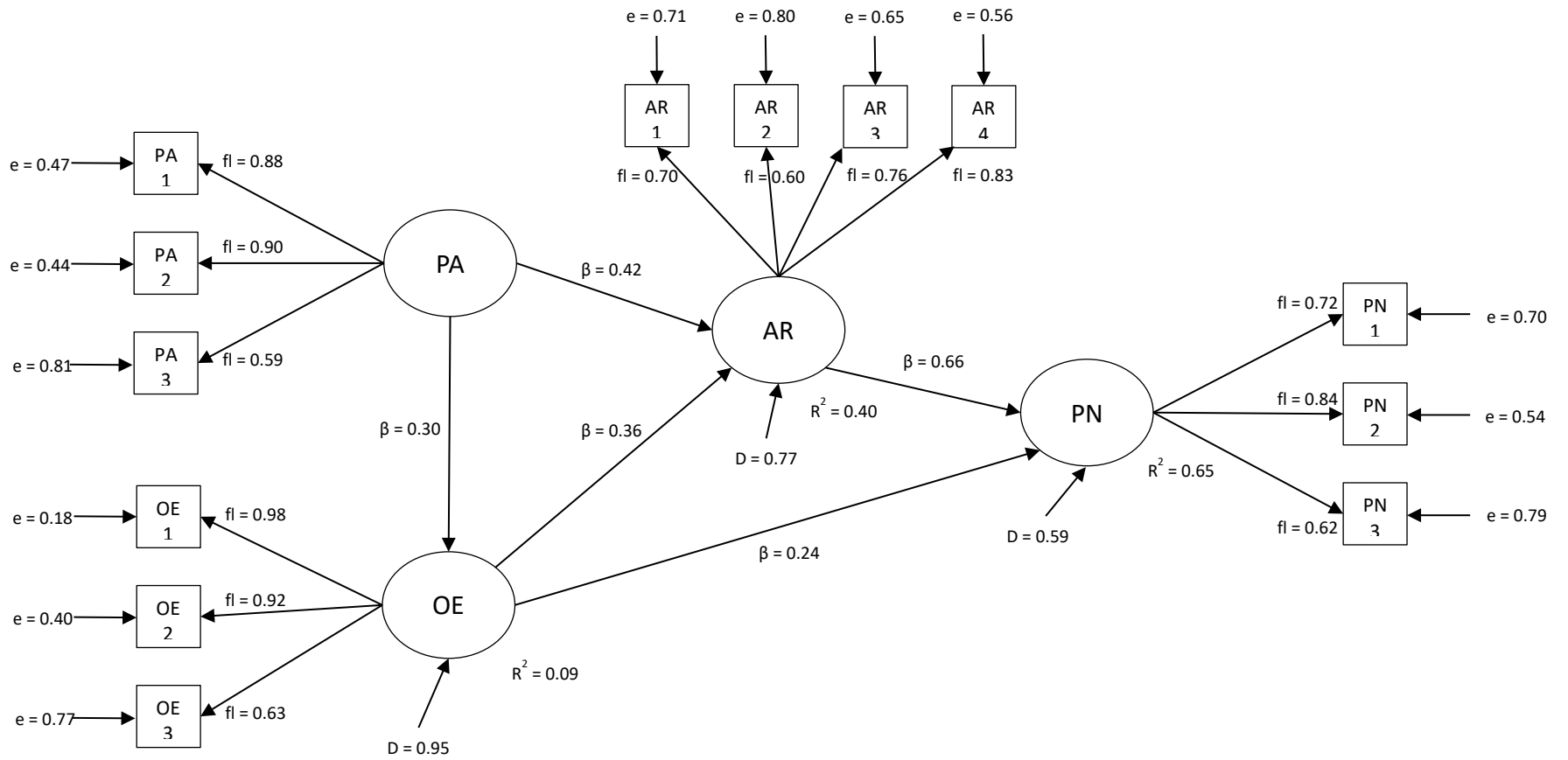


Figure 4.6. SEM Full NAM Model

**Table 4.16. Goodness-of-fit Indices for Structural Model Represented in Figure 4.4**

<b>Goodness-of-fit index</b>	<b>Model output</b>	<b>Fit Guidelines</b>
X <sup>2</sup> /df	1.75	1 to 3
SB NFI	.92	≥ 0.9
SB NNFI	.95	≥ 0.9
CFI	.963	≥ 0.9
IFI	.963	≥ 0.9
MFI	.941	≥ 0.9
RMSEA	.045	≤ 0.5

(Vaske, 2008). All other goodness of fit indices were also acceptable and are presented in Table 4.16.

Alternate models were analyzed for comparison purposes to identify the model that best fit the data. The next step in the analysis was to examine whether alternate relationships between the NAM variables provided a better fit for the data. The first alternate path considered was to replace ascription of responsibility with outcome efficacy as the immediate determinant to personal norms. Various structural models with alternate paths were analyzed (Figure 4.7); however no model variation with outcome efficacy as the sole immediate determinant to personal norms achieved acceptable goodness of fit scores (Table 4.17). As observed in model D (Table 4.17 and Figure 4.7), the overall goodness-of-fit indices improved, and the amount of variance explained by the model increased when a direct path was added between ascription of responsibility and personal norms in addition to outcome efficacy.

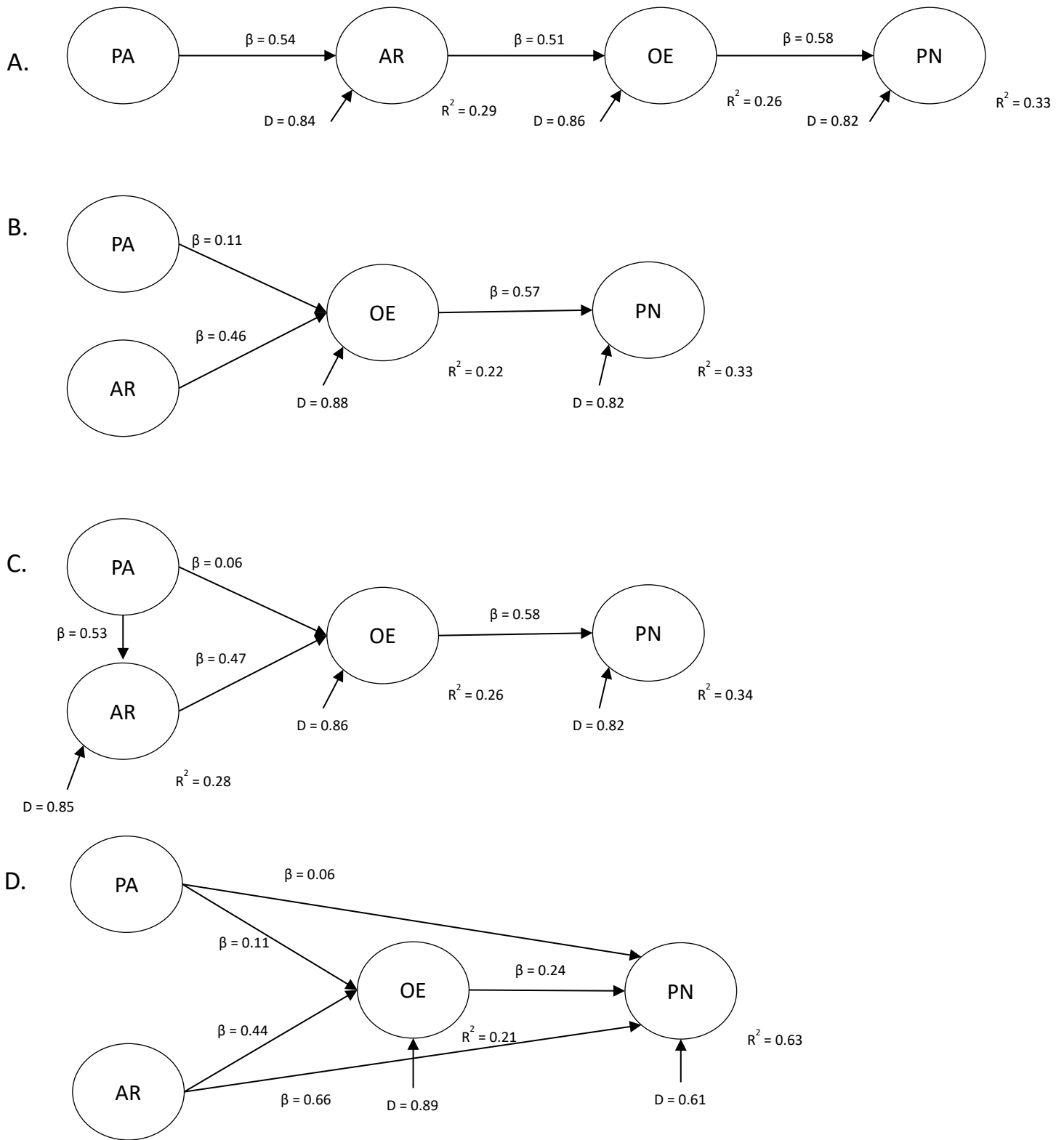
**Table 4.17. Goodness-of-fit Indices for Alternate OE Determinant Models**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>IFI</b>	<b>MFI</b>	<b>RMSEA</b>
A	211.5	62	0.88	0.84	0.84	0.88	0.82	0.081
B	279.54	62	0.82	0.78	0.77	0.82	0.75	0.097
C	209.25	61	0.88	0.84	0.84	0.88	0.82	0.081
D	181.26	60	0.89	0.86	0.87	0.9	0.85	0.074

Additional model variations with ascription of responsibility as the immediate determinant to personal norms were also analyzed. All of these model variations (Figure 4.8) obtained acceptable goodness-of-fit scores with many of the selected indices (Table 4.18); however, when these model indices scores were compared with the output from the model presented in Figure 4.6 it was concluded that the alternate models did not describe the data as well. All standardized path coefficients for models A through D are positive and significant with the exception of one path. Model D included a direct path between problem awareness and personal norms, but as expected, the path coefficient was negative and not statistically significant (Figure 4.8). Of the four alternate AR models examined, model C was the best model to fit the data.

Further analysis using the Chi-square difference test indicated that model C, which represents a full mediation model, did not fit the data as well as the model in Figure 4.6, a partial mediation model. The  $\chi^2$  for the partial mediation model ( $\chi^2 = 105.18$ ) was statistically smaller ( $p < .001$ ) than the full mediation model ( $\chi^2 = 123.53$ ). The improved chi-square statistics implies that the partial mediation model fits the data better than the full mediation model (Kline, 1998). Comparison of additional goodness-of-fit indices for both models suggests that the partial mediation model is also a better fit for the data (table 4.19).





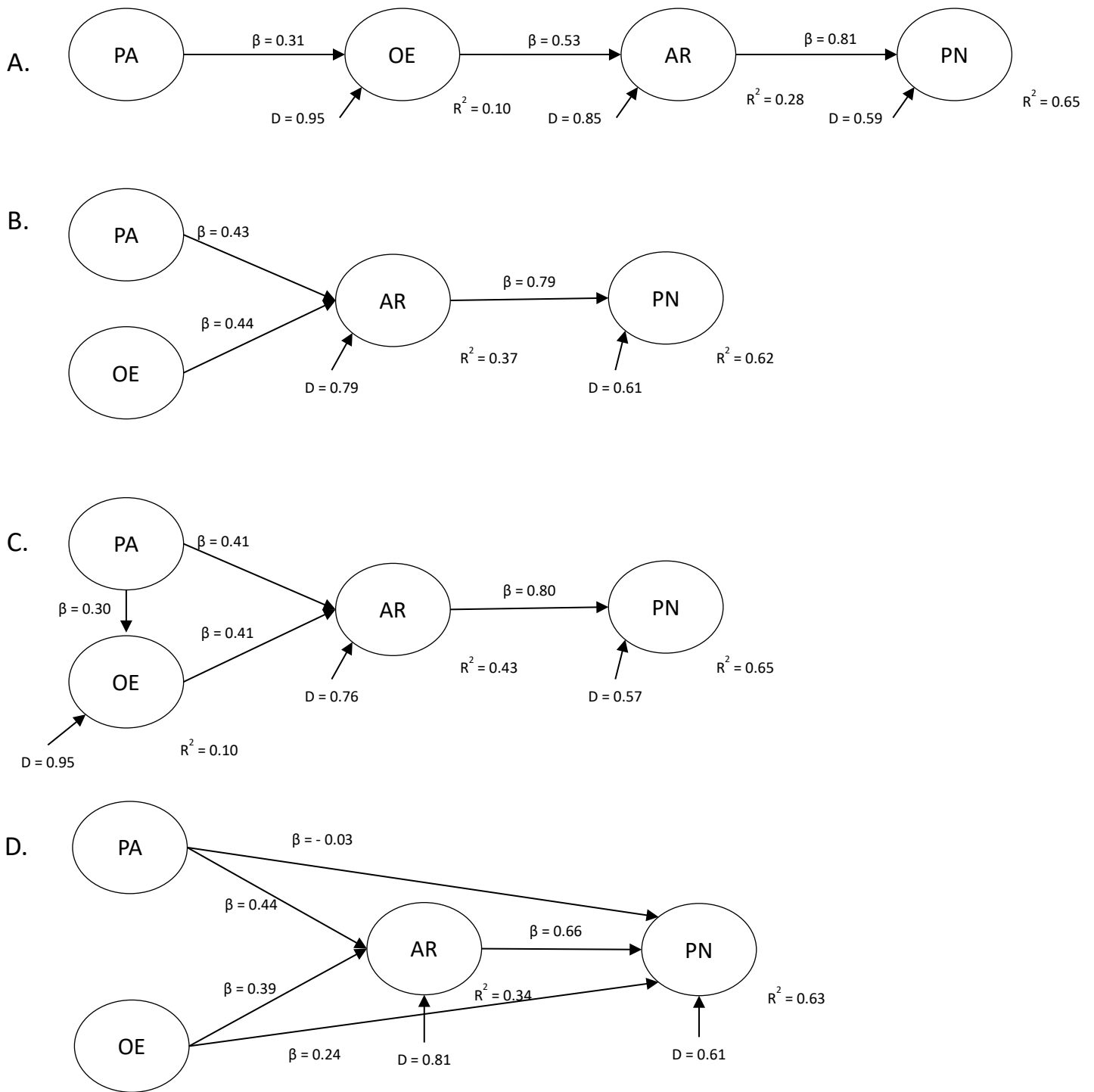
**Figure 4.7. Alternate NAM Structural models with OE as Primary Determinant of PN**

**Table 4.18. Goodness-of-fit Indices for Alternate AR Determinant Models**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>IFI</b>	<b>MFI</b>	<b>RMSEA</b>
A	174.58	62	0.91	0.86	0.88	0.91	0.86	0.07
B	153.02	62	0.92	0.88	0.91	0.93	0.88	0.063
C	123.53	61	0.95	0.9	0.93	0.95	0.92	0.053
D	134.2	60	0.94	0.9	0.92	0.94	0.91	0.058

**Table 4.19. Partial and Full Mediation Models Goodness-of-fit Index Comparisons**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>IFI</b>	<b>MFI</b>	<b>RMSEA</b>	<b><math>\Delta\chi^2</math></b>	<b><math>\Delta df</math></b>	<b><i>p</i></b>
Full mediation	123.53	61	0.95	0.90	0.93	.95	.92	0.053			
Partial mediation	105.18	60	0.96	0.92	0.95	.96	.94	0.045	18.35	1	< 0.01

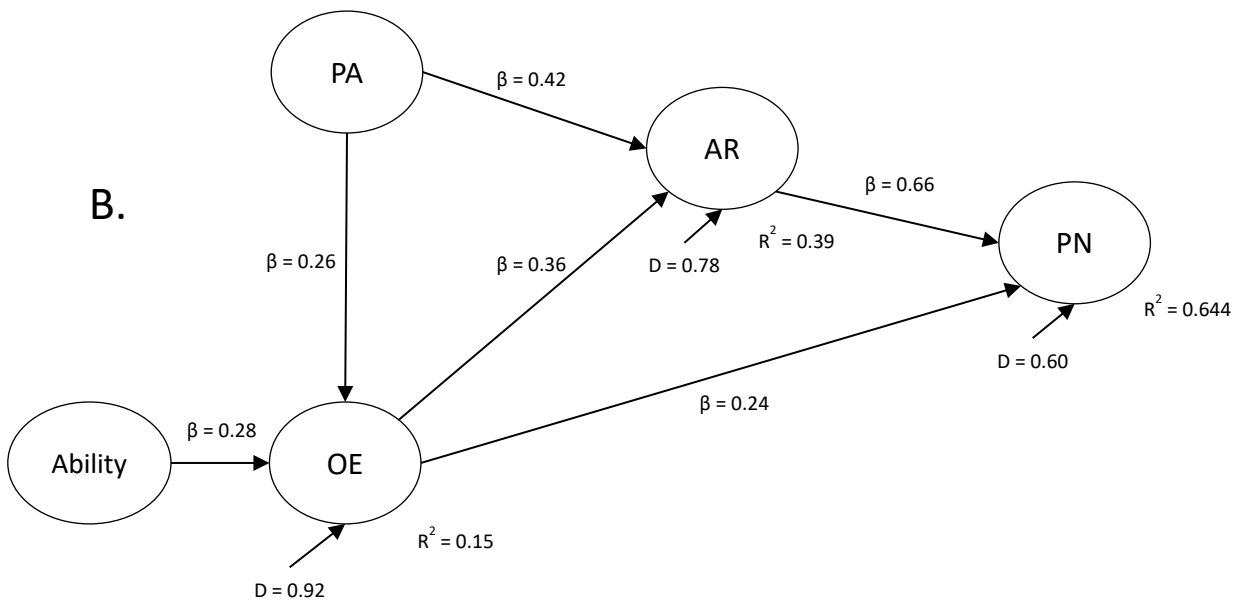
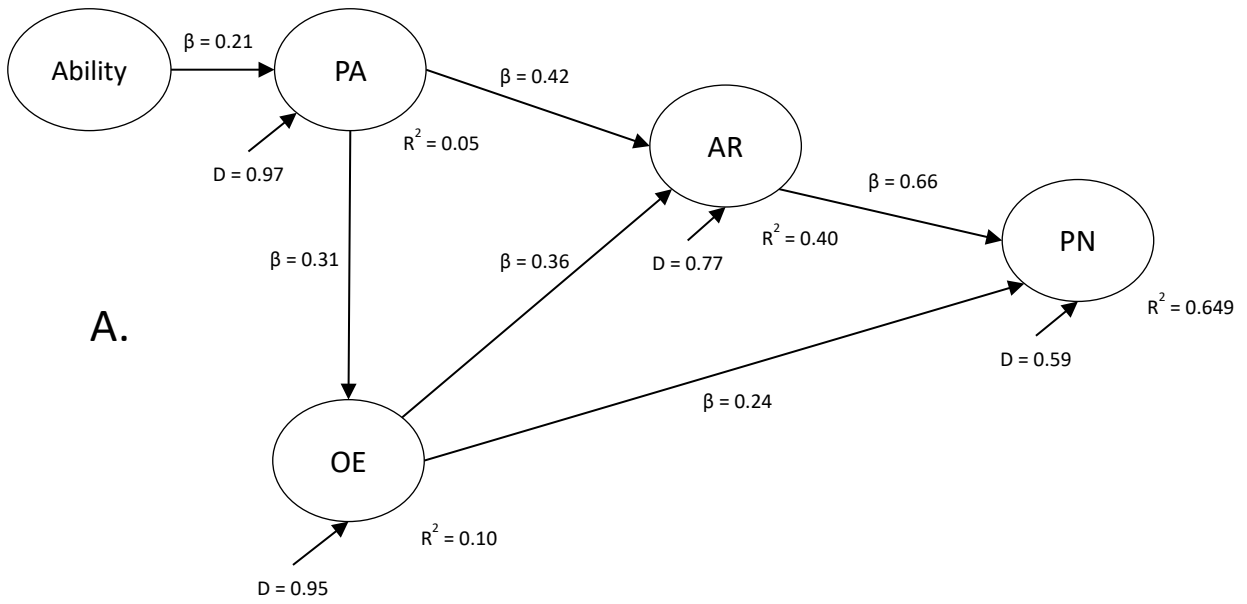


**Figure 4.8. Alternate NAM Structural Models with AR as Primary Determinant of Personal Norms**

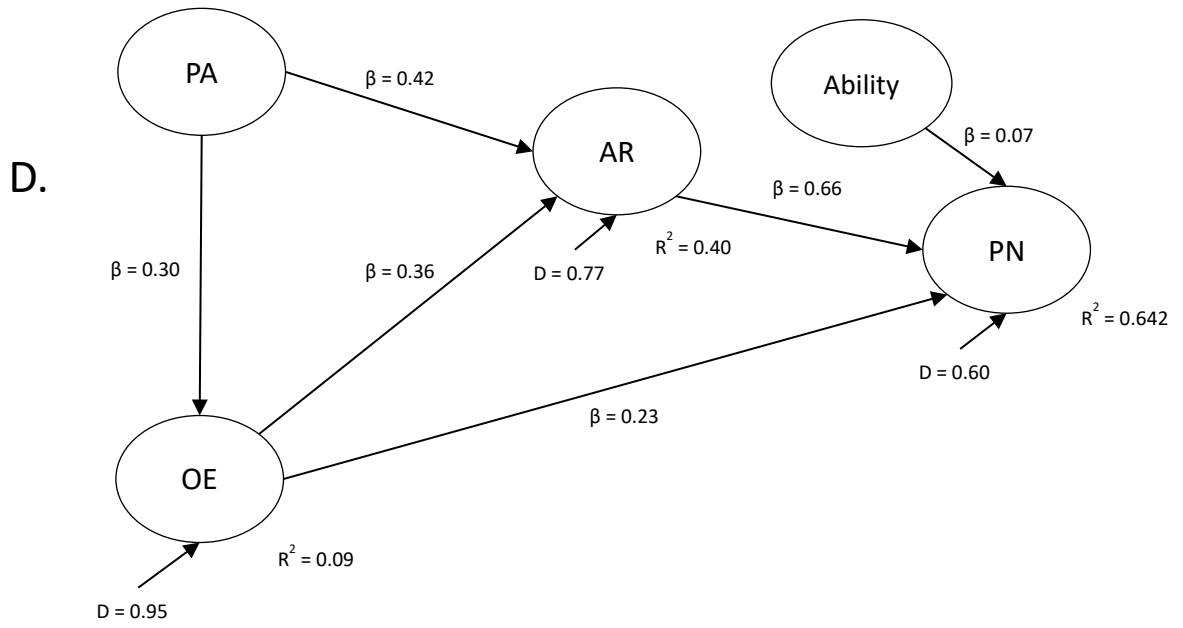
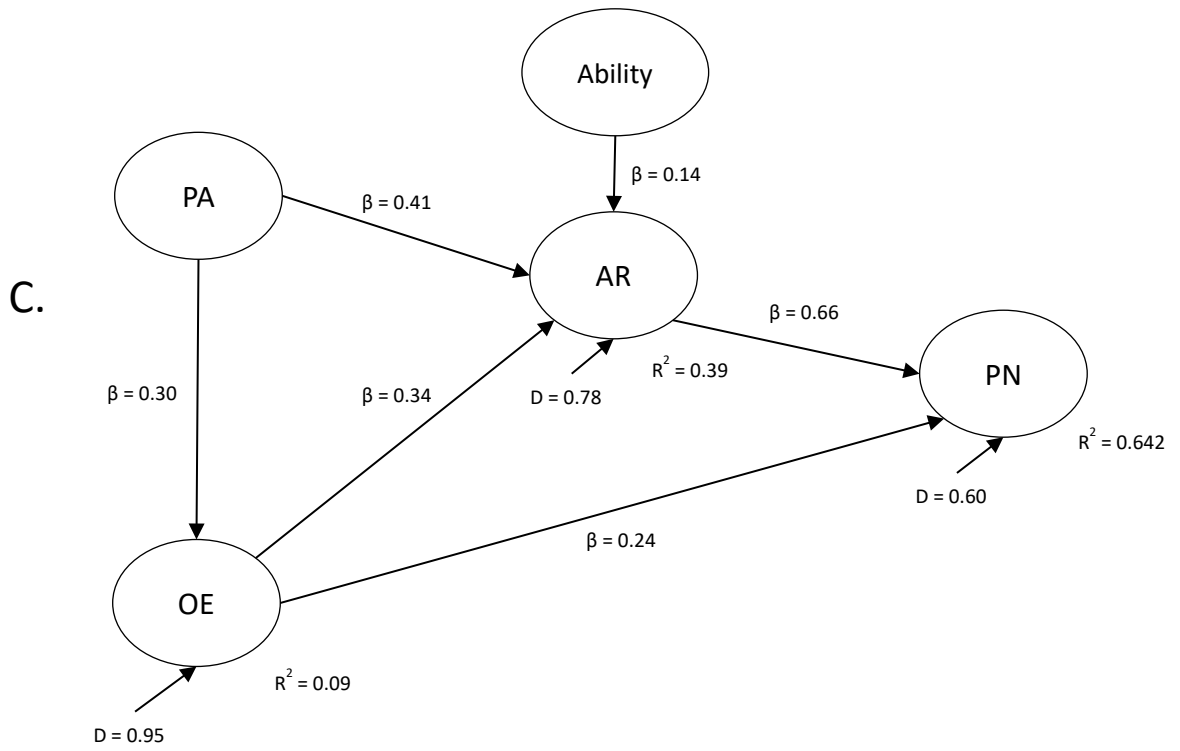
#### ***4.4.3 Ability as a NAM Construct***

In a post-hoc analysis, the construct ability was added to the model best identified to fit the data (Figure 4.6) to explore its relationship with the other NAM constructs and determine whether its inclusion would improve the overall goodness-of-fit of the model. Four distinct models were assessed that included ability, each with a direct path between ability and a different NAM construct. The addition of ability did not improve the original model identified, supporting the decision to exclude it from further data analysis and discussion. Although acceptable goodness-of-fit indices were obtained for all models with ability, none of them was statistically better than the original model.

The standardized path coefficient between ability and the other NAM constructs was significant for all constructs except personal norms (Figure 4.9.a. and Figure 4.9.b.). For all paths, as ability increased, so did the outcome variable. The strongest relationship was between ability and outcome efficacy ( $\beta = 0.262$ ), followed by problem awareness ( $\beta = 0.213$ ); nevertheless, the relationship between ability and the other NAM constructs was not particularly strong for any of the models. All goodness-of-fit indices were comparable for each model; however, the model with ability as a predictor variable for outcome efficacy best explained the data (Table 4.20). The relationship between ability and any of the NAM constructs was only low to moderate using this data, based on path coefficients and effect size (i.e.,  $R^2$  values). In this behavior context, the data supported the exclusion of ability as a construct in the model; its inclusion did not improve the overall explanation of variance in personal norms.



**Figure 4.9.a. NAM Models with the Construct Ability**



**Figure 4.9.b. NAM Models with the Construct Ability**

**Table 4.20. Goodness-of-fit Indices for Models Including Ability**

<b>Model</b>	<b>SB-<math>\chi^2</math></b>	<b><i>df</i></b>	<b>CFI</b>	<b>NFI</b>	<b>NNFI</b>	<b>IFI</b>	<b>MFI</b>	<b>RMSEA</b>
PA	173.81	98	0.953	0.899	0.942	0.953	0.903	0.046
OE	162.58	99	0.96	0.906	0.952	0.961	0.918	0.042
AR	180.72	99	0.949	0.895	0.938	0.95	0.9896	0.047
PN	184.25	99	0.947	0.893	0.94	0.948	0.891	0.048



#### ***4.4.4 Denial of Responsibility***

Initial tests of validity and reliability for the proposed items for denial of responsibility, based on Cronbach's alpha reliability coefficient and item-total correlation, did not support the construction of a composite scale based on the measured items, even after deleting low-scoring items. Confirmatory factor analysis of a subset of the denial of responsibility items with the NAM items used in Figure 4.6 indicated acceptable goodness-of-fit indices. However, additional analysis based on composite reliability and AVE did not support the construction of a denial of responsibility scale based on the items measured.

### **4.5 Research Questions**

The primary focus of this study is to improve the understanding of the effect of personal norms on tourist decisions to comply with visitor rules at MANP. Investigating this involved examining the following research questions:

- (1) Which variables are significantly associated with personal norms?
- (2) Does a full Norm Activation Model (NAM) interpretation improve the strength of personal norms to predict compliance with visitor rules?
- (3) What mechanisms or situational factors affect personal norms to comply with visitor rules?
- (4) What factors interfere with personal norms to comply with visitor rules?

#### ***4.5.1 Research Question 1: Which Variables are Significantly Associated with Personal Norms?***

Statistical analysis revealed that multiple variables were significantly associated with the composite variable for personal norms. As predicted from the theoretical propositions of

NAM, the main model's predictive constructs (i.e., NAM predictive variables) were statistically associated with personal norms (Table 4.19). As the predictive variables' values increased, personal norms also increased, in other words, visitors with more problem awareness also had stronger personal norms. Ascription of responsibility had the strongest positive relationship with personal norms, followed by outcome efficacy, problem awareness and finally ability. Denial of responsibility was excluded from this analysis due to its lack of scale reliability. Three of the four personal values, included to represent awareness of consequences, were also significantly and positively associated with personal norms (Table 4.21). The biospheric value orientation had the strongest positive correlation, followed by altruism and hedonism. The egoistic value orientation was not significantly associated with person norms.

**Table 4.21. Correlations between NAM Predictive Variables and Personal Norms**

<b>Variable</b>	<b>Pearson Correlation</b>	<b>Significance (1-tailed)</b>
Problem Awareness	0.331	0.000
Ascription of Responsibility	0.583	0.000
Outcome Efficacy	0.501	0.000
Ability	0.247	0.000
Egotistic Value Orientation	0.024	0.317
Biospheric Value Orientation	0.332	0.000
Altruistic Value Orientation	0.440	0.000
Hedonistic Value Orientation	0.152	0.001

Additional analysis explored the relationship between personal norms and other variables hypothesized to potentially be associated with personal norms. Multiple situational variables were found to have a significant relationship with personal norms, however effect sizes were minimal for all predictor variables, and

the size of some variable categories were too small to be considered statistically sound. Language and whether or not visitors reported having been in the park before had the largest effect size, 0.20 and 0.21, respectively. Spanish speakers and visitors who had visited the park previously were more likely to have higher personal norms. Country of residence and day of the week visiting the park had minimal effect sizes, and differences between the variable categories is ambiguous, and offers limited information. For example, respondents from Mexico were more likely to have stronger personal norms than respondents from Germany, but no other significant differences existed between countries of residence. Likewise, respondents that visited the park on Tuesdays were more likely to have stronger personal norms than respondents that visited on Saturdays. Rule awareness and knowledge, self-reported behavior violations, and self-reported 'learning' of park rules via posted signs and other sources (either before or during the current park visit) were not significantly associated with personal norms. Three questionnaire items did have a significant relationship with personal norms, however the effect size for all three was very minimal (i.e., ranging from 0.018 to 0.09) and the size of some categories was so small that significance of the relationship is not reliable. These variables were knowledge of the rule 'it is prohibited to feed wildlife,' who initiated the interaction (e.g., animal, human, no animal involved), and whether or not respondents indicated they had taken natural souvenirs from the park sites.

#### ***4.5.2 Research Question 2: Does a Full Norm Activation Model (NAM) Interpretation Improve the Strength of Personal Norms to Predict Compliance with Visitor Rules?***

A primary objective of this research was to examine whether the predictive NAM variables that had been identified as missing from the vast majority of previous research

would contribute to the ability of NAM to predict personal norms. Various models were considered in the data analysis process to identify the best model to fit the data collected. Although the predictive variable *ability* was cut from the overall model analysis for theoretical and contextual reasons previously explained, the remaining three activator variables were included for analysis. Two partial models and a full model containing all three activator variables with personal norms as the outcome variable were compared for analysis.

The first partial model was the standard partial interpretation of NAM found in much of the respective research and literature (i.e., problem awareness, ascription of responsibility, and personal norms). The second partial model included outcome efficacy, ascription of responsibility and personal norms. The full model included problem awareness, ascription of responsibility, outcome efficacy and personal norms. Overall model goodness of fit indices from structural equation modeling output as well as other indices such as beta coefficients, residuals and effect sizes of the different models were considered.

Overall model goodness of fit indices were all beyond acceptable for all three models, but slightly better for the two partial models. Of the two partial models, the second model (OE → AR → PN) had the best goodness of fit indices and a much higher  $r^2$  value for predicting personal norms, 0.65 compared to 0.28 for the first model (PA → AR → PN). However, the  $r^2$  value for ascription of responsibility was much higher when predicted by problem awareness (0.61) rather than outcome efficacy (0.23). When considering only the partial models, the second model, which included outcome efficacy and ascription of responsibility represented the data better than the alternate model that consisted of only

problem awareness and ascription of responsibility. If a partial model were preferred for use this would be the best model to fit the data.

The second partial model in comparison to the full model has slightly improved goodness of fit indices for all indices, and identical  $r^2$  values for explaining the variance of personal norms (0.65), with identical error residuals (0.59). However, the full model was better able to explain the variance in ascription of responsibility ( $r^2 = 0.40$  full model,  $r^2 = 0.23$  partial model), and had lower error residuals ( $d=0.77$  full model,  $d=0.85$  full model).

Based on these estimates, the full model explains more of the variance within the entire model than the partial model does. While both the second partial model and the full model have similar goodness of fit indices and identical  $r^2$  values for predicting personal norms, the partial model does not represent the data as well as the full model. Regardless, the model comparison highlights the stronger predictive ability of models that include both outcome efficacy and ascription of responsibility over models that are limited to problem awareness and ascription of responsibility. Based on this evidence, the full NAM model interpretation does improve the ability to predict personal norms, by better explaining the antecedent predictive variables that ultimately predict the final outcome variable (i.e., personal norms).

#### ***4.5.3 Research Question 3: What Mechanisms or Situational Factors Affect Personal Norms to Comply with Visitor Rules?***

This study was conducted during August and September 2016, which fall within the ‘winter’ season in Costa Rica, and this region of the country (i.e., Central Pacific) experiences heavy, and almost daily rainfall. September is consistently the rainiest month

of the year, with a monthly average of 355 mm of rainfall. The characteristic rainfall patterns of this season resulted in two specific limitations to this study. First, due to heavy rains there were multiple days when data could not be collected for large blocks of time. Data collection largely had to be conducted in the morning hours, and finished by 2 pm, and on some days, the weather almost completely impeded the collection of data.

The climate also influenced the natural behaviors and habits of the wildlife population in the park. During the time of data collection, the heavy rains resulted in sufficient and readily available food and water sources in the forest for the white-faced capuchin monkeys. The ample water and food sources meant that the monkey populations spent more time in the jungle, rather than the beach areas where the tourists frequent. During the preliminary study period of this project (March and April 2016), the weather patterns were typical of the ‘summer’ months, when rainfall averages only 13 mm per month. During this season, it is very common to see white-faced capuchin monkeys spend the majority of the day in the areas adjacent to the beach, where they constantly attempt to interact with human visitors, in attempt to steal food or obtain food. They also spend more time at the water spigots drinking water, which are meant to provide water for park visitors. The drastic differences in climate and the resulting differences in white-faced capuchin monkey behaviors meant a huge decrease in the amount of time monkeys spent on the beach each day, and the number of daily interactions between white-faced capuchin monkeys and park visitors. This resulted in direct change in their territorial range and daily movement; most importantly, they frequented the main beach areas much less than during the preliminary study period. The drastically reduced number of daily interactions meant a sufficient number of observed rule violations was not obtained. The

limited population size meant the advanced statistical analysis necessary to analyze the relationship between personal norms and overt behavior was not possible.

Another principal observed change was in the habits and behaviors of the local raccoon population. During the preliminary research period, raccoons were mostly nocturnal, as there were sufficient food sources available for them in the adjacent forest ecosystem.

However, during the data collection period, the opposite was observed and many raccoons were witnessed to spend the majority of the day on the beach and in the immediately adjacent forest areas where they would take cover before and after attempting to steal food items from human belongings on the beach.

It became immediately apparent, that park visitors did not regard the raccoons in the same manner that was observed for the white-faced capuchin monkeys, and did not wish to directly feed raccoons. On several days, the raccoons demonstrated such aggressive behaviors towards park visitors that some visitors received minor injuries such as scratches and bites. Multiple park visitors verbalized concerns about the raccoons being potentially rabid, since diurnal activities of raccoons is largely, yet erroneously, assumed to be an indicator of rabies in North America. Additional evidence of park visitors' preferences to feed monkeys and not raccoons was obtained through interviews with park visitors whom verbally complained to the researcher that raccoons had stolen food items from their personal belongings that were specifically hidden and brought in to the park in order to feed to the white-faced capuchin monkeys.

The insufficient number of observed behavior violations during the data collection period prevented any reliable data analysis with observed behavior violations as the outcome

variable. While self-reported behavior violations were also included in the visitor questionnaire, as expected, the number of visitors that indicated a rule violation was insufficient for reliable data analysis.

#### ***4.5.4 Research Question 4: What Factors Interfere with Personal Norms to Comply with Visitor Rules?***

The ability to answer this research question was largely impeded by two factors. First, although a reliable set of items to measure personal norms was obtained, a reliable observation of sufficient rule violations was not observed. As previously mentioned, due to the climatic conditions, the primate populations of MANP had sufficient water and food sources during the data collection period and therefore their interactions with park visitors was minimal. The lack of interaction resulted in not a sufficient number of observations of rule violations. The majority of human-wildlife interactions (91%) involved raccoons. White-faced capuchin monkeys, which were the species most visitors wished to feed and interact with, only were involved in 5% of the wildlife-human interactions. These conditions translated into the majority of interactions being initiated by wildlife (88%), where 89% attempted to steal food from visitors' belongings, and 95% of incidents did not result in an observed rule violation. Due to the insufficient variance obtained in rule violations, reliable data analysis was not possible and therefore, this question could not be further explored.

A primary objective of this research question was to examine the proposed role of *denial of responsibility* in the NAM model. Denial of responsibility, an external variable, was proposed as a defensive step aimed at explaining the deactivation of personal norms in individuals (Schwartz, 1977). Although individuals could experience feelings of personal



obligation to comply with park rules, they could attempt to neutralize their feelings of obligation by redefining the situation. This was posited to be done by negating the seriousness of the situation, deny their responsibility to respond to the perceived problem, or diffuse the perceived responsibility on to others. In this case, the others could be park rangers, park administrators, other visitors, or naturalist guides. Participants were asked six items designed to measure these visitors' tendency to negate the seriousness of the situation, diffuse responsibility to others, and deny their own responsibility. As previously mentioned, initial tests of validity and reliability for the proposed items for this construct did not support the construction of a composite scale. Even after deleting low-scoring items the highest Cronbach's alpha coefficient that was obtained was 0.585, and corrected item-total correlations were did not surpass the absolute minimum of 0.40.

#### **4.6 Social Desirability Bias**

Regardless of all preventative measures utilized to prevent social desirability bias, there always exists the possibility of bias in participants' responses. The nature of some items utilized in this study to measure concepts such as NAM constructs, rule awareness, and self-reported behavior violations could present a temptation for some respondents to indicate responses that they believe are more socially acceptable. For these reasons, self-reported rule violations were not utilized in the actual analysis of this study, but instead as a comparative for actual observed behavior violations. Regarding rule awareness respondents were given a neutral option of indicating uncertainty regarding whether or not a rule was an actual rule. Based on actual responses (Table 4.4) there doesn't appear to be much social desirability bias affecting the data collected.

Finally, for NAM constructs the data collected was not normally distributed (Table 4.22), which could be a sign of social desirability bias; however due to the site and context of this study and the population from which the sample was being drawn, the skewed results were expected. Nature-based tourists in a wildlife tourism context in a national park tend to be more biospheric in general (Christensen, Needham, & Rowe, 2009). Although the data for NAM constructs was not normally distributed, it was anticipated and therefore, does not automatically signify that social desirability bias was the reason for the non-normally distributed data.

**Table 4.22. Means for Biospheric Value Items and NAM Items**

Variable	Item	Range	Min.	Max.	Mean	Std. Deviation
Biospheric	Prevent pollution	7	0	7	5.87	1.495
Biospheric	Protecting the environment	7	0	7	6.10	1.376
Biospheric	Unity with nature	7	0	7	5.46	1.784
Biospheric	Protect other species	7	0	7	5.94	1.490
PA	It can be harmful to feed wildlife	6	1	7	5.90	1.385
PA	It can be harmful to touch wildlife	6	1	7	5.80	1.374
PA	Feeding wildlife can be dangerous for humans	6	1	7	5.43	1.435
AR	Visitors who feed wildlife should recognize the animal health problems this might create	6	1	7	6.12	1.157
AR	I would feel responsible if any animal was harmed by my actions in the Park	6	1	7	5.94	1.255
AR	Visitors should be held responsible for their actions in the Park	6	1	7	6.16	1.021
AR	Visitors who feed wildlife should recognize the animal stress and aggression problems this might create	6	1	7	6.11	1.095
PN	I think we can prevent the negative impacts of tourism in the park	6	1	7	5.73	1.139
PN	I should do everything possible to avoid harming the Park's wildlife	6	1	7	6.29	0.971
PN	I feel morally obligated to help protect the Park's wildlife	6	1	7	5.54	1.306
OE	Following the Park's visitor rules helps protect wildlife	6	1	7	6.21	1.016
OE	Following the Park's visitor rules protects the natural environment	6	1	7	6.16	1.052
OE	Visitors like me should comply with the Park's visitor rules	6	1	7	6.18	1.125
Ability	I can decide which of the Park's visitor rules I follow	6	1	7	2.43	1.625
Ability	The Park's visitor rules are only recommendations are visitors are not required to follow them	6	1	7	2.13	1.422
Ability	It is impossible to follow all of the Park's visitor rules	6	1	7	2.75	1.806

## **CHAPTER 5**

### **CONCLUSION**

This chapter provides a discussion of the findings presented in Chapter four, as well as implications based on these findings. First, the major results are summarized with both theoretical and practical contributions presented. This is followed by limitations of the current investigation, and suggestions for future directions and research.

#### **5.1 Major Findings and Discussion**

The purpose of this study was to improve the understanding of personal norm activation within the Norm Activation Model framework, and the role of personal norms in visitor decisions to comply with visitor rules at MANP. Investigating this involved measuring and analyzing the variables hypothesized to influence and lead to personal norm activation, as well as the variables that interfere with personal norm activation. A major objective of this study was to include all NAM activator variables originally hypothesized by Schwartz (1977), as most research employing NAM has failed to include a full NAM interpretation and consistently excludes variables. This study sought to meet these objectives with a research design that utilized self-administered questionnaires to park visitors after an observed encounter where visitors were presented with the opportunity to decide to comply, or not, with park rules.

Seasonal climate patterns at the time of data collection permitted more natural roaming and foraging behaviors of the white-faced capuchin monkey populations at the research site, which resulted in less interaction between this species and MANP visitors. The lack of interaction presented fewer daily opportunities for visitors to feed this wildlife species,

an activity largely desired by many visitors. As a result, the procurement of a sufficient number of observed rule violations was not possible, subsequently it was not possible to perform the statistical analysis required to analyze the influence of personal norms on overt visitor behavior. Nevertheless, the data collected provided new insights regarding the activation of personal norms, and the conceptualization of select NAM variables. Understanding specifically how personal norms are activated and how they influence individual decisions to engage in specific behaviors is far from simple, and highlights the inherently complex and dynamic nature of human behavior.

### ***5.1.1 Reconceptualization of NAM Variables***

From the commencement of the research design process, every effort was made to create specific and logical conceptualizations of the proposed NAM variables.

Conceptualization can vary drastically from one study to the next and it is even common for the same conceptualized variable to have different labels across the field. Items were carefully written to fully represent the breadth and depth of each construct; however, in early stages of the data analysis process, output suggested conceptualization issues related to items for two constructs—outcome efficacy and personal norms.

Outcome efficacy was originally conceptualized as the extent to which an individual can identify effective solutions to the problem(s) identified in the problem awareness stage, and the perception that personal behavior decisions will contribute to relieving or preventing the problem. Data analysis revealed two issues with this original conceptualization. First, the data did not support the inclusion of the items measuring the belief that personal behavioral decisions would make a contribution to resolving the problem(s) identified in the problem awareness phase. After these items were removed,

additional factor analysis revealed that an alternate conceptualization was a more accurate representation of the construct based on the data collected. The new conceptualization utilized for outcome efficacy in this study was the identification of effective solutions to the problem(s) presented in the problem awareness step and a sense of propriety associated with engaging in the identified solutions. This sense of propriety consists of the individual viewing the behaviors or actions to be morally correct or conventionally accepted standards of behavior. This notion of morally correct behaviors is supported theoretically by NAM, as Schwartz (1977) posited that in order for an individual to have activated personal norms he or she must first view the situation to be a moral choice situation.

Additionally, personal norms were originally conceptualized as feelings of personal/moral obligation to engage in the behaviors or actions that ameliorate or prevent the problem(s) identified in the problem awareness step. Factor analysis indicated that in the case of personal norms, the feelings of personal/moral obligation were not oriented towards the specific behavior or action, but instead at a more general level of ameliorating and/or preventing the problem. In this context, this change in conceptualization means personal norms are not feelings of moral obligation to follow the park's visitor rules, but feelings of moral obligation to relieve the problems of visitor activities in the park. Factor analysis indicated that this construct also includes the perception that taking such actions would ultimately be effective at preventing or ameliorating the problem(s) identified. In summary, the data indicated that personal norms are feelings of moral obligation to relieve or prevent the problems identified in the

problem awareness stage and the perception that the problem is preventable or ameliorable.

Although this shift in focus from feelings of obligation to engage in specific behaviors to feelings of obligation to prevent or ameliorate the problem may appear nonsignificant, from a management and applied perspective, it can be very important. For example, a campaign aimed at encouraging or increasing specific environmentally responsible behaviors could have more success if the focus is not on inspiring feelings of obligation to engage in a specific behavior, but rather feelings of obligation to ameliorate the problem itself. These results suggest that programs aimed at generating feelings of obligation to engage in specific behaviors could be less effective than attempting to generate feelings of obligation to relieve the perceived problem itself.

### ***5.1.2 Full versus Partial NAM Interpretation***

Previously, NAM research was predominantly limited to studying problem awareness and ascription of responsibility as the activator variables for personal norms. A main objective of this study was to include the NAM variables that were largely excluded by previous research, to analyze whether their inclusion would improve the model's explanation of variance in personal norms. When a partial model, including only problem awareness and ascription of responsibility was considered, findings showed that 28% of the variance in personal norms was explained by ascription of responsibility, and 61% of the variance in ascription of responsibility was explained by problem awareness.

Although a rather large proportion of ascription of responsibility was explained, a very large proportion of personal norms remained unexplained by the common partial NAM interpretation.

Alternately, including outcome efficacy in lieu of ascription of responsibility increased the amount of explained variance in personal norms to 32%, but problem awareness only explained 9% of outcome efficacy. These findings suggest that outcome efficacy is an important activator variable and should be considered as a predictor variable for personal norms. In consideration of these findings, a partial model with only outcome efficacy and ascription of responsibility as predictor variables was considered. Findings showed that in this scenario, outcome efficacy explained 23% of the variance in ascription of responsibility, and 65% of the variance in personal norms was now explained by ascription of responsibility. In light of these findings, it could be appropriate to utilize a partial model in lieu of a full model; however, the activator variables should be outcome efficacy and ascription of responsibility, instead of problem awareness and ascription of responsibility.

Additionally, structural analysis revealed a few mediation relationships between select activator variables. For example, in this study, structural analysis revealed that ascription of responsibility fully mediated the effects of problem awareness on personal norms, suggesting that problem awareness was only indirectly related to personal norms through the effect of ascription of responsibility. Ascription of responsibility also partially mediated the effect of outcome efficacy on personal norms and outcome efficacy partially mediated the effect of problem awareness on personal norms.

Based on these partial and full mediation relationships, various models were analyzed to determine the best fit for the present data including all three activator variables. In the model identified as the best fit for the data, ascription of responsibility and outcome efficacy explained 65% of the variance in personal norms. Problem awareness and



outcome efficacy explained 40% of the variance in ascription of responsibility. Finally, problem awareness explained only 9% of the variance in outcome efficacy, with a high proportion of outcome efficacy unexplained. Various structural models were compared, and some alternate models had slightly higher amounts of explained variance (e.g., 43% of AR instead of 40%); however, model goodness-of-fit indices also had to be taken into consideration, and the additional parameters did not support the selection of one of the alternate models. Based on the variance explained and overall model goodness-of-fit indices for all models included in this study, the full models explained more of the variance within the entire model than the partial model variations did.

As previously discussed, ability as a predictor variable was removed from final data analysis and model comparisons for both theoretical and applied reasons. In the behavioral context of this study, all visitors to MANP included in this study were physically able to follow the park rules, resulting in the obsolescence of ability as a model construct. When ability was considered for analysis, strictly for comparison purposes, the variable added minimally to the explained variance or overall model goodness-of-fit indices scores.

Given the high factor loadings and reliabilities, explained variance and model goodness-of-fit indices, the best model to describe the data included problem awareness, outcome efficacy, and ascription of responsibility. Nevertheless, all model variations indicated a positive correlation between activator variables and the outcome variable (i.e., personal norms). In other words, visitors with higher levels of problem awareness were more likely to have higher levels of outcome efficacy, and ascription of responsibility, and ultimately more likely to have activated personal norms. The results suggest that outcome

efficacy contributes significantly to the ability of NAM to explain the variance in personal norms and should be considered for future research. As previously mentioned, a partial model including outcome efficacy and ascription of responsibility could be deemed similar to a full model should the logistics of research or management strategies need to focus on an abbreviated set of activator variables.

## **5.2 Implications of Study**

This study proposed that including the missing NAM activator variables would contribute to the explanation of visitors activated personal norms to comply with park rules at MANP. The results have theoretical implications for research regarding personal norms as a predictor variable, for both compliance of visitor rules in a tourism setting and other environmentally responsible behaviors. The results also have practical implications for the managers of MANP and other similar protected sites open to nature-based tourism activities. From a theoretical perspective, the results of these findings suggest that the majority of previous NAM studies have missed measuring essential elements of the NAM activation process, and this research shows potential to highlight new directions research could take to improve the overall understanding of personal norm activation. From an applied perspective, the results of this study show insights into management issues that MANP currently faces and suggestions of ways forward.

### ***5.2.1 Theoretical Implications***

Rule compliance in national parks, protected areas and other sites of nature-based tourism and recreation is often one of the most difficult visitor management issues for site managers, yet essential to prevent and minimize the negative impacts of visitor activities. Moreover, understanding the factors that influence visitor decisions to comply with rules

is very challenging due to the complex nature of human behaviors. Building on previous research, this study examined the activation of personal norms and the influence of personal norms in individual behavioral decisions. While this study offers a valuable insight into slightly alternate conceptualizations of some NAM activator variable (i.e., outcome efficacy and personal norms) as is true for such novel findings, this study should be viewed as a first attempt at understanding the role of missing NAM variables in explaining the activation of personal norms. More research is necessary to see how these results fit other research sites and contexts.

First, Schwartz (1977) proposed four activator variables, which contribute to the activation of personal norms, defined as feelings of personal or moral obligation to engage in a specific behavior or action. The four activator variables are problem awareness, outcome efficacy, ability and ascription of responsibility. Nevertheless, almost all NAM research is limited to only two activator variables—problem awareness and ascription of responsibility. In the present behavioral context, complying with park rules, ability was considered superfluous, as all park visitors should have the physical ability to comply with the park rules. This study therefore focused on three activator variables, and found that the inclusion of outcome efficacy significantly contributed to the model's ability to explain the variance in personal norms.

Second, the findings from this study suggested a need to modify the conceptualizations of two NAM variables. Outcome efficacy was found to contain an element of propriety, in other words, the individual perceives the behavior(s) or action(s) as morally correct or ideal. Although, Schwartz (1977) ascertains that personal norms can only be activated in moral choice situations, no modern study has actually attempted to examine whether or

not participants view the particular behavior as a moral choice situation, or whether they view the desired behavior as morally correct. The findings from this study indicate that outcome efficacy is a significant factor in the norm activation process in other words. Individuals do appear to be able to identify effective solutions to the problems identified, and perceive those actions as being morally correct are more likely to have activated personal norms.

Finally, this study suggests that personal norms, at least in this particular context and situation, are best conceptualized and measured as feelings of personal or moral obligation to prevent or ameliorate the problem(s) identified in the problem awareness phase, rather than feelings to engage in specific actions or behaviors. In the context of this study, this translates into feelings of obligation to prevent the negative impacts of tourism (e.g., not harm wildlife), rather than feelings of obligation to comply with park rules (e.g., not feed wildlife). This minor adjustment in the focus on feelings of obligation could have significant results for more applied NAM studies and possibly be applicable to other behavioral contexts. Further research is needed to better understand these results.

Although the conceptualizations used in this study are slightly different, these findings support previous research that has had similar findings in different behavioral contexts and visitor sites. Various studies have explored the idea of missing concepts within the NAM model, but not included the variables that Schwartz (1977) proposed in his extended NAM. Research in the areas of wildlife and eco-tourism have found that the concept of personal norms, messages of responsibility and affective messages have been more successful than alternate messages at eliciting desired behavioral intentions such as rule compliance or conservation behaviors (e.g., Jacobs & Harms, 2014; Vaske, Jacobs,

& Espinosa, 2015). However, little research has been done in national parks to compare the effectiveness of these results with other studies in similar contexts (e.g., Zhang, Zhang, Zhang, & Cheng, 2014).

### ***5.2.2 Practical Implications***

This research offers practical implications for managers of national parks and conservation areas open to tourism activities by providing insight on visitor management activities that could improve rule compliance issues. The examination of rule compliance and environmentally responsible behaviors at national parks and nature-based tourism settings is not a new topic. It has been discussed several times, across many fields, and from different perspectives. A number of public, private, and non-profit organizations work to improve rule compliance and encourage visitors to engage in actions that will protect the immediate ecosystem and natural resources that make sites attractive to visitors. Nevertheless, ensuring rule compliance continues to be a challenge for tourism site managers, while imperative to prevent negative impacts of visitor activities.

The findings from this study highlight the need for improved communication efforts to visitors. As discussed, the majority of visitors (52.7%) reported learning about park rules before arriving to the park, with 72.6% seeing visitor rules posted on signs throughout the park after arrival (see Table 4.3). Despite the fact that most visitors claimed to have seen signs and learned about rules before arriving to the park, the majority were unable to correctly identify park rules when asked to do so in the self-administered questionnaire. Visitors were provided with a list of eight rules in the questionnaire and asked to respond if the item was a rule, was not a rule, or if they were uncertain if it was a rule (Table 4.4). For five of the eight rules, the majority of park visitors were either uncertain of its status

as a rule or believed it to not be a rule, this indicates a widespread level of lack of rule awareness. For three of the eight rules, more than 50% of respondents positively indicated that the rule was an actual rule.

The findings from this study support previous research that questions the effectiveness of signs as the primary method of communicating rules or other important information to visitors. Several studies have shown signs to be ineffective in a variety of contexts, as they prove difficult to capture and maintain visitors' attention (e.g., Benton & Sinha, 2011), and visitors often fail to recall information conveyed via signs (e.g., Boon, Fluker, & Wilson, 2008). Although it is not recommended to remove the signs from the park, since they serve as a useful source of interpretative information, additional measures and strategies to communicate important park information to visitors should be adopted and incorporated into the MANP visitor management plan.

A very effective strategy that could be quite successful at MANP is an education center at the park entrance that includes a series of interactive and interpretive displays where visitors can learn about the park, its wildlife, park rules, and the issues impacts of deleterious visitor behavior. The most essential element of this educational center would be an educational video that visitors would be required to watch before entering the park. The video would need to be designed to provide specific messages directed towards activating personal norms and guiding visitors to understand the responsibility of visitors to engage in environmentally responsible behaviors (e.g., follow park rules) while in the park. Visitors would be allowed into the educational center to view the interpretive displays before attending the video, which would be in a separate space within the center.

For repeat visitors, there could be a system where they were allowed to register that they had watched the video and only be required to watch it once every 6 or 12 months.

Additionally, it is recommended that all forms of communication to visitors, specifically regarding park rules use consistent and clear language. There is much ambiguity in the language used regarding park rules throughout MANP, and this can lead to confusion amongst park visitors as to whether the rules are only recommendations or actual requirements. Additionally, the rules are not consistent from one language to the next. For example, in the visitor information brochure that is handed out at the ticket kiosk, several rules listed in Spanish are distinct from the list of rules in English. The tone of the language also changes from one language to another (see Appendix A).

From an applied perspective, findings showed that park visitors felt more obligated to help prevent negative impacts of tourism under three conditions. The first condition was that visitors were more aware that their actions could have negative impacts on the park's environment or wildlife (i.e., problem awareness). Second, visitors felt more responsible for the impacts of their actions while in the park (i.e., ascription of responsibility). And finally, visitors were able to identify actions or behaviors that would help prevent or ameliorate the problems that tourism activities could cause in the park, and they believed that engaging in those actions or behaviors was morally correct or ideal (i.e., outcome efficacy). Rule knowledge and awareness was not statistically associated with personal norms, nor any of the NAM activator variables.

Understanding this information can assist visitor education and management efforts in determining how much and what types of interpretation to provide, as well as how

information can be tailored to focus on fostering environmentally responsible behaviors amongst visitors while in the park. In addition to current strategies, which include informative brochures and signs, such efforts could include a short and informative video that all visitors are required to watch before entering the park, or a short talk provided by park rangers.

### **5.3 Limitations and Recommendations for Future Research**

The findings of this study suggest the need for a variety of additional research on NAM activator variables, NAM in the context of park visitor rule compliance, as well as NAM in other ERB contexts and domains. As expected with all studies, this research also has some limitations that should be considered and addressed in future studies.

This study was a case study of visitors to a specific area of MANP during one particular time of year. This study should be replicated at other sites, outside of MANP.

Additionally, this study could be replicated in MANP during a different time of year, when occurrences of wildlife-visitor interactions are at their greatest, specifically when white-faced capuchin monkeys are more likely to frequent the Manuel Antonio beach area adjacent to the rainforest. Ideal months for this are March and April when rainfall is seasonally low and the monkey populations are more likely to initiate interactions with visitors to obtain food. This time of year should provide a larger number of observed rule violations to conduct further statistical analysis that would allow overt behavior as an outcome variable. This study could also re-test the variable scales used in this study to test for their reliability and focus on the new conceptualization for outcome efficacy and personal norms.



While this study provided a first step for testing a full NAM model in a recreation/tourism context, additional research is needed to better understand the relationship between all NAM activator variables. The findings of this research indicated that outcome efficacy significantly contributes to the explanation of variance of personal norms, but more research is needed to better understand how this variable is best conceptualized. Additional research is also needed to better understand the reconceptualization of personal norms that was utilized in this study. This would ideally be explored through studying NAM in additional behavior contexts and domains as well. Additionally, the findings of this study indicated that the object of personal norms was best represented as preventing or ameliorating the problems identified in the problem awareness phase, rather than engaging in specific behaviors, and that the individual believes the problem can be ameliorated or prevented. Further research is needed to confirm this conceptualization and examine whether or not this conceptualization is appropriate in other behavior contexts.

Additional research, in a different behavior context is also needed to be able to incorporate the construct of ability. While ability was omitted in this study, the concept could have a significantly different influence on personal norms in other ERB contexts (e.g., recycling, car use, etc.), and has been continually omitted from the majority of NAM research. Similarly, additional research should focus on how to conceptualize and operationalize the proposed external variables, awareness of consequences and denial of responsibility, and explore their role in the norm activation process.

The findings from this study add new knowledge regarding the role of personal norms and NAM in the ERB literature, and require future research to better understand these

findings. While quantitative methodologies, such as those employed in this study, offer many benefits, it is recommended that future research also take a qualitative approach to further explore the quantitative findings, and elaborate on the intricacies of visitors' personal norms. Although quantitative methods best suited the objectives of this initial study, such methods can miss in-depth aspects of visitors' behavioral decisions that can only be explored and represented through a more interpretative and qualitative approach. In the context and setting of this study, a useful approach could be walking interviews. Walking interviews would allow for data triangulation and add to the richness and complexity of explaining visitor behavior. Additionally, walking interviews would allow the researcher to accompany participants through the park and not only observe the visitor throughout the park, but gain insight into the thought processes of visitors while presented with real-time opportunities to comply or not with park rules.

Finally, future studies should explore the relationship between rule awareness and knowledge, and NAM constructs as well as overt behavior. An astonishing percentage of park visitors in this study were not aware of several park rules. Further research is needed to understand the role of rule awareness in predicting and influencing visitor behaviors and decisions while in the park. Similarly, additional research is also needed to better understand which communication methods are most effective at conveying NAM based messages to visitors and consequently successfully influencing visitor actions while in the park.

## APPENDIX A

### MANP Visitor Recommendations from Coopealianza Visitor Brochure

(Coopealianza, 2016)

Note: Italicized sections are unique to the specific language

#### Recommendations in Spanish (Translated to English)

Introduction: To enjoy your stay, follow these recommendations:

1. The National Park has a regulation of public use and it is the obligation of all visitors to respect it.
2. *Fishing within the park is not allowed.*
3. *It is prohibited to enter under the effect of drugs, stimulants, or with weapons.*
4. *Always remember to take care of your belongings.*
5. *The Manzanillo found on the beach has a latex that causes irritation, so it should not be touched.*
6. All living beings, plants and animals share the planet with you, respect *their lives* and do not feed them as this *can cause digestive problems (diarrhea), tooth decay and changes in their natural behavior.*
7. Stay only inside the trails, protect the signs, and do not destroy them.
8. *Campfires damage the environment and are a danger to wild animals.*

#### Recommendations in English

Introduction: Recommendations: If you want to enjoy a day in the park, follow these recommendations *to further enrich your experience with this marvelous world.*

1. *If you need help or have questions, please ask the rangers, they will be pleased to help you.*
2. All living things, plants and animals alike, share this planet with you. *Please* respect them.
3. Enjoy the peace and natural sounds of the forest. Do not play radios, or make loud noises which could disturb the tranquility found here.
4. Please, stay on the trails. *The signed areas are for the benefit of everyone*, do not deface or destroy them.
5. *This area is a natural preserve. We invite you to observe and take as many pictures as you can. However, please* do not remove plants, animals, stones or other materials as souvenirs.
6. *Please* collect your garbage and deposit it in the appropriate containers.
7. Do not feed the wildlife. They can suffer serious health problems if they eat people food.
8. *In spite of biological biodiversity, many animals living in Costa Rica are hard to observe because of their migratory and reproductive habits are nocturnal, or because the forest is too dense to see them clearly. Move quietly and sharpen your*

*observation skills in order to appreciate the richness of the area.*

9. *Tables are eating areas where food is handled. Do not sit on them.*

9. *All protected wildlife areas have rules which regulate the protection of resources, and activities of the visitors. This park operates under these rules for public use, and it is the obligation of all visitors to respect them.*

10. *Do not leave traces of your stay in the park. Collect your trash and dispose of it properly.*

11. *Enjoy the scenic beauty, do not extract the natural resources of the park such as shells, snails and stones so that others can also appreciate them.*

12. *Use water rationally and do not use soap or shampoo as they contaminate the lagoon and mangrove.*

13. *Pets annoy wild animals and can transmit diseases to them, so entrance to the park is not allowed.*

14. *Enjoy the tranquility and natural sounds that the areas offer, do not play games on the beach like football and volleyball, or enter with radios or other objects that can disturb the environment and frighten the animals.*

## APPENDIX B

### IRB Approval Letter



UNIVERSITY  
of HAWAII®  
MĀNOA

Office of Research Compliance  
Human Studies Program

January 11, 2016

TO: Kerrie Littlejohn  
Brian Szuster, Ph.D.  
Principal Investigators  
Geography

FROM: Denise A. Lin-DeShetler, MPH, MA  
Director

A handwritten signature in black ink, appearing to read 'Denise A. Lin-DeShetler'.

SUBJECT: CHS #23665 - "Geography of Responsibility: Tourism, Conservation and Norm  
Activation in the Galapagos National Park"

This letter is your record of the Human Studies Program approval of this study as exempt.

On January 11, 2016, the University of Hawai'i (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45 CFR 46.101(b) (Category 2).

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at <http://www.hawaii.edu/irb/html/manual/appendices/A/belmont.html>

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via email at [uhirb@hawaii.edu](mailto:uhirb@hawaii.edu). (The subject line should read: Exempt Study Modification.) The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program at 956-5007 or [uhirb@hawaii.edu](mailto:uhirb@hawaii.edu). We wish you success in carrying out your research project.

1960 East-West Road  
Biomedical Sciences Building B104  
Honolulu, Hawai'i 96822  
Telephone: (808) 956-5007  
Fax: (808) 956-8683

An Equal Opportunity/Affirmative Action Institution

**APPENDIX C**  
**Participant Observation Record Sheet**

ID #	Start Time	End Time	# PPL	Non Com#	Animal	# Ani.	Loc.	Action	Response	Notes

## **APPENDIX D**

### **Participant Recruitment Script**

Good Morning. My name is Kerrie Littlejohn. I am a graduate student at the University of Hawai‘i at Mānoa in the Department of Geography. I am doing a research project to evaluate the experience of visitors in Manuel Antonio National Park. The demand to visit this National Park is continually growing and requires further study to better understand visitors’ experiences.

As a visitor of this park, you are invited to participate in this study by completing a questionnaire. Your experiences and opinions are important, and will inform management decisions at this Park. The questionnaire should take less than 15 minutes of your time.

Participation is voluntary and responses are completely anonymous. Your participation is extremely valued and appreciated.

Buenos días. Mi nombre es Kerrie Littlejohn. Soy estudiante de doctorado de la Universidad de Hawai en el Departamento de Geografía. Estoy haciendo un proyecto de investigación para evaluar la experiencia de los visitantes al Parque Nacional Manuel Antonio. La demanda para visitar a este parque sigue creciendo y requiere más estudio para mejor entender la experiencia de visitantes.

Como visitante de este parque nacional, se le invita a participar en este estudio, completando una encuesta. Sus experiencias y opiniones son importantes, e informarán a las decisiones de gestión en estos sitios. La encuesta demora aproximadamente 15 minutos.

La participación es voluntaria y las respuestas son completamente anónimas. Su participación es muy valorada y apreciada.

**APPENDIX E**  
**Participant Consent Form – No signature required**

**University of Hawai'i**

**Consent to Participate in Research Project:**

Evaluation of Day Tour Visitor Experience in Manuel Antonio National Park

My name is Kerrie Littlejohn. I am a graduate student at the University of Hawai'i at Mānoa in the Department of Geography. As part of the requirements for earning my graduate degree, I am doing a research project. The purpose of my project is to evaluate the experience of day tour visitors in Manuel Antonio National Park.

As a visitor of a popular day tour visitor site in the Costa Rica, you are invited to participate in this study by completing a pre-trip and post-trip survey. Your experiences and opinions are important, and will inform management decisions at these sites. The surveys should take less than 15 minutes of your time. Participation is voluntary and you may refuse to answer any question(s) for any reason. Responses are anonymous and will be kept confidential to the extent permitted by law. To ensure anonymity and confidentiality, you are asked to avoid writing your name or contact information on the survey. Your responses will be combined with others in a statistical database and reported as a larger group. Surveys will be destroyed after responses are entered into this database. As a participant in this study, there are no foreseeable risks to you and there are no direct benefits to you beyond helping to inform management of Galapagos visitor areas and to advance science. Your participation, however, is extremely valued.

If you have any questions regarding this research project, please contact myself Kerrie Littlejohn at (808) 956-8465 or [klittlej@hawaii.edu](mailto:klittlej@hawaii.edu). You may also contact my advisor Dr. Brian Szuster at (808) 956-7345/[szuster@hawaii.edu](mailto:szuster@hawaii.edu). If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007.

**Completing the survey will be considered as your consent to participate in this study.**

**Please keep a copy of this page for your reference.**



## **Universidad de Hawai**

### **El consentimiento para participar en el proyecto de investigación:**

Evaluación de la Experiencia de visita en el Parque Nacional Manuel Antonio.

Mi nombre es Kerrie Littlejohn. Soy un estudiante de doctorado de la Universidad de Hawai en Mānoa en el Departamento de Geografía. Como parte de los requisitos para obtener mi título, estoy haciendo un proyecto de investigación. El objetivo de mi proyecto es evaluar la experiencia de los visitantes al Parque Nacional Manuel Antonio.

Como visitante de un sitio popular en Costa Rica, se le invita a participar en este estudio, completando una encuesta previa al viaje y después del viaje. Sus experiencias y opiniones son importantes, e informarán a las decisiones de gestión en estos sitios. Las encuestas demorarán alrededor de 15 minutos de su tiempo. La participación es voluntaria y puede negarse a responder a cualquier pregunta(s) por cualquier razón. Las respuestas son anónimas y se mantendrán confidenciales en la medida permitida por la ley. Para garantizar el anonimato y la confidencialidad, se le pide que evite escribir su nombre o información de contacto en la encuesta. Sus respuestas serán combinadas con otros en una base de datos estadísticos y se presenta como un grupo más grande. Las encuestas serán destruidas después de que las respuestas se introducen en esta base de datos. Como participante en este estudio, no existen riesgos previsibles para usted y no hay beneficios directos para usted más allá de ayudar a informar a la gestión de las áreas de los visitantes de Parque Nacional Manuel Antonio y para avanzar la ciencia. Su participación, sin embargo, es muy valorado.

Si tiene alguna pregunta acerca de este proyecto de investigación, por favor, póngase en contacto con mí persona Kerrie Littlejohn al (808) 956'8465 o klittlej@hawaii.edu. También puede ponerse en contacto con mi profesor Dr. Brian Szuster al (808) 956-7345/szuster@hawaii.edu. Si usted tiene alguna pregunta sobre sus derechos como participante en la investigación, por favor, póngase en contacto con el Comité de Estudios Humanos UH al (808) 956-5007.

**Completar la encuesta se considerará como su consentimiento para participar en este estudio.**

**Por favor, mantenga una copia de esta página para su referencia.**

## APPENDIX F

### Questionnaire Instrument

#### Experiencias de visitantes en el Parque Nacional Manuel Antonio

Esta encuesta es parte de un proyecto de investigación de PhD. en la Universidad de Hawai. El propósito es aprender de las experiencias turísticas basadas en la naturaleza en el Parque Nacional Manuel Antonio, y su aporte ayudará a la gestión del Parque y los sitios de visita. La participación es voluntaria y todas las respuestas son **anónimas**. Por favor, conteste las siguientes preguntas y devuelva el formulario al investigador.

1. ¿Es su primera visita al Parque Nacional Manuel Antonio? (elija **UNO**)  No  Sí
2. ¿Visitó el Parque hoy como participante de un tour organizado? (elija **UNO**)  No  Sí
3. ¿Con quién está visitando el Parque hoy? (elija **TODOS** los que corresponden)  
 Amigos  Pareja  Esposo/a  Hijos  Otro(s) familiar(es)  Solo  
 Grupo de tour  Otro grupo  Otro, por favor especifique: \_\_\_\_\_
4. Incluyendo a usted, ¿con cuántas personas está visitando el Parque hoy? \_\_\_\_\_ personas
5. En esta visita al Parque Nacional Manuel Antonio (circule una letra para **CADA** artículo)

	SI	NO
Tomé recuerdos naturales como conchas, arena o rocas	S	N
Toqué los animales del Parque	S	N
Di de comer a los animales del Parque	S	N
Hice ruidos a los animales para atraer su atención	S	N
Los animales del Parque robaron comida de mis pertenencias	S	N
Tomé fotos a mí mismo con los animales del Parque	S	N

6. ¿Cómo de importantes son los siguientes “valores principales” en su vida? (circule un número para **CADA** artículo)

	Opuesto a mis valores	No Importante	Importante					Muy Importante	Sumamente Importante
<b>Poder Social:</b> estatus, prestigio, dominio	-1	0	1	2	3	4	5	6	7
<b>Riqueza:</b> bienes materiales, dinero	-1	0	1	2	3	4	5	6	7
<b>Autoridad:</b> capacidad de controlar eventos o personas	-1	0	1	2	3	4	5	6	7
<b>Influencia:</b> capacidad de tomar decisiones, el liderazgo	-1	0	1	2	3	4	5	6	7
<b>Igualdad:</b> igualdad de oportunidades, equidad	-1	0	1	2	3	4	5	6	7
<b>Paz:</b> ausencia de guerra y conflicto	-1	0	1	2	3	4	5	6	7
<b>Justicia social:</b> corrección de injusticia, atención a los perjudicados	-1	0	1	2	3	4	5	6	7

<b>Utilidad:</b> asistencia, ayuda a los que necesitan	-1	0	1	2	3	4	5	6	7
<b>Evitar Contaminación:</b> reciclar, reducir desperdicios	-1	0	1	2	3	4	5	6	7
<b>Proteger el medioambiente:</b> recursos naturales	-1	0	1	2	3	4	5	6	7
<b>Unidad con la naturaleza:</b> la sensación de conexión, en armonía	-1	0	1	2	3	4	5	6	7
<b>Proteger Otros Especies:</b> conservación de animales silvestres	-1	0	1	2	3	4	5	6	7
<b>Placer:</b> comida, actividades, relajación	-1	0	1	2	3	4	5	6	7
<b>Diversión:</b> entretenimiento, recreación	-1	0	1	2	3	4	5	6	7
<b>Indulgencia:</b> mimarse, de lujo	-1	0	1	2	3	4	5	6	7
<b>Emocionarse:</b> experiencias estimulantes, sensación	-1	0	1	2	3	4	5	6	7

7. Por favor, indique con qué medida está de acuerdo o desacuerdo de cada una de las siguientes afirmaciones. (circule un número para **CADA** afirmación)

	Totalmente en Desacuerdo	Muy en Desacuerdo	En Desacuerdo	Ni de acuerdo ni en desacuerdo	De Acuerdo	Muy De Acuerdo	Totalmente de Acuerdo
Puede ser dañino alimentar a los animales	1	2	3	4	5	6	7
Puede ser dañino tocar a los animales	1	2	3	4	5	6	7
Los visitantes pueden contribuir a los cambios en el comportamiento de los animales	1	2	3	4	5	6	7
La alimentación de los animales puede ser peligroso para los seres humanos	1	2	3	4	5	6	7
Hacer ruido para atraer a los animales puede ser peligroso para los seres humanos	1	2	3	4	5	6	7

Los visitantes pueden dañar el entorno natural del Parque	1	2	3	4	5	6	7
Los visitantes que alimentan a los animales deben reconocer los problemas de salud para el animal que esto podría crear	1	2	3	4	5	6	7
Visitando el Parque, yo personalmente contribuyo a problemas de salud y comportamiento de los animales	1	2	3	4	5	6	7
No me siento personalmente responsable de los problemas creados por el turismo en el Parque porque mi contribución individual es muy pequeña	1	2	3	4	5	6	7
Me sentiría responsable si cualquier animal se hiciera daño por mis acciones en el Parque	1	2	3	4	5	6	7
Los visitantes deben ser considerados responsables de sus acciones en el Parque	1	2	3	4	5	6	7
Los visitantes que alimentan a los animales deben reconocer el estrés y problemas de agresión en los animales que esto podría crear	1	2	3	4	5	6	7

Los visitantes deben hacer todo lo posible para no molestar al medio ambiente, mientras se encuentran en el Parque	1	2	3	4	5	6	7
Los visitantes no tienen que preocuparse por problemas en el Parque	1	2	3	4	5	6	7
Mis acciones personales son demasiado pequeñas para hacer un impacto significativo en el ambiente del Parque	1	2	3	4	5	6	7
Las acciones de una persona pueden reducir los impactos negativos del turismo en el Parque	1	2	3	4	5	6	7
Seguir las recomendaciones de guardaparques ayuda a minimizar los impactos negativos del turismo en el Parque	1	2	3	4	5	6	7
Creo que podemos prevenir los impactos negativos del turismo en este Parque	1	2	3	4	5	6	7
Yo debería hacer todo lo posible para evitar daño a los animales del Parque	1	2	3	4	5	6	7
Me sentiría culpable si de	1	2	3	4	5	6	7

forma no intencionada dañase a un animal del Parque							
Alimentar con comida sana a los animales en el Parque es aceptable	1	2	3	4	5	6	7
Los visitantes del parque no deben ser culpados si los animales roban su comida	1	2	3	4	5	6	7
Es aceptable hacer ruido para atraer a los animales en el Parque	1	2	3	4	5	6	7
Me siento moralmente obligado a ayudar a proteger los animales del Parque	1	2	3	4	5	6	7

Parque Nacional Manuel Antonio tiene **reglas de visitantes** con el fin de no poner en riesgo a los animales, y prevenir los impactos ambientales de las actividades turísticas. En la siguiente sección se le pide que comparta sus percepciones y opiniones de las **reglas del Parque**.

8. Por favor, indique con qué medida está de acuerdo o desacuerdo de cada una de las siguientes afirmaciones. **(circule un número para CADA afirmación)**

	Totalmente en Desacuerdo	Muy en Desacuerdo	En Desacuerdo	Ni de acuerdo ni en desacuerdo	De Acuerdo	Muy de Acuerdo	Totalmente de Acuerdo
Puedo decidir cuál de las reglas del Parque sigo	1	2	3	4	5	6	7
Seguir las reglas del Parque ayuda a proteger a los animales	1	2	3	4	5	6	7
Seguir las reglas del Parque protege el medio ambiente	1	2	3	4	5	6	7
Las reglas del Parque son sólo recomendaciones y los visitantes no están obligados a seguirlas	1	2	3	4	5	6	7
Es imposible seguir todas las reglas del Parque	1	2	3	4	5	6	7
Podría seguir las reglas del Parque si quisiera	1	2	3	4	5	6	7
Me siento personalmente obligado a seguir las reglas del Parque	1	2	3	4	5	6	7
Los visitantes como yo, deben cumplir con las reglas del Parque	1	2	3	4	5	6	7
Me sentiría culpable si no siguiera las reglas del Parque	1	2	3	4	5	6	7

---

Los guardaparques deben hacer un mejor trabajo de educar a los visitantes para que sigan las reglas del Parque	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

---

9. ¿Aprendió acerca de las reglas del Parque antes de llegar hoy? (**elija UNO**)

No     Sí → ¿en caso afirmativo, donde? (**elija TODOS los que corresponden**)

internet    hotel    agencia de turismo    publicación de la taquilla    otro; por favor especifique: \_\_\_\_\_

10. ¿Ha visto letreros en el Parque hoy que proporcionan información sobre las reglas del Parque? (**elija UNO**)

No     Sí → ¿en caso afirmativo, donde? (**elija TODOS los que corresponden**)

Entrada del Parque    Senderos    Las áreas de playa    otro; por favor especifique: \_\_\_\_\_

---

11. ¿Alguien le dio más información sobre las reglas del Parque **después** de entrar al Parque hoy? (**elija UNO**)

No     Sí → ¿en caso afirmativo, quién? (**elija TODOS los que corresponden**)

Guía Turístico    Guardaparque    miembro de mi grupo de visitantes    miembro de otro grupo

otro; por favor especifique: \_\_\_\_\_

12. ¿Cuál de las siguientes opciones están incluidas en las reglas del Parque? (**circule una letra para CADA afirmación**)

	SI	NO	INSEGURO
Mantenerse en los senderos	S	N	I
No alimentar a los animales	S	N	I
No dejar restos de su visita (como basura, graffiti)	S	N	I
No imitar cantos de pájaros	S	N	I
No llevar comida en el Parque	S	N	I
No retirar artefactos naturales (arena, conchas, rocas)	S	N	I
No hacer ruidos para atraer a los animales	S	N	I
No utilizar un flash para fotografiar a los animales	S	N	I



13. Por favor, indique con qué medida está de acuerdo o desacuerdo de cada una de las siguientes afirmaciones. **(circule un número para CADA afirmación)**

	Totalmente en Desacuerdo	Muy en Desacuerdo	En Desacuerdo	Ni de acuerdo ni en desacuerdo	De Acuerdo	Muy de Acuerdo	Totalmente de Acuerdo
Los seres humanos tienen el derecho a modificar el entorno natural para satisfacer sus necesidades	1	2	3	4	5	6	7
Los seres humanos están destinados a gobernar el resto de la naturaleza	1	2	3	4	5	6	7
La llamada crisis ecológica que enfrenta la humanidad se ha exagerado mucho	1	2	3	4	5	6	7
La tierra tiene un montón de recursos naturales si aprendemos cómo desarrollarlas	1	2	3	4	5	6	7
El equilibrio de la naturaleza es muy delicado y fácilmente alterado	1	2	3	4	5	6	7
Cuando los seres humanos interfieren con la naturaleza, a menudo se produce consecuencias desastrosas	1	2	3	4	5	6	7
Las plantas y los animales tienen tanto derecho existir como a los seres humanos	1	2	3	4	5	6	7
Los seres humanos están abusando gravemente el medio ambiente	1	2	3	4	5	6	7

14. ¿Dónde vive la mayor parte del año? **(escriba respuesta)** Estado/Provincia \_\_\_\_\_

País \_\_\_\_\_

15. Género:  Masculino  Femenino

16. Edad: \_\_\_\_\_ años

17. ¿Cuál es el nivel más alto de educación que ha completado? **(elija UNO)**

Sin educación formal

Título Universitario (e.g., Lic., Ing.)

Menos de diploma de escuela secundaria

Diploma de escuela secundaria

Posgrado

Diploma de escuela técnica

(e.g., masters, Ph.D., doctor de medicina o jurisprudencia)

Gracias, su opinión es importante! ***Por favor, devuelva este cuestionario al investigador.***

INVESTIGADOR COMPLETA ESTA SECCIÓN:

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Site: \_\_\_\_\_ ID # \_\_\_\_\_

## Visitor Experiences at Manuel Antonio National Park

This survey is part of a Ph.D. research project at the University of Hawai'i at Mānoa. The purpose is to learn about nature-based tourism experiences at Manuel Antonio National Park, and your input will help management of the Park and visitor sites. Participation is voluntary and all answers are **anonymous**. Please answer the following questions and return the form to the researcher.

1. Is this your first visit to Manuel Antonio National Park? (**check ONE**)     No     Yes
2. Are you visiting the Park as a participant in an organized group tour today? (**check ONE**)     No  
 Yes
3. Who are you visiting the Park with today? (**check ALL that apply**)  
 Friends     Partner     Spouse     Children     Other family     Alone  
 Tour group     Other group     Other, please specify: \_\_\_\_\_
4. Including yourself, how many people are visiting the Park with you today? \_\_\_\_\_ persons
5. On this visit to Manuel Antonio National Park...(**circle one number for EACH item**)

	Yes	No
I took natural souvenirs such as shells, sand, or rocks	Y	N
I touched wildlife	Y	N
I fed wildlife	Y	N
I made noises at wildlife to attract their attention	Y	N
Wildlife stole food from my belongings	Y	N
I photographed myself with wildlife	Y	N

6. How important are the following as 'guiding principles' in your life? (**circle one number for EACH item**)

	Opposed to my values	Not Important	Important					Very Important	Extremely Important
	-1	0	1	2	3	4	5	6	7
<b>Social Power:</b> status, prestige, dominance	-1	0	1	2	3	4	5	6	7
<b>Wealth:</b> material possessions, money	-1	0	1	2	3	4	5	6	7
<b>Authority:</b> ability to control events or people	-1	0	1	2	3	4	5	6	7
<b>Influence:</b> ability to make decisions, leadership	-1	0	1	2	3	4	5	6	7
<b>Equality:</b> equal opportunities, fairness	-1	0	1	2	3	4	5	6	7
<b>Peace:</b> absence of war and conflict	-1	0	1	2	3	4	5	6	7
<b>Social justice:</b> correcting injustice, care for the disadvantaged	-1	0	1	2	3	4	5	6	7
<b>Helpfulness:</b> assistance, aid to those in need	-1	0	1	2	3	4	5	6	7
<b>Preventing Pollution:</b> recycling, limiting waste	-1	0	1	2	3	4	5	6	7

<b>Protecting the Environment:</b> natural resources	-1	0	1	2	3	4	5	6	7
<b>Unity with Nature:</b> feeling connected, in harmony	-1	0	1	2	3	4	5	6	7
<b>Protecting Other Species:</b> wildlife conservation	-1	0	1	2	3	4	5	6	7
<b>Pleasure:</b> food, activities, relaxation	-1	0	1	2	3	4	5	6	7
<b>Fun:</b> entertainment, amusement, recreation	-1	0	1	2	3	4	5	6	7
<b>Indulgence:</b> pampering yourself, luxury	-1	0	1	2	3	4	5	6	7
<b>Excitement:</b> stimulating experiences, thrills	-1	0	1	2	3	4	5	6	7

7. Please tell us the extent to which you agree or disagree with each of the following statements. (**circle one number for *EACH* statement**)

	Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Very Strongly Agree
It can be harmful to feed wildlife	1	2	3	4	5	6	7
It can be harmful to touch wildlife	1	2	3	4	5	6	7
Visitors can contribute to changes in wildlife behavior	1	2	3	4	5	6	7
Feeding wildlife can be dangerous for humans	1	2	3	4	5	6	7
Making noise to attract wildlife can be dangerous for humans	1	2	3	4	5	6	7
Visitors can harm the Park's natural environment	1	2	3	4	5	6	7
Visitors who feed wildlife should recognize the animal health problems this might create	1	2	3	4	5	6	7
I personally contribute to animal health and behavior problems by visiting the Park	1	2	3	4	5	6	7
I do not feel personally responsible for any problems created by tourism in the Park because my individual contribution is very small	1	2	3	4	5	6	7
I would feel responsible if any animal was harmed by my actions in the Park	1	2	3	4	5	6	7
Visitors should be held responsible for their actions in the Park	1	2	3	4	5	6	7

Visitors who feed wildlife should recognize the animal stress and aggression problems this might create	1	2	3	4	5	6	7
Visitors should do what they can to avoid disturbing the environment while in the Park	1	2	3	4	5	6	7
Visitors do not need to worry about problems in the Park	1	2	3	4	5	6	7
My personal actions are too small to make any significant impact on the Park's environment	1	2	3	4	5	6	7
The actions of one person can reduce the negative impacts of tourism in the Park	1	2	3	4	5	6	7
Following park ranger recommendations helps to minimize the negative impacts of tourism in the Park	1	2	3	4	5	6	7
I think we can prevent the negative impacts of tourism in this Park	1	2	3	4	5	6	7
I should do everything possible to avoid harming the Park's wildlife	1	2	3	4	5	6	7
I would feel guilty if I unintentionally hurt an animal in the Park	1	2	3	4	5	6	7
Feeding healthy food to wildlife in the Park is acceptable	1	2	3	4	5	6	7
Park visitors should not be blamed if wildlife steal their food	1	2	3	4	5	6	7
It is acceptable to attract wildlife in the Park by making noise	1	2	3	4	5	6	7
I feel morally obligated to help protect the Park's wildlife	1	2	3	4	5	6	7

Manuel Antonio National Park has **visitor rules** in order to not put wildlife at risk, and prevent environmental impacts of tourism activities. In the next section, you are asked to share your perceptions and opinions of the **Park's visitor rules**.

8. Please tell us the extent to which you agree or disagree with each of the following statements. (**circle one number for EACH statement**)

	Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Very Strongly Agree
I can decide which of the Park's visitor rules I follow	1	2	3	4	5	6	7
Following the Park's visitor rules helps protect wildlife	1	2	3	4	5	6	7
Following the Park's visitor rules protects the natural environment	1	2	3	4	5	6	7
The Park's visitor rules are only recommendations and visitors are not required to follow them	1	2	3	4	5	6	7
It is impossible to follow all of the Park's visitor rules	1	2	3	4	5	6	7
I could follow the Park's visitor rules if I wanted to	1	2	3	4	5	6	7
I feel personally obligated to follow the Park's visitor rules	1	2	3	4	5	6	7
Visitors like me should comply with the Park's visitor rules	1	2	3	4	5	6	7
I would feel guilty if I didn't follow the Park's visitor rules	1	2	3	4	5	6	7
Park rangers should do a better job of educating visitors so they follow the Park's visitor rules	1	2	3	4	5	6	7

9. Did you learn about the Park's visitor rules **before** arriving today? (**check ONE**)

- No     Yes → if yes, where? (**check all that apply**)     online     hotel     tour operator/agency  
 publication from ticket office     other; please specify: \_\_\_\_\_

10. Have you seen signs in the Park today that provide information on visitor rules? (**check ONE**)

- No     Yes → if yes, where? (**check all that apply**)     Park entrance     paths     beach areas

11. Did anyone provide you with more information about visitor rules **after** you entered the Park today? (**check ONE**)

- No     Yes → if yes, who? (**check all that apply**)     tour guide     park ranger     member of my visitor group  
 member of another visitor group     other; please specify: \_\_\_\_\_

12. Which of the following are included in the Park's visitor rules? (circle one letter for ***EACH*** statement)

	YES	NO	UNSURE
Stay on trails	Y	N	U
Do not feed wildlife	Y	N	U
Do not leave traces of your visit (e.g., litter, graffiti)	Y	N	U
Do not imitate bird calls	Y	N	U
Do not bring food in the Park	Y	N	U
Do not remove natural artifacts (e.g., sand, shells, rocks)	Y	N	U
Do not make noises to attract wildlife	Y	N	U
Do not use a flash to photograph wildlife	Y	N	U

13. Please tell us the extent to which you agree or disagree with each of the following statements. (circle one number for ***EACH*** statement)

	Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Very Strongly Agree
Humans have the right to modify the natural environment to suit their needs	1	2	3	4	5	6	7
Humans were meant to rule over the rest of nature	1	2	3	4	5	6	7
The so-called ecological crisis facing humankind has been greatly exaggerated	1	2	3	4	5	6	7
The earth has plenty of natural resources if we just learn how to develop them	1	2	3	4	5	6	7
The balance of nature is very delicate and easily upset	1	2	3	4	5	6	7
When humans interfere with nature, it often produces disastrous consequences	1	2	3	4	5	6	7
Plants and animals have as much right as humans to exist	1	2	3	4	5	6	7
Humans are severely abusing the environment	1	2	3	4	5	6	7

14. Where do you live during most of the year? (write response) State/Province \_\_\_\_\_ Country \_\_\_\_\_

15. Gender:  Male  Female

16. Age: \_\_\_\_\_ years

17. What is the ***highest*** level of education that you have completed? (check ***ONE***)

- |   |   |
|---|---|
| <input type="checkbox"/> No formal education                      | <input type="checkbox"/> 4-year college degree (e.g., bachelors degree) |
| <input type="checkbox"/> Less than high school diploma            |   |
| <input type="checkbox"/> High school diploma or GED               | <input type="checkbox"/> Advanced degree beyond 4-year degree           |
| <input type="checkbox"/> 2-year associates degree or trade school | (e.g., masters, Ph.D., medical doctor, law degree)                      |

Thank you, your input is important! ***Please return this questionnaire to the researcher.***

RESEARCHER COMPLETES THIS SECTION:

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Site: \_\_\_\_\_ ID # \_\_\_\_\_

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