

ABSTRACT

SERENARI, CHRISTOPHER. Understanding Environmentally Significant Behavior among Guides in the Garhwal Himalaya. (Under the direction of Dr. Aram Attarian.)

Garhwal, Uttarakhand, India is attempting to manage environmental impacts related to tourism. Nature-based guides have been shown to play a role in recreation resource management. Much of the attention has been paid to eco guides. Commonly, guide training follows prescribed American outdoor ethics and assumptions about their recreation resource roles are made without taking into account guides' unique cultural context. This has implications for transfer of environmental education, dissemination of related information to clients and team members, and manifestation of internal outdoor ethics. Guides working in Garhwal operate in a vastly different cultural context than guides studied elsewhere. To date, their beliefs and attitudes towards pro-environmental behavior have not been explored by social scientists.

A volunteer sample was obtained from a population of Garhwal-based whitewater and trekking guides in 2009. The Theory of Planned Behavior was applied to assess the modal salient beliefs, attitudes, and intention of Garhwal-based guides to pack out trash, bury human waste, and refrain from cutting/cut living trees for firewood. Results show that Garhwal-based guides find more advantages than disadvantages to performing these behaviors and are mainly self-influenced when choosing to perform these behaviors. However, a number of constraints and barriers were identified that may make incorporating American outdoor ethics in Garhwal a challenge. Results also discovered possible impediments that may hinder the consistent performance of pro-environmental

behavior among guides in Garhwal. An industry wide ethic based on sound cultural and cognitive understanding of the Garhwal-based guide population is suggested.

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Understanding Environmentally Significant Behavior Among Guides in the Garhwal
Himalaya, India

by
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BIOGRAPHY

Crediting an article he read about the creation of a protected area in Africa as his inspiration, Christopher Serenari left his career as an industrial hygienist and decided to pursue graduate studies in human-environment interactions. During summer 2009 Chris completed a study abroad course and data collection for his Master's research in the Himalayan Mountains of Garhwal, Uttarakhand, India. The research was funded by the American Alpine Club and the North Carolina State University College of Natural Resources.

Five weeks were spent traveling throughout the Himalayan Mountains: trekking, rafting, motorcycle riding, sweating profusely, battling a stubborn infection, eating the same foods over and over, and working with some amazing people. Chris states, "It is my hope that this study will highlight the need for research with a cultural and cognitive foundation that enhances our appreciation for environmental ethics in their rightful context."

Upon completion of his Master's degree, the author will enjoy his new role as a father and hopes to start a Ph.D. program in Fall 2010. He plans to continue to conduct human-environment based research abroad and ultimately find a position in academia or an internationally based organization.

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Understanding Environmentally Significant Behaviors Among Guides in the Garhwal, Himalaya, India

Introduction

A stronghold of Hinduism and spanning 29.26 N-31.28 N latitude to 77.49 E – 80.6 E longitude, the Garhwal Himalaya covers an area approximately 30,090 square mountainous miles. Garhwal is located within the state of Uttarakhand, India, formerly Uttaranchal, with an approximate population of 4,919,000. This part of India is known for its cultural and historical depth along with magnificent rivers, mountains, and wildlife. Mountain tourism in India was firmly established in 1961 with the creation of the Indian Mountaineering Foundation, but has entertained explorers and climbers since the 19th century (Bisht, 1994). The Garhwal Division saw frequent expeditions as climbers frequented the Rishi Gorge on the way to the slopes of Nanda Devi (7816m), among other peaks. During the 1970's, Garhwal saw a dramatic increase in expeditions after the Hill Area Development Board opened some restricted areas along the Indo-Tibetan boarder (Bisht, 1994).

Mountain tourism in Garhwal has expanded beyond that of large expeditions. Several popular forms of nature-based tourism, including eco, adventure, and religious tourism, have been cited by the State as vehicles to propel the State economy (Indian Council, 2008). The State's former tourism minister, Prakash Pant, expressed in 2008 that Uttarakhand is to become a highly sought after tourist destination by 2015 (Kumar, 2009). Despite poor infrastructure development, which has kept foreign tourists away,

nature-based tourism numbers have grown steadily for decades (Bisht, 1994; Indian Council, 2008).

Problem Statement

Most nature-based tourists are Indian and they take to the mountains of Garhwal in the millions pursuing sightseeing, religious endeavors, and recreation, among other activities (Indian Council, 2008). Poor infrastructure combined with millions of tourists in Garhwal has resulted in environmental impacts, many of them negative and significant. The most commonly cited issues in scholarly literature have been waste disposal (organic and inorganic) and vegetation loss (deforestation) (Bisht, 1994; Farooquee, Budal, & Maikhuri, 2008; Kuniyal, 2002; Nigam, 2002; Rai & Sundriyal, 1997; Singh, Mal & Kala, 2009; Silori, 2004). According to Singh (2002), mountain tourists, Indians in particular, have been apathetic to or uneducated of traditional conservation values. These impacts and issues are being tackled by land managers and scholars.

Nature-based guides have been shown to play major role in recreation resource management as they lead various types of tours and serve as a moderator between a client's behavior and the outcome on the natural landscape (Barker & Roberts, 2004; Littlefair & Buckley, 2008; Roggenbuck, Williams, & Bobinski, 1992; Wagstaff & Wilson, 1988). Yet, Garhwal-based guides operate in a vastly different social context than guides studied elsewhere and to date their beliefs and attitudes on pro-environmental behavior have not been explored by social scientists. In addition, it was observed in the scholarly literature that recreation impacts around the world are dealt with in very similar

ways. For example, environmental education commonly draws on America's Leave No Trace outdoor ethics program and research focused on nature-based guides tends to assume that guides should perform as recreation resource managers with an outdoor ethic to share. The weaknesses of these two approaches are the drivers of the following research as understanding cultural and cognitive components of behavior have implications for transfer of environmental education (Ziguras, 2001), dissemination of related information to clients and other team members, and manifestation of internal outdoor ethics.

Approach and Purpose

This study is divided into two manuscripts. The first examines the cross-cultural utility of American outdoor ethics (e.g., LNT). As indicated on their website (www.lnt.org), LNT has been adopted in many parts of the world. Jones and Bruyere (2004) declared that LNT employs a belief changing strategy and seeks to get recreationists to "do the right thing" (p.3). However, many parts of the world employ various strategies to revere nature and spur pro-environmental behavior based on religious beliefs, cultural perceptions, and traditions different from those used to create LNT; Garhwal has historically been one of those places (Byers, Cunliffe, & Hudak, 2001; Guha, 1989; Luo, Liu, & Zhang, 2009; Kuriyan, 2002; Sharma, Rikhari, & Palni, 1999; Sinha, 1995). The first manuscript questions whether the belief changing strategy of LNT will work in Garhwal. It examines the role of culture on beliefs and seeks to uncover those salient beliefs that drive whitewater and trekking guides intentions to perform pro-

environmental behavior.

The second manuscript addresses the need for research on the natural resource role of guides in a context outside of ecotourism in a “developing” country. Howard, Thwaites, and Smith (2001) found that the cultural context that directs a guide’s conservation behavior is important to understanding their current and potential resource management role. This research argues that for recreation resource management efforts pertaining to environmental education to be efficient and effective, managers and similar interested parties must discover the cognitive context of the population of interest in which they seek to alter and influence recreation behavior. This study attempted to uncover this cognitive context among guides in Garhwal by examining intention to perform pro-environmental behavior.

The Theory of Planned Behavior was chosen to lay a foundation to understanding whitewater and trekking guides cultural and cognitive context for performing pro-environmental behavior, for its ability to help understand and predict environmentally-related behavior (Beedell & Rehman, 2000; Bissonnette & Contento, 2001; Fielding, McDonald, & Louis, 2008; Hinds & Sparks, 2008; Karppinen, 2005; Knussen, Yule, MacKenzie, & Wells, 2004; Teo & Loosemore, 2001; Tonglet, Phillips, & Bates, 2004) and increased effectiveness when culture was incorporated (Oreg & Katz-Gerro, 2006).

Delimitations

The immediate results of this study are applicable to Garhwal, Uttarakhand, India.

Subjects approached for the study were whitewater and trekking guides that live and work in Garhwal. Some guides may not have been born in Garhwal, or India, as the guiding profession attracts outsiders who come to live within Uttarakhand's borders to live and work.

Significance

This research is intended for resource managers domestic and abroad, related educators and trainers in the field of recreation resource management who seek to advance their understanding of culture, context, and indigenous recreation populations. However, the research will also be of strong interest to a broader audience that includes policy-makers, project and program managers and staff, researchers, and others concerned with the interface between recreation resource management and indigenous populations.

Evaluating the Cross-Cultural Utility of American Outdoor Ethics in Garhwal Himalaya, India

Abstract

American beliefs, rationale, and experience have resulted in ethics (right and wrong) that seek to reduce the impacts of recreationists on public lands. These ethics have been exported to the rest of the world. However, many non-American societies rely on religious beliefs, cultural perceptions, and traditions different from those used to create LNT to serve as the foundation for environmental concern. This notion also pertains to nature-based guides, who have been assumed to be steadfast influences in terms of recreation resource management and dissemination of environmental education. To date research has not addressed the cross-cultural utility of American outdoor ethics (Leave No Trace) and paid little attention to nature-based guides outside of ecotourism. An elicitation study was conducted in Garhwal, Uttarakhand, India in 2009 following the Theory of Planned Behavior. The modal salient beliefs that led to forty-four Garhwal-based whitewater and trekking guides intention to pack out trash, bury human waste, and refrain from cutting living trees for firewood were acquired. Results show that Garhwal-based guides find more advantages than disadvantages to performing these behaviors and are mainly self-influenced when choosing to perform these behaviors. However, a number of constraints and barriers were identified that may make incorporating American outdoor ethics in Gahrwal a challenge.

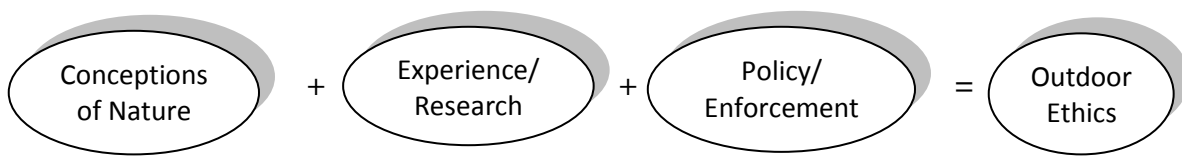
Introduction

The Himalayas have been a playground for explorers since the 19th century. In particular, the Garhwal Division of India was passage to Nanda Devi (7816m), once the second most attempted Himalayan peak behind Everest. The arduous approach via the Rishi Gorge made it one of the most difficult approach/climbs in the world (now ensconced in the closed-to-humans Nanda Devi Biosphere Reserve). The inception of the Indian Mountaineering Foundation in 1961 was a sign that mountain tourism in India was firmly established, providing support for mountaineering, skiing, trekking, and rock climbing expeditions (Bisht, 1994). The advent of the Hill Area Development Board in 1972 and the opening of some restricted areas along the Indo-Tibetan boarder gave rise to a flood of higher elevation expeditions in the 1970s (Bisht, 1994). As improvements to infrastructure and technology have been made, mountain adventure tourism has become more accessible to a wider variety of tourists (Beedie & Hudson, 2003) and numbers have been surging in Garhwal (Bisht, 1994; euttaranchal.com, 2009). Increased tourism in the mountains has resulted in environmental impacts and resulted in scholarly research to address these issues. Waste disposal (human and non-human) and vegetation loss were found to be tourism impacts commonly occurring in the Indian Himalaya (Bisht, 1994; Farooquee, Budal, & Maikhuri, 2008; Kuniyal, 2002; Nigam, 2002; Rai & Sundriyal, 1997; Silori, 2004, Singh, Mal & Kala, 2009). In some cases, environmental education has been suggested and used to curb the negative environmental impacts of tourism in Garhwal (Madan & Rawat, 2000; Singh, Mal & Kala, 2009).

The leading program in outdoor ethics in America, Leave No Trace (LNT), was developed as an education-based response to wild land management challenges, expansion of wild land use, and degradation of recreational areas in the United States (Marion & Reid, 2007). Now firmly established in America, outdoor enthusiasts in six of seven continents are acquiring these skills and ethics from individuals who complete the LNT Master Educator course (Marion & Reid, 2001). There has been mention of expeditions leaving no trace in the Arctic as well (Rolston III, 2000). In addition, governments, schools, organizations, and businesses in Taiwan (Government of Taiwan, 2010), India (Nehru Institute of Mountaineering, personal communication, June 26, 2009), New Zealand (New Zealand schools, 2008), and South Africa (van den Berg & Swain, 2007) have adopted LNT principles. The intent of these principles (i.e. ethics) is to reduce negative outdoor recreation impacts and change or reinforce recommended behavior by targeting and changing the belief system of the recreationist (Adams & Hulme, 2001; Christensen & Cole, 2000; Jones & Bruyere, 2004).

It is interesting that it has been deemed necessary to export these ethics outside of the United States to countries with socially, culturally, and historically different environmental perspectives and histories. LNT was created to achieve American federal land manager goals and based specifically on American rationale and experience (Figure 1). LNT is useful to public land managers as their presentist belief of what the natural landscape should look like (Simon & Alagona, 2009; Wilderness Act, 1964) is supported via a body of knowledge on visitor impact research (Marion & Reid, 2007). Lassiter

(2003) illustrated the relationship between belief and knowledge suggesting “what we believe” is not the same as “what we know” and that it is common for humans to hold knowledge in a higher regard than beliefs (Lassiter, 2003, p. 169). To many, the implied goal of these ethics “is to leave the landscape as charming and healthy” as it was found by European settlers (United States Forest Service, 2001, p.3), get recreationists to “do the *right* thing” (Jones & Bruyere, 2004, p.3), and prevent natural landscapes from looking like the “back alleys of third world villages” (McGivney, 2003, p. 19). American outdoor ethics, by definition, are not beliefs any longer but a body of knowledge based on a collective set of values and morals, and accordingly, perception of right and wrong. This is evidenced by the existence and enforcement of current federal land management policies.



¹Figure 1. The rise of outdoor ethics in the United States.

Purpose

This research does not seek to criticize the seven principles of LNT. This study questions whether American outdoor ethics are universally viable by examining the role of culture on beliefs to perform pro-environmental behavior. The overarching research question driving the scholarly idea is: what is the cross-cultural utility of American outdoor ethics when introduced to populations with different conceptions, if any

conceptions at all, about nature and conservation? An American brand of nature and conservation is not shared in all corners of the globe (Guha, 1989). Further, perhaps the exportation of these ethics can be seen as a semblance of cultural or educational imperialism as local epistemologies are replaced by a more dominant way of knowing; a similar argument has been made pertaining to other educational programs distributed offshore (Ziguras, 2001). In addition, despite the global achievements of LNT, the reverence of nature and pro-environmental behavior has not always needed an American outdoor ethic or policy to occur. A number of societies have relied on religious beliefs, cultural perceptions, and traditions different from those used to create LNT to serve as the foundation for conservation, resource management, environmental protection, and to influence related behavior without the aid of policy (Byers, Cunliffe, & Hudak, 2001; Guha, 1989; Luo, Liu, & Zhang, 2009; Kuriyan, 2002; Sharma, Rikhari, & Palni, 1999; Sinha, 1995). For example, Sinha (1995) detailed biodiversity conservation as an outgrowth of religion in India and remarked that apolitical reverence of the natural landscape and animals has occurred since 5000 B.C.

Scholarly literature has not addressed LNT's implementation strategy of belief changing in these societies. This research draws from the notion that nature-based discourses have been constructed by a complex web of social phenomena affected by histories, economics, technologies, science, and myths that are unique to assorted societies and cultures (Escobar, 1996). The present study was undertaken in Garhwal, Uttarakhand, India. Garhwal was selected for its burgeoning nature-based tourism,

variety of tourists that use the natural landscape, and rich and diverse cultural and environmental history. These characteristics provided a contrast with American beliefs of the natural landscape. The data presented in this study address the following research question: what are those salient beliefs that prompt whitewater and trekking guides' intention to perform pro-environmental behavior? The behaviors selected were based on recreation resource impacts of prominence in the Indian Himalaya and addressed by LNT (trash, human waste, and tree cutting for firewood). It was anticipated that by eliciting Garhwal-based guide beliefs a greater understanding of this unique population's outdoor ethics would be achieved. This understanding can aid those that seek to implement outdoor ethics in non-American cultures to avoid assumptions of adequate transfer of environmentally-based information and neocolonialist predispositions (Ziguras, 2001). It can also help draw out internal outdoor ethics rooted in culture.

This paper does not seek to engage in a sophisticated dialogue of nature and conservation as social constructions, nor to debate epistemologies regarding these topics. It does argue that outdoor ethics are born from unique experiences and rationale and that extrapolation of American outdoor ethics should be predicated on a sound cultural and cognitive understanding of environmentally significant behavior of the population of interest.

Outdoor Ethic Development Among Guides

This study presumes that Garhwal-based guides' conceptions of nature are dictated by their belief system which is rooted in a unique and multifaceted culture.

Nature based guides provided an appealing look at Garhwal citizens with a dualistic existence. According to researchers, whitewater and trekking guides would be expected disseminators of outdoor ethics (Muñoz, 1995; Black, Ham, & Weiler, 2001) and thus arguably most likely exposed to outdoor ethics as part of their jobs. On the other hand, Garhwal-based guides must still exist as citizens in a society with norms perceived as negative towards the environment (e.g. littering). In light of these observations, an assessment of nature-based guide beliefs was found to be a practicable avenue to evaluate the utility of American outdoor ethics in Garhwal.

Theoretical Framework and Salient Beliefs

The Theory of Planned Behavior was chosen for its ability to help understand and predict environmentally-related behavior (Beedell & Rehman, 2000; Bissonnette & Contento, 2001; Fielding, McDonald, & Louis, 2008; Hinds & Sparks, 2008; Karppinen, 2005; Knussen, Yule, MacKenzie, & Wells, 2004; Teo & Loosemore, 2001; Tonglet, Phillips, & Bates, 2004). An understanding of environmentally-related behavior, as sought in this study, begins with the discovery of an “informational foundation” for explaining human behavior in specific contexts (Ajzen, 1991). The starting place for discovering this foundation is by eliciting salient beliefs within a representative sample of the population (Sutton, French, Henning, Mitchell, Wareham, Griffin, Hardeman, & Kinmoth, 2003).

The Theory of Planned Behavior was designed to “predict and explain human behavior in specific contexts” (Ajzen, 1991, p. 3). The theory posits that intention

(motivation) and actual performance of a behavior is based on three predictor variables: attitude toward the behavior, subjective norm, and perceived behavioral control (Ajzen, 1991). Attitude is used in the theory to assess one's perception of the behavior in terms of positive or negative, favorable or unfavorable. Subjective norm is defined as a person's external or social influence to perform the behavior. Perceived behavior control refers to the resources and opportunities one has at their disposal that enables them to carry out a behavior.

An extension of the Theory of Planned Behavior was used to establish a belief foundation for intention to perform three low impact behaviors. The antecedents of the abovementioned predictor variables are salient beliefs, which also play a role in determining intention and action. The TOPB assumes that *behavioral beliefs* influence *attitudes* toward the behavior by producing a favorable or unfavorable attitude toward the behavior. These beliefs are based on consequences, or advantages and disadvantages, of performing the behavior. Thus, those with a favorable attitude towards low impact travel behaviors would be have greater intention to perform pro-environmental behaviors (Ajzen, 1991). *Normative beliefs* result in a *subjective norm* and are dictated by perceived social pressure. These beliefs stem from an individual's perceptions that people important to them would approve or disapprove of the individual performing the behavior in question. *Control beliefs* are the foundation for *perceived behavioral control*. The ability to control performance of environmentally significant behavior was a primary reason TOPB was chosen as the theoretical foundation for this research. Resources and

opportunities perceived necessary by an individual may not always be present in their view. Ajzen (1991) wrote that experience with the behavior and influence by second-hand information about the behavior, among other factors, can manipulate the perceived difficulty of performing the behavior in question. Ajzen (1991) explained, “The more resources and opportunities individuals believe they possess, and the fewer obstacles or impediments they anticipate, the greater should be their perceived control over the behavior” (p. 196).

The role of behavioral, normative, and control beliefs was illustrated by Ajzen (1991) writing that “when attitudes are estimated on the basis of salient beliefs, correlations with a standard measure tend to be higher than when they are estimated on the basis of an intuitively selected set of beliefs” (p. 192). An elicitation study was used to extract these beliefs pertaining to intention to pack out trash, bury human waste, and refrain from cutting living trees for firewood. The resultant list of modal salient beliefs for each construct is fleshed out by content analysis that abides by certain parameters, such as accounting for a certain percentage of beliefs above 20%, 10%, etc. (Sutton et al., 2003).

Cultural conditions were found by Oreg and Katz-Gerro (2006) to be instrumental in shaping an individual’s actions towards environmental issues. However, Lee, Ebesu-Hubbard, Kulp-O’Riordan, and Kim (2006) found only a few studies had attempted to incorporate the TOPB in “non-Western” societies. This research offered an opportunity to apply part of the TOPB in a unique cultural context.

Methods

Sampling and Data Collection

A volunteer sample was obtained from a population of Garhwal-based whitewater and trekking guides during May-June 2009. Three local (indigenous) guides served as assistants and helped approach subjects, obtain verbal informed consent before collecting data, and administer questionnaires. Assistants were first briefed on the research objective and then on the appropriate manner in which to assist a subject to complete a questionnaire (e.g. refrain from coaching responses, obtaining verbal consent first, maintaining confidentiality of responses). Questionnaires were administered on a volunteer basis by frequenting adventure tour companies and guide agencies in Joshimath, Rishikesh, and Uttarkashi, India and asking guides present at these locations to participate in the study. The study was carried out during the peak of the adventure tourism season and very busy much of the week. Subjects were occasionally contacted by telephone and arrangements were made to meet them. Participants were given the option of completing the questionnaire on site or returning a completed questionnaire at a drop location, such as a guide company. Research assistants provided translation and clarification services to the participants as needed.

Participants

Whitewater and trekking guides 16 years of age and older ($n = 44$) working and residing in Garhwal, Uttarakhand, India were chosen for this study. Guide ages ranged from 16 to 45 years (Mean = 28, SD = 6.75). Respondents averaged 7 years of guiding

experience, ranging from 1 to 20 years. The overwhelming majority of respondents were male (98%). Over one-third (36%) were employed as whitewater guides, 41% as trekking guides, and 23% as both a whitewater and trekking guide.

Survey Instrument

A questionnaire was comprised of 18 belief-based questions (Table 1) following Ajzen (2006). Based on the Theory of Planned Behavior's belief constructs, the questionnaire was translated from English to Hindi and then administered. There was a delay in the translation; a number of questionnaires were completed in English by guides who felt capable of answering in English.

Analysis

Open-ended questions were included at the end of the questionnaire. Twenty of the forty-four guides responded in Hindi requiring translation by a fluent speaker of Hindi and English. A code sheet was developed to direct the open coding process after evaluating all forty-four questionnaires and following suggestions by Riddick and Russell (2008) and faculty at North Carolina State University (K. Henderson, personal communication, August, 28, 2009). Due to the large variety of responses, specific coding was developed for each question. The authors independently analyzed the content of eight (8) questionnaires by labeling the themes identified according to the code sheet and their results were compared. Inter-rater reliability was .82. Frequency of themes for all forty-four questionnaires was then counted and entered into an Excel database.

Overlapping codes, such as those referring to a belief related to the preservation of the natural environment in a general sense (e.g. PUR = Keep the environment pure/protected; SAV = Save the environment) were reduced to account for the range of answers given by the respondents seemingly attempting to arrive at the same belief. Answers were then reduced into themes using a format adapted from Downs and Hausenblaus (2005) and falling within the three categories specified by the TOPB :

- behavioral beliefs
- normative beliefs
- control beliefs

Limitations

The location of the study resulted in various limitations that should be noted. The translation from English to Hindi took longer than expected and questionnaires had to be issued in both English and Hindi. Many guides were assisted by a Hindi speaking research assistant/guide in order to complete the questionnaire. However, many guides refused assistance despite needing it. Foregoing support resulted in alternative or misinterpretation of the question asked (as evidenced by answers given) and on occasion limited the quality and breadth of responses provided by guides. Cultural differences have also been assumed to play a role in how guides answered the questions asked. Questions about religious beliefs were deemed sensitive in nature and not included in the questionnaire. Additionally, a volunteer sample was used because of the difficult nature to gain the cooperation of busy guides and the language barrier between the researcher

Table 1

Elicitation Study Questions

Behavioral Beliefs

What are the advantages of packing out trash during the expeditions that you work?

What are the disadvantages of packing out trash during the expeditions that you work?

What are the advantages of burying your human waste during the expeditions that you work?

What are the disadvantages of burying your human waste during the expeditions that you work?

What are the advantages of refraining from cutting living trees for firewood during the expeditions that you work?

What are the disadvantages of refraining from cutting living trees for firewood during the expeditions that you work?

Normative Beliefs

Who would approve of your packing out trash during the expeditions that you work?

Who would disapprove of your packing out trash during the expeditions that you work?

Who would approve of your burying your human waste during the expeditions that you work?

Who would disapprove of your burying your human waste during the expeditions that you work?

Who would approve of your refraining from cutting living trees for firewood during the expeditions that you work?

Who would disapprove of your refraining from cutting living trees for firewood the expeditions that you work?

Control Beliefs

What are the factors or circumstances that enable you to pack out trash during the expeditions that you work?

What are the factors or circumstances that make it difficult for you to pack out trash during the expeditions that you work?

What are the factors or circumstances that enable you to bury your human waste during the expeditions that you work?

What are the factors or circumstances that make it difficult for you to bury your human waste during the expeditions that you work?

What are the factors or circumstances that enable you refrain from cutting living trees for firewood during the expeditions that you work?

What are the factors or circumstances that make it difficult for you to refrain from cutting living trees for firewood during the expeditions that you work?

and subjects. These types of samples have been known to result in a non-representative sample as people with strong opinions usually participate. The sample consisted of mainly males who appear to make up the majority of guides in Garhwal. The one female in all likelihood was a male who checked the wrong box due to an error in the number of boxes drawn in for “Sex”.

Results

Ajzen and Fishbein (1980) suggested using one of three rules when analyzing salient beliefs. These were summarized by Sutton et al. (2003):

1. Include the ten or twelve most frequently mentioned outcomes. According to Ajzen and Fishbein (1980), this procedure results in a set of beliefs that is likely to include at least some of the beliefs mentioned by each respondent in the sample.
2. Include those beliefs that exceed a particular frequency, for example all beliefs mentioned by at least 10 percent or 20 percent of the sample.
3. Choose as many beliefs as necessary to account for a certain percentage (e.g., 75 percent) of all beliefs elicited (pp. 237).

For all three salient belief analyses, those beliefs occurring at and above 10% of salient beliefs were reported. Some cases arose where this cutoff had to be expanded. For example, a high response rate for one belief may have been found and the response rate below 10% for all other beliefs. This would have resulted in a small number of beliefs above a 10% cutoff. To remedy this situation, a hybrid of rules one and two was used. In

addition to the 10% cutoff, a minimum of the highest three modal beliefs were reported. Analysis of control beliefs followed rule number one; ten to twelve beliefs were reported.

Behavioral Beliefs (Table 2)

A majority of guides reported *Pollution Prevention* as the primary advantage for packing out trash (N = 26, 60%) followed by *Cleanliness/Purity of Setting* (N = 12, 28%). The non-specific response category *Environmental Benefit* (N = 7, 26%) was third followed by *Environmental Protection* (N = 8, 19%). The majority of guides reported *Dispersal of Pollution* as the primary disadvantage for packing out trash (N = 25, 58%), followed by *Extra Resources are Needed* (N = 5, 12%), and *None* (N = 4, 9%).

Cleanliness/Purity of Setting (N = 15, 35%) was reported by guides to be the primary advantage to burying human waste. Other significant advantages were *Pollution Prevention* (N = 8, 19%), followed by *Pollution Control* (6, 14%) and *Bio-Turnover* (N = 5, 12%). A majority of guides reported no disadvantages/*None* (N = 22, 56%), Increased Pollution (N = 7, 18%), and Lack of Pollution Control (3, 8%) as the top three modal beliefs.

A large majority of guides declared *Cleanliness/Purity of Setting* (N = 29, 69%) to be the primary advantage to refraining from cutting living trees. Other significant advantages were *Environmental Protection* (N = 8, 19%), followed by *Environment in Balance*, *Rain Production*, *Pollution Prevention*, *None* (N = 3, 7%). Half of guides

Table 2

The number (N) and percent (%) of behavioral beliefs

(Adapted from Downs & Hausenblas, 2005)

Advantages of Packing Out Trash		n = 43	
<i>Broad Belief Category</i>	<i>Raw Data Theme</i>	<i>N</i>	<i>%^c</i>
Pollution Prevention	Environment does not get polluted; forest and land will be free of pollution	26	60
Cleanliness/Purity	Clean place for next coming backpackers; to keep environment clean	12	28
Environmental Protection	We can save the environment; protect from air and water pollution and forest fire	8	19
Environmental Benefit	Environment safety; there will be a good effect on environment	7	16
Disadvantages of Packing Out Trash		n = 43	
None	No disadvantages; do not think any disadvantages; nothing; no harm ^b	25	58
Extra Resources are Needed	Don't have to carry extra load on our back; more time; have to carry extra bag	5	12
Dispersal of Pollution	Garbage spreads around; bag of trash thrown into river	4	9
Advantages of Burying Human Waste		n = 43	
Cleanliness/Purity	Area is clean; to keep clean the surrounding; the environment remains pure	15	35
Pollution Prevention	There will be no pollution; environment will not be polluted	8	19
Pollution Control	Garbage will not spread here and there; it will be stored in one place	6	14
Bio-turnover	The land will be more fertile; organic material will be formed	5	12

Table 2 continued			
Disadvantages of Burying Human Waste		n = 39	
None	No harm ^b ; none	22	56
Increased Pollution	Dirty camp(site); pollution will not end completely	7	18
Lack of Pollution Control	Garbage will spread around; later is will harm the environment	3	8 ^a
Advantages of Refraining from Cutting Living Trees for Firewood		n = 42	
Cleanliness/Purity	Environment will be clean; forest will be green and dense; our forests will stay green	29	69
Environmental Protection	Avoiding the (de)forestation; environment is protected; prevent global warming	8	19
Other: Environment in Balance, Rain Production, Pollution Prevention, None	Balanced environment; trees bring rain; reduce pollution	3	7 ^a
Disadvantages of Refraining from Cutting Living Trees for Firewood		n = 42	
None	No harm ^b ; nothing	21	50
Increased Pollution	Our environment will be polluted; environment gets polluted	8	19
Environmental Damage	The environment will be destroyed; human being and this Earth will be destroyed	4	10

^a Third highest modal response, below 10% cutoff.

^b According to the translator, the Hindi to English translation was "No harm".

^c Percents may not add up to 100% because respondents were permitted to contribute multiple responses.

reported no disadvantages/*None* (N = 21, 50%), *Increased Pollution* (N = 7, 18%), and the general *Environmental Damage* (4, 10%) as the top three modal beliefs.

Normative Beliefs (Table 3)

Guides reported that *they/Self* (N = 18, 44%) were the most influential on their intension to pack out trash. *Worksite Personnel* (N = 15, 37%) closely followed, with *Government* (8, 20%), *Friends* (N = 4, 10), and *Community* (N = 4, 10%) as the top modal beliefs. Most guides declared that *No One* (N = 20, 48%) would disprove of their packing out trash. Other notable responses were *Self* (N = 7, 17%), *Community* (N = 6, 14%), *Worksite Personnel* (N = 4, 10%). Nearly half of guides reported *they/Self* (N = 20, 48%) would approve of their burying human waste. *Worksite Personnel* was a distant second (N = 8, 19%), with *Community* (6, 14%), and *Government* (N = 4, 10) rounding out the list. Half of guides reported that *No One* (N = 21, 50%) would approve of their burying human waste. Other responses were *Self* (N = 6, 14%), *Worksite Personnel* (N = 4, 10%), and *Community* (N = 3, 7%). *Self* (N = 13, 31%) was found to be guides' top modal belief followed by *Worksite Personnel* (N = 11, 26%). *Government* (N = 8, 19%) and *Community* (N = 4, 10%) also contribute to top modal beliefs. Guides reported that *No One* (N = 19, 46%) would disapprove of their refraining from cutting living trees for firewood. Following were *Self* (N = 7, 17%), *Community* (N = 6, 15%), and *Worksite Personnel* (N = 6, 15%).

Control Beliefs (Table 4)

Guides listed an array of responses relevant to Factors of Packing out Trash. The top twelve responses were reported. *Motivation/Energy* (N = 20, 47%) was the top

Table 3

The number (N) and percent (%) of normative beliefs

(Adapted from Downs & Hausenblaus, 2005)

<i>Broad Belief Category</i>	<i>Raw Data Theme</i>	<i>N</i>	<i>%^b</i>
Self	Self	18	44
Worksite Personnel	Boss; colleague; team member; senior guide; trip leader	15	37
Government	Forest department; ministry of tourism, village government	8	20
Friends		4	10
Community	Nature enthusiasts; everyone	4	10
Disapprove of Packing Out Trash		n = 42	
No one		20	48
Self		7	17
Community	Those lacking environmental education; anti-environmentalists	6	14
Worksite personnel	Team members; boss; porters;	4	10
Approve of Burying Human Waste		n = 42	
Self		20	48
Worksite personnel	Colleague; senior guide; lead guide; team members	8	19
Community	Everyone; people; villagers	6	14
Government	Forest administration; Ministry of Tourism	4	10
Disapprove of Burying Human Waste		n = 42	
No one		21	50
Self		6	14
Worksite personnel	Team members; senior guide; boss; colleague	4	10
Community	Everyone; those with opposing views; villager/locals	3	7 ^a

Table 3 Continued

Approve of Refraining from Cutting Living Trees for Firewood		n = 41	
Self		13	31
Worksite personnel	Team members; senior guide; boss; colleagues	11	26
Government	Municipal corporation; residence administration; Forest Department	8	19
Community	Villagers/locals; those who love the environment; everyone; people; those lacking environmental education	4	10
Disapprove of Refraining from Cutting Living Trees for Firewood		n = 41	
No one		19	46
Self		7	17
Government	Forest Department; Municipal government	6	15
Worksite personnel	Lead guide; senior guide; boss	6	15

^a Fourth highest modal response, below 10% cutoff.

^b Percents may not add up to 100% because respondents were permitted to contribute multiple responses.

modal belief reported by guides. *Social Support* (N = 12, 28%), *Convenience* (N = 11, 26%), *Experience/Knowledge* (N = 8, 19%) *Necessity* (N = 2, 5%), and *None* (N = 1, 2%) were also of significance. No obstructing factors/*None* (N = 9, 21%) was the top modal belief. *Lacking Motivation/Energy* (N = 3, 7%) and *Lacking Experience/Knowledge* (N = 3, 7%) tied for second. *Lacking Social Support* (N = 2, 5%), and *Money* (N = 1, 2%) were also noteworthy. Guides expressed *Motivation/Energy* (N = 12, 28%) as the top facilitating factor of burying human waste, closely followed by *Convenience* (N = 11, 26%) and *Experience/Knowledge* (N = 10, 23%). *Social Support* (N = 8, 19%), *Necessity* (N = 4, 9%), and *None* (N = 1, 2%) completed the list. A large majority of guides

Table 4

The number (N) and percent (%) of control beliefs

(Adapted from Downs & Hausenblaus, 2005)

<i>Broad Belief Category</i>	<i>Raw Data Theme</i>	<i>N</i>	<i>%</i>
Facilitating Factors of Packing Out Trash		n = 43	
Motivation/Energy	Our mind and heart help us...; the will to save the environment; spread garbage doesn't look good; protection of nature; to maintain ecological balance; pollution control	20	47
Social Support	Entire team; help of friends; from tourists; (from) environmental organizations; from government	12	28
Convenience	Good weather; it is not difficult; time; we carry extra plastic bags (to carry out trash); extra porters	11	26
Experience/Knowledge	Understanding and awareness of people; nature attracts (tourists); Environmental literacy (Awareness about nature and my mother land)	8	19
Necessity	Forest department (rules)	2	5
None		1	2
Obstructing Factors of Packing Out Trash		n = 43	
Inconvenience	When there is a calamity/illness; Lack of proper means of garbage collection...; bad weather; if we are getting late; distance to carry it back; time; smell comes	22	51
None		9	21
Lacking Motivation/Energy	Corrupt mind	3	7
Lacking Experience/Knowledge	Ignorance; illiteracy about environment	3	7
Lacking Social Support	Lack of manpower	2	5
Money	Owner gets angry because he has to pay extra money	1	2
Motivation/Energy	Keep camp clean; (Provide) good service; ...help the soil/land	12	28

Table 4 continued

Facilitating Factors of Burying Human Waste		n = 43	
Convenience	Suitable weather; it is not difficult; human waste is easily degradable	11	26
Experience/Knowledge	Enlightenment; awareness; very tough to teach clients; spreading no disease; organic soil/fertile land; pollution control	10	23
Social Support	Combined efforts; support of staff (colleagues); (from) tourists; (from) government; villagers get angry when we dig in their area	8	19
Necessity	(Forest) Administration orders; we have to do it to clean the environment; we do not move away our camps until we clean it	4	9
None		1	2
Obstructing Factors Burying Human Waste		n = 44	
Inconvenience	Weather; we do not have any means (to do so); nature does not help us; if any calamities occur; laziness; lack of time	29	66
None		10	23
Lacking Social Support	Clients like to go out and leave toilet tent; from tourists; from friends; from colleagues	5	11
Lacking Motivation/Energy	Other people who don't have knowledge of environment people don't know the bad (impacts); we get tired; not caring	4	9
Lacking Experience/Knowledge	Awareness	2	4
Facilitating Factors of Refraining from Cutting Living Trees for Firewood		n = 43	
Necessity	Ban on cutting trees; we do not require wood	14	33
Motivation/Energy	Our own thoughts/understanding; avoiding deforestation; Green and healthy (environment); it is not difficult; bad for me; not spoiling nature; save the environment	13	30
Experience/Knowledge	Sightseeing (requirements); green trees give me and my world oxygen; not good for nature, wildlife,...or the mountains; environmental literacy	11	26
Convenience	Biotin gas, diesel help to stop (tree cutting); Alternative fuel	7	16
Social Support	(Clients don't require fire); (from) village administration; (influence from) environmental organizations/magazines/fliers	4	9
None		1	2

Table 4 continued

Obstructing Factors of Refraining from Cutting Living Trees for Firewood		n = 44	
None		12	27
Necessity	Rules/laws of Forest Administration; cold night [read: to stay warm]; Tourists need/pay for campfire	12	27
Experience/Knowledge	Green wood will not burn; people don't know the effects of (deforestation); (forests provide) birds' food; ignorance	12	27
Motivation/Energy	I don't want tree cutting and (do not) allow guests to cut (trees)	1	2
Lacking Social Support	Lack of Forest Administration	1	2

indicated that *Inconvenience* (N = 29, 66%) was the most obstructing factor to burying human waste. *None* (N = 10, 23%) made up almost one fourth of the responses. *Lacking Experience/Knowledge* (N = 5, 11%), *Lacking Motivation/Energy* (N = 4, 9%), and *Lacking Social Support* (N = 2, 4%) were found to be worthy of reporting. *Necessity* (N = 14, 33%) and *Motivation/Energy* (N = 13, 30%) were the top modal beliefs regarding Facilitating Factors of Refraining from Cutting Living Trees for Firewood. *Experience/Knowledge* (N = 11, 26%), *Convenience* (N = 7, 16%), *Social Support* (N = 4, 9%), and *None* (N = 1, 2%) were also of note. Interestingly, guides indicated that beliefs falling into no obstructing factors/*None* (N = 12, 27%), *Necessity* (N = 12, 27%), and *Lacking Experience/Knowledge* (N = 12, 27%) classifications were of equal importance. *Inconvenience* (N = 5, 11%), *Lacking Motivation/Energy* (N = 1, 2%), *Lacking Social Support* (N = 1, 2%) completed this list.

Discussion

This study elicited guide beliefs to help determine the cross-cultural utility of American outdoor ethics. The results of this study are wide-ranging therefore following discussion focuses on major belief themes observed. The findings provide preliminary evidence that due to societal intricacies prescriptive training and certifications in LNT, as advocated regularly by researchers, may not be enough to establish consistent pro-environmental behavior among guides in Garhwal.

The first set of beliefs examined was behavioral (attitudinal) beliefs. According to the TOPB these beliefs drive attitude and indicated advantages and disadvantages of performing the behavior in question. The results suggest that advantages of these behaviors far outweigh the disadvantages. Additionally, maintenance of the natural landscape was central to performing pro-environmental behaviors. Guide beliefs indicated that these behaviors prevented pollution, maintained cleanliness and purity of the natural setting, and saved and protected the environment from damage (fire, pollution, finite destruction of Earth and humans). Respondents' positive behavioral beliefs appear similar to the American wilderness belief system where visions of a "charming" and pristine natural environment paved the way for LNT. However, these beliefs in Garhwal may have less to do with a Eurocentric view of nature and more with an Escobar-like (1999) "organic nature" where their religious lifestyles and beliefs imply unanimity. According to Misra (2007), Hindus, who make up the vast majority of Indians, practice "utilitarian conservationism" where elements of nature are protected in accord with the

Hindu lifestyle . Environmental education following LNT would have to ostensibly surmount the potential argument that these ethics perpetuate a disconnect with nature (Moskowitz & Ottey, 2006).

The overall positive view towards pro-environmental behavior may also be explained by the disposition of the guiding profession and suggests that guides have an influential emotional connectedness with the natural landscape achieved through environmental literacy (awareness). Like ecological literacy, the term refers to guides' "lived experience of nature" and recognition of their long term impact on the non-human landscape (Martin & Ho, 2009, p. 87). Hinds and Sparks (2008) found "the more one has an affective connection with nature, the greater one's intentions to engage with it" (p. 115) while Nord, Luloff, and Bridger (1998) found pro-environmental behavior and forest recreation to be linked. Traditional close ties to nature in conjunction with the out of doors character of guiding may reinforce awareness of as well as concern for the environment. Thus, it is suggested that Garhwal-based guides' regular exposure to the natural environment may enhance their bond and influence their tendency to perform pro-environmental behavior in accord with American outdoor ethics, despite its perceptible Eurocentric origin.

The disadvantages specified by guides were few, but noteworthy, and are indicative of this unique population's social environment. For some guides the behaviors of packing out trash and burying human waste would result in merely moving waste from one spot to another. For example, some guides noted trash would end up "spreading

around” or “thrown into (a) river” and that human waste would “not end completely”. Various beliefs responses, like the latter, show a need for education among guides. Other explanations for particular beliefs are undoubtedly more complex and likely attributed to embedded social norms discussed earlier as well as the outlawed caste system which has been in place for centuries and is alive and well in many rural parts of India. These social dynamics have arguably been ingrained into guide psyche long before they began their profession and may currently dictate how guides behave while moving through the landscape. Littering has a long history in India (Misra, 2007) and leaving food scraps to feed wild animals is acceptable to guides, possibly for religious reasons described above. Therefore, it may be that for programs such as LNT to be useful in a context like Garhwal, environmental education would need to not merely address “ingrained and habitual behavior” (p. 9) as found by Borrie and Harding’s (2002) research on attitudes toward low-impact practices, but deal with the root origin of that behavior, such as religion and environmental histories. This appears to be currently out of the scope of LNT ethics and debatably a limitation of its utility in Garhwal.

The second set of beliefs examined social influences. According to the TOPB these beliefs should indicate who would approve and disapprove of performing the behavior in question. Surprisingly, guides found themselves to be most influential in the approval of performing pro-environmental behavior and were also ironically the second highest influence that disapproved. Research on mountain guides by Beedie (2003) concluded that guides “script their own performances” and are “independent and self-

reliant” (p. 163-164). By the same token, our findings suggest that Garhwal-based guides’ intention to perform pro-environmental behavior may be constructed from a similar sense of independence and self-reliance found among Beedie’s mountaineering guides. Though mainly independent in their performance over environmentally significant behavior, results indicate a social component to performing these behaviors. External influences, such as *worksite personnel*, and to a lesser extent *community and government*, were found to be important as well. Garhwal-based guides may have an occupational culture that dictates their collective attitudes and actions and singularly a guide’s role, status, and expectations (Teo & Loosemore, 2001, p. 743) with respect to outdoor ethics. Social pressure and social identity among recreationists were discussed by Harding, Borrie, and Cole (2000). The authors note that motivations to perform pro-environmental behavior may not be rooted in any desire to protect the environment but to conforming to social demands. In Garhwal, it could be argued that environmental identities vary depending on the behavior. Motivations for *not* packing out trash or burying human waste may not be rooted in a desire to harm the environment or indifference but to social influence and related identity, whereas refraining from cutting trees for firewood may be due to heavy-handed forest management policy that has been integral in Garhwal society since the 19th century (Dangwal, 2009).

Control beliefs, or those beliefs that indicate those facilitating and obstructing factors that allow a guide to control performance a behavior, were also explored. The results illustrate that facilitating factors to performing these behaviors outnumber the

obstructing factors. A top facilitating factor was *motivation* and *energy*. Guides answered regularly that their hearts or minds would facilitate or obstruct their performance of the behaviors in question. Similar findings were noted by Parker and Avant (2000) who revealed that Sierra mountain guides internalized their outdoor ethics. In turn, their behavior was in accordance with what they thought was just. Guides did specify that for some behaviors *social support* was a facilitating factor, mainly referring to immediate team members. In essence, guide will make the choice, but may be swayed if they knew they were not the only ones performing the behavior. Environmental education based on American outdoor ethics may have to settle for complementing those outdoor ethics that are already instilled within guides.

Convenience was a significant factor for packing out trash and burying human waste, while *inconvenience* was seen as the most salient obstructing factor. Convenience in this study meant a variety of conditions, but commonly referred to weather. Other barriers and constraints to behavior performance were calamities, having the means to carry out trash (e.g. bags), time, energy to carry extra weight, or motivation (e.g. laziness, overcoming smell of garbage). Findings suggest that there are prominent obstacles that stand in the way of altering and influencing environmentally significant behavior in Garhwal. Literature on outdoor ethics research has not adequately addressed such barriers and constraints to performance of pro-environmental behavior or how to deal with them.

Necessity was a central factor dictating guide responses to behaviors involving tree cutting for firewood. Most respondents acknowledged the ban on tree cutting by the

forest department and were compelled to heed associated policies. Many also pointed to the benefits of leaving trees as they are for reasons varying from aesthetics and habitat protection to personal constraints. Where LNT may struggle in Garhwal regarding camp fires is by declaring that “potential damage to the backcountry” should be the most important factor in deciding to create a fire (Leave No Trace, n.d.). Some respondents would likely disagree. Guides claimed that trees would be cut to stay warm or keep predators, such as the leopard, away while a team slept. These circumstances could be deemed “confounding variables” pertaining to limitations of LNT’s campfire ethics (Marion & Reid, 2005) in Gahrwal.

Future Research

The findings of this study merely scratch the surface of fully understanding the beliefs of Garhwal-based whitewater and trekking guides towards American outdoor ethics and environmentally significant behavior. Research should explore several avenues to further examine cross-cultural utility of American outdoor ethics in Garhwal. The first step is to begin to summarize Garhwal guide values, making the leap from beliefs to truths. This is what ultimately outdoor ethics have become and should be examined in Garhwal in the same fashion. Values were defined by Parker and Avant (2000) to be “the evaluation of certain beliefs (that is, if you believe something to be true, whether that truth is positive or negative)” (p. 196). There has been value-based research conducted by Stern (2000) that expands on Schwartz and Howard’s work, to develop a conceptual framework that explains environmentally significant individual behavior. Oreg and Katz-

Gerro (2006) described such a framework, the value-belief-norm (VBN) theory of environmentalism. This theory declares “pro-environmental behaviors stem from acceptance of particular personal values, from beliefs that things important to those values are under threat, and from beliefs that actions initiated by the individual can help alleviate the threat and restore the values” (Oreg and Katz-Gerro, 2006, p. 464). Personal norms (self-expectations based on internalized values) were also found to be important in determining intention to perform behavior (Harlan, Staats, & Wilke, 1999, p. 2057). Value-based frameworks, along with investigation into personal norms, might provide insight into Garhwal guide perceptions of self-influenced behavior that the TOPB cannot and resultant social and personal identities.

Secondly, further study should incorporate questions pertaining to complex social phenomena to determine their role in terms of influencing outdoor ethics among guides. Questions pertaining to religion, the caste system, environmental histories, perspectives on client-guide relationships, etc. can be difficult to ask and to answer. However, they appear to be crucial in putting outdoor ethics in their appropriate cultural and cognitive context.

Lastly, Garhwal-based guides detailed a host of factors that dictated their performance of LNT-like behaviors. Environmental education or related training in the vein of LNT was not explicitly cited by guides as a factor. However enlightenment, awareness, and environmental literacy were mentioned. Research should explore more explicitly the facilitating factors, as well as barriers and constraints to performing pro-

environmental behavior in Garhwal.

Conclusions/Implications

Nature-based guides in Garhwal, by the very nature of their occupations, live a dualistic existence and straddle the divide of two worlds: the wild and the civilized. In America, these two worlds have been separated by historic (i.e. colonial) ideals of humans and nature and, as some have argued, encouraged (indirectly or directly) by LNT-style ethics (Simon & Alagona, 2009). In Garhwal, however, such a divide is not as clear as indicated by guide beliefs elicited in this study. This could pose challenges to implementing American outdoor ethics into a setting like Garhwal.

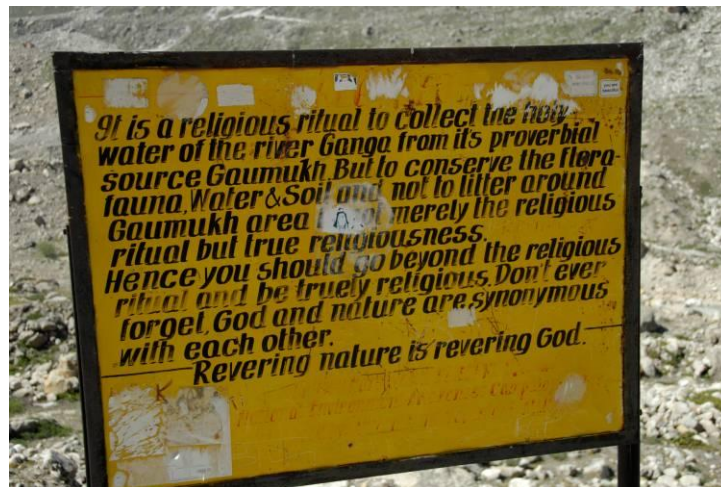
The LNT Center for Outdoor Ethics strives to do little more than aid recreationists in reducing their impacts by educational means. Still, the belief structure that LNT ethics were founded on is one that hopes “communication, reasoning and internalization will change people’s belief structure” and lead recreationists to “do the *right* thing”. (Jones & Bruyere, 2004, p.3). Though LNT has successfully helped land managers in America to uphold these beliefs, now these ethics, or rights and wrongs, have a bigger challenge. As they have been exported throughout the world they inadvertently try to change the underlying belief structures of not just individuals, but entire societies.

In Gahrwal, a guide would seemingly have to overcome various social dynamics to perform some pro-environmental behaviors, despite holding positive attitudes about those behaviors and apparent self-influence. This burden would be heaviest on those guides, like whitewater and trekking guides, who do not operate under a traditional

ecotourism framework and where the ethics have not already been laid out and whose clientele may not be seeking a guide whose behavior reflects that experience. As they were intended and currently exist, American outdoor ethics do not leave room for addressing or overcoming larger social constraints and barriers such as ingrained behavior and perspectives on nature and conservation to achieving pro-environmental behavior.

To expect Garhwal-based guides to take to LNT, be disseminators of environmental education, and steadfast recreation resource managers is to ignore their social and cultural context. Rarely are guides cultural and cognitive foundations explored by scholarly literature to a depth necessary to determine the transfer of outdoor ethics-based training outside of ecotourism let alone in a society where some social norms are not considered pro-environmental. Making things a bit more complex, the state of Uttarakhand has called all nature-based tourism ecotourism in their “Guidelines for Ecotourists” document. This muddies the water regarding the rigidity of ethical standards that Garhwal-based guides must live up to. This ambiguity potentially affects transfer of environmental education of all origins for not merely guides but the tourists they would be expected to reach and suppresses internal outdoor ethics. For example, if a client refuses to take responsibility for their recreation impacts, like human waste (based on a number of social or cultural reasons), the trade off for guides may be do whatever it takes to obtain a bigger tip at the end of the trip or risk it all by breaching the traditional guide-client relationship in order to follow LNT while receiving little in return.

In summary, if LNT's approach is indeed to appeal to personal responsibility this approach may not succeed in Garhwal in its entirety. Environmental education based on American outdoor ethics will have to engage their students beyond just feeding them information and may have to merely complement those outdoor ethics that are already instilled within guides and their clients (Figure 2). Environmental educational training may be more effective by following Oreg and Katz-Gerro who declared:



²Figure 2. Taking a cultural approach to environmental education, Gangotri National Park.

...cultural value orientations, independent of knowledge, need to be targeted as the basis of environmental programs. Environmental education involves developing values, attitudes, knowledge, and problem-solving orientations. It emerges through broad community introspection into the

values and ethical issues that it desires to nurture (Pooley & O'Connor, 2000); thus, we argue, it is highly dependent on particular and country-specific value orientations (p. 478).

Understanding Environmentally Significant Behavior in the Garhwal Himalaya, India:
An Exploratory Study of Whitewater and Trekking Guides

Abstract

Garhwal, Uttarakhand, India is an area ripe for nature-based tourism. However, tourism has resulted in waste accumulation, vegetation loss, and subsequent scholarly research to address these impacts. Aiding in the minimization of impacts is the natural resource role taken on by guides. A number of studies have focused on the natural resource management role of eco guides, yet there is limited research on guides in a context outside of ecotourism and particularly in “developing” countries where the majority of the clientele is indigenous, as in the case of Garhwal. Many non-American societies rely on their beliefs, cultural perceptions, and histories to influence conservation behavior. This notion also includes guides, who have been identified as effective in altering client behavior and minimizing environmentally destructive behavior. This exploratory research was conducted in Garhwal in 2009, considered cultural context, and applied the Theory of Planned Behavior (Ajzen, 1991) to identify those cognitive factors that lead a volunteer sample of sixty-eight (68) whitewater and trekking guides to pack out trash, bury human waste, and cut living trees for firewood. Results suggest that the theoretical antecedents of the Theory of Planned Behavior are capable of predicting intention to perform pro-environmental behavior among a foreign population of guides; however, their utility depends on the behavior performed. The implications of these results are discussed.

Introduction

The state of Uttarakhand, revered for its cultural affluence and scenic wonder, has been cited as having vast potential for tourism growth (Indian Council, 2008). Nature-based tourism, including eco, adventure, and religious tourism, has been cited as one type of tourism that could flourish within the state (Indian Council, 2008) and has been growing steadily in the state for decades (Bisht, 2008; euttaranchal.com, 2009). The bulk of Uttarakhand's 19.45 million tourists in 2006 were domestic tourists; the State seeks to continue infrastructure development to attract more foreign tourists (Indian Council, 2008).

Garhwal, one of two administrative units in Uttarakhand, is one of the areas ripe for religious and adventure tourism (Rao & Nandy, 2001; Indian Council, 2008). In the past, however, increases in tourism, as well as pilgrimages, have resulted in environmental impacts and subsequent scholarly research to address these impacts. Waste disposal and vegetation loss in the Garhwal Himalaya were common themes found throughout this literature (Bisht, 1994; Farooquee, Budal, & Maikhuri, 2008; Kuniyal, 2002 & 2005; Nigam, 2002; Rai & Sundriyal, 1997; Silori, 2004; Singh, Mal & Kala, 2009) and the focus of this study. Early recreation and tourism impacts were outlined by Bisht (1994) and Silori (2004). They detailed heavy deforestation and garbage trails in Gahrwal as two of the many significant impacts of unchecked tourism and use of the natural landscape. Kuniyal (2002 & 2005) dedicated several studies to the vast accumulation of organic and inorganic waste by mountaineers, pilgrims, religious

tourists, and trekkers in both Garhwal and Kumaon districts of Uttarakhand. Studies by Singh, Mal & Kala (2009) also looked at waste accumulation as part of their overall tourism impact study. More recent studies by Farooquee, Budal, & Maikhuri (2008) examined the more recently and widely popular whitewater rafting trips that have exploded onto the scene in Garhwal. Little research has detailed the natural resource role of guides in Garhwal with respect to tourism impacts.

The Significance of Guides

Cohen (1985) analyzed the historic and modern role of the tour guide. The role proposed by Cohen's "pathfinder" and "mentor" model has since been expanded upon. Weiler and Davis (1993) modified Cohen's model by adding "motivator" and "environmental interpreter" to the original model. Summarizing Weiler and Davis's (1993) thoughts on nature-based tour leaders, Howard, Thwaites, and Smith (2001) wrote that an (eco) guide can "create(s) a conservation ethic by simply stating the types of behaviours appropriate for long term conservation" (p. 37). A common way to achieve that ethic is interpretation (Randall & Rollins, 2009). Interpretation has been found to reduce the need for enforcement by enhancing visitor awareness to achieve visitor use management objectives (Beckmann, 1989). The close contact between guide and client allow for interpretation and other educational approaches to be successful. Roggenbuck, Williams, and Bobinski (1992) investigated the effectiveness of whitewater rafting guides as interpreters and noted that close contact was an effective aspect of the profession that altered client behavior. Furthermore, guides trained in "minimal impact skills" have been

identified as valuable components to minimizing environmentally destructive behavior displayed by their clients (Barker & Roberts, 2004; Littlefair & Buckley, 2008; Wagstaff & Wilson, 1988).

Aiding in this minimization of impacts is the natural resource role taken on by guides. According to Muñoz (1995) eco guides are expected to be role models of pro-environmental and culturally sensitive behavior and assist in natural resource management (Black, Ham, & Weiler, 2001). Black et al. (2001) include all nature-based guides within the eco guide profession and stated that training is required to meet these expectations. Despite a number of ecotourism studies focusing on the natural resource management role of eco guides (Ormsby & Mannle, 2006; Black et al., 2001; Haig & McIntyre, 2002; Peake, Innes, & Dyer, 2009), there is limited research on the natural resource role of guides in a context outside of ecotourism and particularly in “developing” countries where the majority of the clientele is indigenous, as in the case of Garhwal, India. The musings by Howard et al. (2001) on the style of education provided by eco and indigenous guides aided the construction of this research by suggesting that the cultural context that directs a guide’s conservation behavior is important to understanding their current and potential resource management role.

That said, Garhwal-based guides serve three main populations who may have different expectations of the natural resource role displayed by their guides. Adventure tourism (e.g. trekking and whitewater rafting) is an extension of adventure recreation (Weber, 2001) and combines “travel, sport, and outdoor recreation” (Beedie & Hudson,

2003, p. 626) where the activity, rather than the setting, is paramount (Weber, 2001).

Ecotourists are known hold the destination and its scenic beauty, biodiversity, and culture in a higher regard (Donohoe & Needham, 2006). The definition of religious tourism has been debated by scholars (Shinde, 2007). In this study, religious tourists are those who visit religious sites for religious and cultural motives (Shinde, 2007). They are much like ecotourists, however set principles do not exist for their experience as there are for ecotourism (Subramaniam, 2008). This research was conducted with the hopes of clarifying a common recreation resource role than can be applied to all tourists using guides to move about the natural landscape in Garhwal.



³Figure 3. Human waste left unburied at a campground, Gangotri National Park.

It was first believed necessary to understand why guides performed environmentally significant individual behavior on expeditions that they work. To build a

foundation to address this possibility this study asked: What are the cognitive factors that lead whitewater and trekking guides to perform what Stern (2000) called environmentally significant individual behavior?

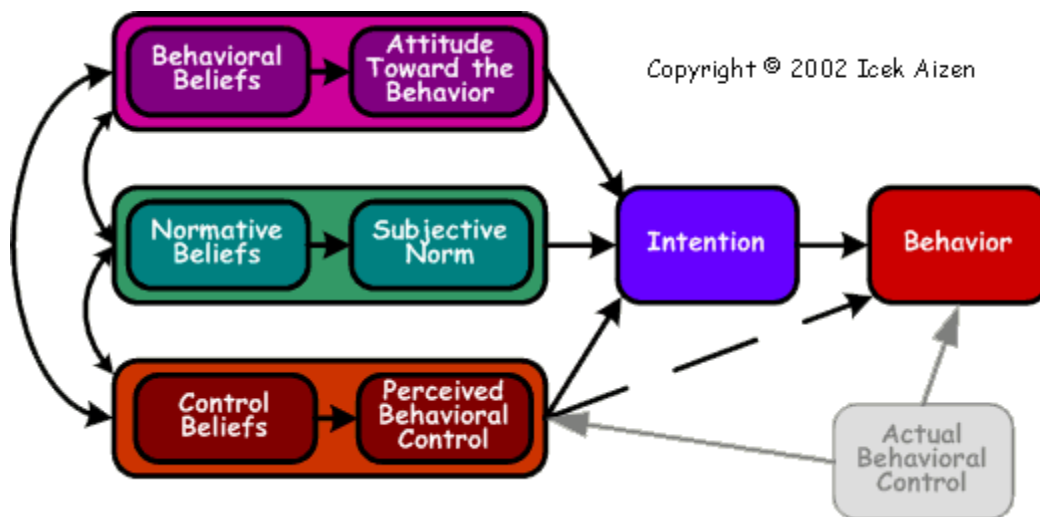
Theoretical Framework

Given that “different populations may possess different beliefs regarding the same behavior” (Cheung, Chan, & Wong, 1999) the Theory of Planned Behavior (TOPB) (Ajzen, 1991) was deemed an appropriate theoretical foundation for this research to help explain (at least in part) the intentions of whitewater and trekking guides working in the Garhwal region of Uttarakhand, India to perform pro-environmental behaviors. This study assessed intention, attitude, social influence, and control of three commonly addressed LNT behaviors (littering, improper disposal of human waste, and cutting living trees for firewood). Past behavior was also measured as it has proved beneficial in helping predict environmental behavior. This study examined the applicability of the belief-based TOPB (Figure 4) to understand and predict environmentally significant behavior in a foreign culture. The Theory of Planned Behavior is an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980). Like the TRA, the central component to the theory is determining intention to perform a behavior. The theory accomplishes this by measuring the following constructs: attitudes towards a behavior and social influences to perform or not perform the behavior in question (Ajzen, 2006). Modifications to the TRA are twofold. First, an addition of a third predictor variable, perceived behavioral control (PBC), was made. By including this change, the theory

takes into account the belief that the subject has the necessary “opportunities and resources” (level of knowledge, skill, or cooperation) to perform a behavior. In other words, taking non-volitional control into consideration greatly improves prediction capabilities (Ajzen and Driver, 1992). The second change includes the role of beliefs in determining human behavior. Ajzen (1991) stated that “behavior is a function of salient information” (p. 189). The TOPB model includes three kinds of salient beliefs (behavioral, normative, and control) that influence their respective predictor variables. These beliefs are first elicited from a small sample of the population of interest via a pilot study and then measured intently via a larger study. Cheung et al. (1999) cite considerable empirical support for the predictive capabilities of the theory. However, Lee, Ebesu-Hubbard, Kulp-O’Riordan, and Kim (2006) found few studies had been conducted to support the validity of the TOPB within “non-Western” cultures. Additionally, this theory has not been applied in an adventure tourism context focusing on guide behavior. Thus, this research is an opportunity to extend the TOPB’s capabilities.

The Theory of Planned Behavior is not without its criticisms. Arguments include that PBC may not always predict actual behavioral control and that only self-reported rational thoughts are addressed (Sharma & Kanekar, 2007). The shortcomings of the theory found in this study can be resolved through continued study of the topic. Nonetheless, the theory has been useful to help understand and predict environmentally-related behavior, or at the very least, serve as a good starting point (Beedell & Rehman,

2000; Bissonnette & Contento, 2001; Fielding, McDonald, & Louis, 2008; Hinds & Sparks, 2008; Karppinen, 2005; Knussen, Yule, MacKenzie, & Wells, 2004; Teo & Loosemore, 2001; Tonglet, Phillips, & Bates, 2004). Culture, a vital component of this study, was found to be a crucial part of TOPB. Oreg & Katz-Gerro (2006) stated that cultural conditions in conjunction with the TOPB were instrumental in shaping individual's actions towards environmental issues. It was anticipated that by eliciting salient behavioral, normative, and control beliefs a greater understanding of this unique population's outdoor ethics would be achieved. This understanding can aid those populations that seek to implement outdoor ethics in non-American, and particularly developing societies to consider the appropriate composition of such knowledge before implementation. One other variable, past behavior, was selected to be potentially useful in predicting intention to perform the behaviors in question.



⁴Figure 4. The Theory of Planned Behavior.

Past Behavior

Past behavior has proven to be a strong test of the sufficiency of the TOPB model and has proven to be a productive predictor of intentions and behavior (Ajzen, 1991; Cheung et al., 1999; Knussen et al., 2004; Rossi & Armstrong, 1999). There have been some proponents of using past behavior in conjunction with the TOPB, however, there has been recent strong support for its inclusion due to the construct *habit*. Habit refers to “automatic responses to situations” (Verplanken, Aarts, van Knippenberg, & Moonen, 1998, p.112) and has been given special attention because environmental impacts are a result of repeated behavior (Knussen et al., 2004). Ajzen (1991) wrote that past behavior “is best treated not as a measure of habit but as a reflection of all factors that determine the behavior of interest” (p. 203). Due to the reputation that past behavior has for being a dependable test of stability and reliability, it was included in this study as an addition to the TOPB as suggested by Ajzen (1991). Examples of TOPB and past behavior question structure are described below.

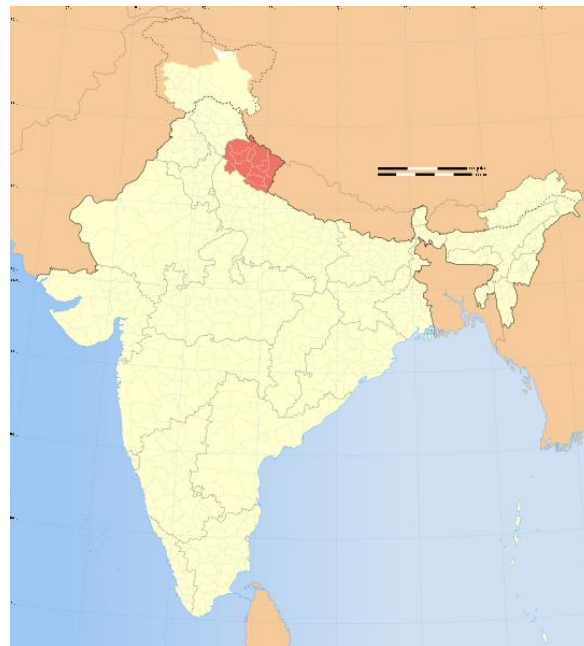
Methods

Study Area

A stronghold of Hinduism the Garhwal Himalaya (Figure 5) covers an area approximately 30,090 square mountainous miles. Garhwal is located within the state of Uttarakhand (Figure 6), formerly Uttaranchal, with a population of just under five million at the time of the last census (Government of India, 2001). Kandari & Gusain (2001)



⁵Figure 5. Divisions of Uttarakhand.



⁶Figure 6. Map of Uttarakhand.

described the region in detail in their book *Garhwal Himalaya*. To the north, the Himalayan Mountains create a snow and ice clad border with Tibet. The River Tons separates with Himachal Pradesh to the northwest, and the Himalayan foothills give way to the plains of Uttar Pradesh to the southwest. This area is known as a series of hill ridges bisected by steep valleys. Forming the border with Tibet, the Greater Himalaya, also known as Himadri (abode of the snows), contains clusters of massive peaks (including Nanda Devi [7817m], Kamet [7756m], and Chaukhamba [7318m]), glaciers, lakes, cirques, and hanging valleys separated by the Yamuna, Bhagirathi, and Alakananda drainage systems. The Bhagirathi and Alakananda rivers combine to form the river Ganga.

Participants

Garhwal-based whitewater and trekking guides based are a mixed network of independent contractors and those employed by adventure companies. Sixty-eight (68) questionnaires were obtained from the population of adult (India's minimum legal working age is 16) whitewater and trekking guides employed in the Garhwal region.

Sampling and Data Collection

A volunteer sample was obtained from the population during June 2009. Three local (indigenous) guides served as assistants and helped approach subjects, obtain verbal informed consent before collecting data, and administer questionnaires. Assistants were first briefed on the research objective and then on the appropriate manner in which to assist a subject to complete a questionnaire (e.g. refrain from coaching responses,

obtaining verbal consent first, maintaining confidentiality of responses). Questionnaires were administered on a volunteer basis by frequenting an unknown number of adventure tour companies, guide agencies, and storefronts in Joshimath, Rishikesh, and Uttarkashi, India and asking guides present at these locations to participate in the study. The study was carried out during the peak of the adventure tourism season to maximize participation. Subjects were occasionally contacted by telephone and arrangements were made to meet them. Participants were given the option of completing the questionnaire on site or returning a completed questionnaire at a drop location, such as a guide company. Research assistants provided translation and clarification services to the participants as needed.

Survey Instrument

A two-part questionnaire was constructed following Ajzen's TOPB model (2006) containing forty-five questions. Due to a significant delay in obtaining translation from English to Hindi, thirty-nine (39) questionnaires were issued in English and twenty-nine (29) in Hindi. The first part of the questionnaire measured four predictor variables of behavioral intention (attitudes, subjective norms, and perceived behavioral control, and past behavior), including the dependent variable behavioral intention. It was also essential to the exploratory nature of the study to identify behavioral, normative, and control beliefs to open the door for further research using the TOPB. As a result, the

second half of the questionnaire was comprised of an 18-question elicitation study was included in the questionnaire. Beliefs that influence littering, burying human waste, and deforestation would be relevant in a larger study using the TOPB.

To measure behavioral intentions, participants were asked to respond to the following: (a) I plan to pack out my trash/bury my human waste/ to cut living trees for firewood during the expeditions that I work (b) I will try to bury my human waste/to cut living trees for firewood during the expeditions that I work. (Due to an error not discovered until the survey was completed, intention to pack out trash was measured with one construct). The response format was a 5-point semantic differential scale ranging from *strongly disagree* (1) to *strongly agree* (5) and *definitely no* to *definitely yes* (5), respectively.

To measure attitudes, participants were asked to respond to the following: Packing out my trash/burying my human waste/ cutting living trees for firewood during the expeditions that I work. The response format was a 5-point semantic differential scale ranging from *extremely bad* to *extremely good*, *extremely foolish* to *extremely wise*, and *extremely unlikely* to *extremely likely*.

Subjective norms were measured by asking participants to respond to the following: (a) People who are important to me think I should pack out my trash/bury my human waste/cut living trees for firewood during the expeditions that I work and (b) The people in my life whose opinion I value would...of me packing out my trash/burying my human waste/cutting living trees for firewood during the expeditions that I work. The

response format was a 5-point semantic differential scale ranging from *strongly disagree* (1) to *strongly agree* (5) and *disapprove* to *approve* (5), respectively.

Perceived behavioral control was measured by asking participants to respond to the following: (a) How much control do you have over packing out your trash/burying your human waste/refraining from cutting trees during the expeditions that you work? and (b) For me to pack out my trash/bury my human waste/cut trees during the expeditions that I work is... The response format was a 5-point semantic differential scale ranging from *very little control* (1) to *complete control* (5) and *difficult* to *easy* (5), respectively.

Past Behavior

Respondents were asked: *In the last month, how often have you* (performed target behavior) *during the expeditions that you have worked?* Four answers were provided and ranged from *Never* to *Always*. This measure gauged the frequency of occurrence of the target behavior in the month prior to the study.

Missing Values

A considerable number of missing values were received for three attitude constructs (missing $n = 11$, 16%, to $n = 20$, 29%) for each behavior of interest (a total of nine constructs). Attitude constructs were deemed an important part of the study and representing missing-data uncertainty was required for analysis. Further, case deletion and other imputation methods under normal conditions were found to be inferior options

(Scheffer, 2002), while multiple imputation (MI) performed well under both normal and non-normal conditions (Schafer & Olsen, 1998; Scheffer, 2002). Multiple imputation using the Markov Chain Monte Carlo (MCMC) method in SAS version 9.1.3 was chosen to replace missing values after giving the issue much thought. Like many MI methods, MCMC assumes a normal distribution. Thus it should be noted that including non-normally distributed variables into the MI procedure may introduce bias such as low or negative values (Sterne, White, Carlin, Spratt, Royston, Kenward, Wood, & Carpenter, 2009). The potential for bias introduced is a limitation of this study. However, inspection of the data post imputation revealed plausible results. Commonly, transformation of non-normal variables is conducted prior to imputation or not at all. Transformation prior to imputation posed an issue when collapsing constructs (e.g. three attitude measures were totaled to achieve one measure). If data were missing from one or more constructs, the zero value inserted would artificially lower overall scores. Further, transformation did not yield satisfactory results prior to MI.

MI using MCMC performs “very well” for values missing up to 25% (Scheffer, 2002). However, missing values for the behavior *Cutting Living Trees for Firewood* exceeded the 25% mentioned by a small margin. The researchers considered deleting the worse offending of the three constructs for all behaviors and achieve the 25% benchmark. However, this method increased deviation from normality significantly, even after transformation. It was decided to keep all three constructs because the increase above 25% was significantly less than 50% (Scheffer, 2002).

Assumptions of Multiple Regression

Prior to and after replacing missing values, skewness, kurtosis, and scatter and P-P plots were examined to determine if non-linearity, normality and heteroscedasticity of the dependent and independent variables met normality assumptions necessary for multiple regression. Further, investigation concluded that these variables were highly skewed, a common occurrence in social sciences (Vaske, 2008). It is likely that the small sample size increased the departure from a normal distribution (Tabachnick & Fidell, 2007). Reflected inverse data transformations were used to restore skewness (.025 to 1.395) and kurtosis (.304 to -1.914) within acceptable, but not necessarily ideal, values of ± 1 for most constructs and ± 2 (Hutcheson & Sofroniou, 1999) for intention to pack out trash. In regression analysis, prediction errors are anticipated to fall around the predicted score of the dependent variable. It was understood by the researcher that non-normal, non-linear, and non-homoscedastic relationships weakens the predictive ability of the regression equation and a stringent criteria of ± 1 for skewness and ± 2 for kurtosis is common (Garson, 2009). Considering the exploratory nature of the study, a less stringent criterion of ± 2 was used to address the non-normal distribution stemming from the use of one construct, rather than two, to measure intention to pack out trash.

Intercorrelations amongst variables are shown in Table 5. Collinearity statistics showed that all predictor variables fell within the acceptable coefficients of tolerance (0.1) and VIF (10) (Pallant, 2007). When Tolerance and VIF values exceed these values, correlations among the independent variables the possibility that the variables overlap

each other and are not independent of each other exists. After regressions for each complete model were computed, it was determined that collinearity of the independent variables for any of the three behaviors was not a factor. The presence of outliers was verified by examining the Mahal Distance value. The cutoff value of 18.47 (Pallant, 2007) for four independent variables was not exceeded.

Data Analysis

A comparison of English and Hindi versions of the questionnaire verified that initial translation was done well. To prevent response bias certain questions were worded in reverse. All tree cutting questions and past history questions pertaining Packing out Trash and Burying Human Waste were reverse coded in SPSS so higher scores would demonstrate more favorable views towards pro-environmental behavior.

Four-step hierarchical regression analyses were done separately on each of the three dependent variables (behavioral intentions) to straightforwardly examine those independent variables that make the most unique contributions to TOPB. This method of analysis is used to determine whether adding predictors to a model can help explain the variability of response. Four independent variables were tested for contributions to the model: attitude toward the behavior, subjective norm, perceived behavioral control, and past behavior. Using Pallant (2007), R^2 , Adjusted R^2 , R^2 change, F score change, and standardized Beta and Final Beta scores were chosen to represent the results.

Sample Size

Multiple regression requires a sample size between 15 and $N > 50 + 8m$ (m = number of independent variables) subjects per independent variable (Stevens, 1996; Tabachnick & Fidell, 2007). The obtained sample required that a maximum of four independent variables be examined as part of the TOPB model.

Results

The majority of those surveyed were employed as whitewater rafting guides (36.8%), followed by trekking guides (29.4%) and both whitewater and trekking guides (26.5%). Gender was overwhelmingly male (98%). The average age of respondents was 29, spanning a range of 16 to 49 years of age, with 44% falling between the ages of 24 and 35 years of age. The sample averaged eight years of guiding experience. Almost three-fourths (73%) of respondents reported that they had heard of low impact outdoor ethics, while just over half (59%) claimed that they were familiar with the benefits of these ethics.

Predicting Behavioral Intentions

Intentions to perform environmental behaviors as advocated by Leave No Trace and similar minimal impact codes were evaluated. Attitudes (step 1), subjective norms (step 2), perceived behavioral control (step 3), and past behavior (step 4) were added to the regression equation to examine their contributions to the prediction of intention (Table 6).

Packing out Trash

The full four-variable model was a significant predictor of intentions ($R = .62$, $p < 0.001$) and accounted for 39% ($\text{Adj. } R^2 = 34\%$) of the variability in the response while the base TOPB model accounted for 37% of the variance ($\text{Adj. } R^2 = 34\%$). Attitudes alone accounted for 20% of the variance ($\text{Adj. } R^2 = 19\%$, $F\Delta = 15.39$). Subjective norm explained an additional 10% ($\text{Adj. } R^2 = 9\%$, $F\Delta = 8.23$). PBC and past behavior added 7% ($\text{Adj. } R^2 = 6\%$, $F\Delta = 6.15$) and 2% ($\text{Adj. } R^2 = 1\%$, $F\Delta = 1.56$) to the total variance to the model, respectively. Attitude alone ($\beta = .45$, $p < .001$) contributed strongly to predicting intention to pack out trash. The addition of social norm in the second step was significant ($\beta = .33$, $p < .05$) as well, but reduced the influence of attitude ($\beta = .34$, $p < .01$). When all three TOPB constructs were present in the model, attitude, though reduced for the second time ($\beta = .24$, $p < .05$), showed significant independent predictive capabilities, while PBC ($\beta = .33$, $p < .01$) was the strongest predictor. When past behavior was added in the fourth step of the regression analyses, significant decreases in the contribution of all three TOPB constructs were found. Final beta values do not show significant independent predictive effects in the full four-variable model, with attitude and PBC just missing significance at the $p < .05$ level.

Burying Human Waste

The four-variable model was a significant predictor of intentions ($R = .48$, $p < .01$) to bury human waste and accounted for 23% ($\text{Adj. } R^2 = 18\%$) of the variance with

the theoretical antecedents of the TOPB accounting for all of the 23% of the variance (Adj. $R^2 = 19\%$). Attitude accounted for 14% of the variance (Adj. $R^2 = 13\%$, $F\Delta = 10.53$). When subjective norm was added to the model the total variance explained only .1% (Adj. $R^2 = -1\%$, $F\Delta = .06$). PBC added 9% to the variance (Adj. $R^2 = 8\%$, $F\Delta = 6.68$), while past behavior did not add to the model (Adj. $R^2 = -1\%$, $F\Delta = .04$). Again, attitude ($\beta = .38$, $p < .01$) alone was a strong predictor of intention to bury human waste when added to the model. The addition of social norm was not significant and reduced the influence of attitude ($\beta = .37$, $p < .05$). When all three TOPB predictors were included in the model, PBC ($\beta = .36$, $p < .05/p < .02$) was the only variable that was statistically significant. When past behavior was added in the fourth step of the regression analyses small decreases in the contribution of all three TOPB constructs were noted. Final beta values show that the predictive capabilities of PBC increased and was the lone variable that was statistically significant ($\beta = .38$, $p < .05$).

Cutting Living Trees for Firewood

The TOPB and four-variable model performed very well and were significant predictors of intentions ($R = .70$, $p < 0.001$) to cut trees for firewood. The TOPB accounted for 48% (Adj. $R^2 = 45\%$) of 49% (Adj. $R^2 = 45\%$) of the variance. Attitudes accounted for 32% (Adj. $R^2 = 31\%$, $F\Delta = 27.89$) of the variance. Subjective norm explained 16% (Adj. $R^2 = 15\%$, $F\Delta = 17.82$) of the total variance while conversely PBC did not add to the model, $R^2 = 0\%$, (Adj. $R^2 = -1\%$, $F\Delta = .13$). Past behavior explained

only 1% of the variance ($\text{Adj. } R^2 = 0\%$, $F\Delta = 1.36$). Attitude ($\beta = .56$, $p < .001$) alone predicted intention to cut trees for firewood. The addition of subjective norm ($B = .47$, $p < .001$) in the second step was significant and again reduced the influence of attitude ($\beta = .31$, $p < .05$), however. After adding the final of the three TOPB constructs to the model, PBC, attitude ($\beta = .31$, $p < .05$) and subjective norm ($\beta = .46$, $p < .001$) showed significant independent predictive capabilities of intention. When past behavior was added in the fourth step of the regression analyses, decreases in the contribution of all three TOPB constructs were found. Final beta values show that attitude ($\beta = .271$, $p < .05$) and subjective norm ($\beta = .45$, $p < .001$) still had significant independent predictive effects.

After adding the final of the three TOPB constructs to the model, PBC, attitude ($\beta = .31$, $p < .05$) and subjective norm ($\beta = .46$, $p < .001$) showed significant independent predictive capabilities of intention. When past behavior was added in the fourth step of the regression analyses, decreases in the contribution of all three TOPB constructs were found. Final beta values show that attitude ($\beta = .271$, $p < .05$) and subjective norm ($\beta = .45$, $p < .001$) still had significant independent predictive effects. After adding the final of the three TOPB constructs to the model, PBC, attitude ($\beta = .31$, $p < .05$) and subjective norm ($\beta = .46$, $p < .001$) showed significant independent predictive capabilities of intention. When past behavior was added in the fourth step of the regression analyses, decreases in the contribution of all three TOPB constructs were found. Final beta values

Table 5

Intercorrelations Between Variables of Interest

Packing out Trash						
Variable	N	1	2	3	4	5
1. Intention	64	--	.45**	.45**	.45**	.54**
2. Past Behavior	66		--	.34**	.46**	.52**
3. Attitude	68			--	.34**	.45**
4. Norm	67				--	.56**
5. PBC	68					--
Burying Human Waste						
Variable	N	1	2	3	4	5
1. Intention	67	--	.30*	.38**	.17	.46**
2. Past Behavior	68		--	.55**	.35**	.62**
3. Attitude	67			--	.37**	.56**
4. Norm	65				--	.37**
5. PBC	68					--
Cutting Trees for Firewood						
Variable	N	1	2	3	4	5
1. Intention	67	--	.39**	.56**	.64**	.28*
2. Past Behavior	68		--	.42**	.33**	.28*
3. Attitude	65			--	.54**	.22
4. Norm	65				--	.37**
5. PBC	67					--

* $p < .05$, ** $p < .01$.

Table 6

Hierarchical Multiple Regression Analysis of Intention

Step	Predictor Variable	R ²	^a Adj. R ²	^b ΔR ²	β	F Δ	^c Final β
Packing out Trash N = 64							
1	Attitude	.20	.19	.20	.45	15.39***	.22
2	Norms	.30	.28	.10	.33	8.23**	.14
3	Control	.37	.34	.07	.33	6.15**	.28
4	Past Behavior	.39	.34	.02	.16	1.56	.16
Burying Human Waste N = 67							
1	Attitude	.14	.13	.14	.38	10.58**	.20
2	Norms	.15	.12	.00	.03	.06	-.03
3	Control	.23	.19	.09	.36	6.68*	.38*
4	Past Behavior	.23	.18	.00	-.03	.04	-.03
Cut Living Trees for Firewood N = 67							
1	Attitude	.32	.31	.32	.56	27.89***	.27*
2	Norms	.48	.46	.16	.47	17.82***	.45***
3	Control	.48	.45	.00	.04	.13	.01
4	Past Behavior	.49	.45	.01	.12	1.36	.12

Note. N is dependent on number of respondents to dependent variable question.

^aAdj./R² = proportion of variance explained. ^bΔR² is calculated based on the change in R². ^cFinal = beta after all constructs are entered in the analyses.

p* < .05. *p* < .01. ****p* < .001.

show that attitude ($\beta = .271, p < .05$) and subjective norm ($\beta = .45, p < .001$) still had significant independent predictive effects. After adding the final of the three TOPB constructs to the model, PBC, attitude ($\beta = .31, p < .05$) and subjective norm ($\beta = .46, p < .001$) showed significant independent predictive capabilities of intention. When past behavior was added in the fourth step of the regression analyses, decreases in the contribution of all three TOPB constructs were found. Final beta values show that attitude ($\beta = .271, p < .05$) and subjective norm ($\beta = .45, p < .001$) still had significant independent predictive effects.

Discussion

The primary goal of this study was to understand and help explain Garhwal-based guide intentions to performed environmentally significant behavior on the expeditions that they work. The Theory of Planned Behavior was used to help identify those cognitive constructs that have been shown empirically to predict and explain such behavior. The findings of this study suggest that the basic constructs of the TOPB explained behavioral intentions to perform pro-environmental behavior. However, their influence was dependent on the behavior performed. Implications for these results are discussed below.

A meta-analysis by Armitage and Conner (2001) found that the average variance of intentions explained by the three TPB constructs was 39%. Two of three models tested in the current study performed well above and slightly below this average. However, the model performed poorly for predicting intention to bury human waste. Several

explanations can be posited that may explain the low percentage of variance.

First, burying human waste is not sufficiently established among guides in Garhwal. Consequently, pro-environmental behavior is viewed as a low priority where resources and incentives to perform such behavior are limited (Teo & Loosemore, 2001). Non-established behavior was alluded to in studies pertaining to household recycling and construction waste (Knussen et al., 2004; Teo & Loosemore, 2001). Social norms have also been found to be outperformed in the prediction of intention by attitude and PBC (Knussen et al., 2004).

Second, it may be argued that the societal expectation and pressure in Garhwal to bury human waste is also weak if not non-existent as evidenced by this study and other studies mentioned. It follows then that the expected social norm to be ineffectual in the prediction of intention to bury human waste in a society where it is common to expel human waste wherever feasible and walk away.

Third, the low variance for predicting intention to bury human waste is predicated on the findings of Knussen et al.'s (2004) research on recycling behavior where it was revealed that a limitation of the TOPB is the failure to account for variance of intentions. As described by the authors, negative emotions may arise at some point in performing the behavior. This creates a paradox where the global view of performing the behavior is positive, but the intentions are negative. For example, the intention to bury human waste could be viewed as positive: intending to avoid pollution, maintain the aesthetics of a natural area, minimize the spread of disease, or expedite decomposition. It can also be

seen as negative: the potential to contact bodily fluids, encounter a foul smell, or exert extra effort to find an object to then arduously dig a cat hole (a guide with a shovel in Garhwal is rare). Motivation is theoretically accounted for in the TOPB by measuring the effort one is willing to put forth to perform the behavior (behavioral intention). Desire, however, is not accounted for by the TOPB (Hines, Hungerford, & Tomera, 1986). Unlike PBC, desire does not take into account inhibiting or facilitating factors (Armitage & Conner, 2001). Motivation beyond that measured by the TOPB and the desire to perform a behavior may play a role in identifying intention to bury human waste in this context and help address loss of variance by the packing out trash and burying human waste models.

As anticipated, attitude alone was a strong predictor of intention to perform all three behaviors, suggesting that the more positive participants attitude, the greater their intentions to engage in low impact outdoor behaviors. However, when other predictors were added to the model, its unique contribution was diminished. Harland, Staats, & Wilke (1999) reported similar findings, attributing greater influence by the other TOPB variables. Ajzen and Fishbein (2004) argued that the TOPB cannot predict in advance which theoretical antecedents will be of importance and that the influence of these constructs is expected to vary between behaviors and populations. Consequently, only one or two predictors may be necessary at a time. Nonetheless, when all three TOPB constructs were present in the model, attitude showed significant independent predictive capabilities for packing out trash and cutting living trees for firewood. Though guides'

self-reported control regarding these pro-environmental behaviors was positive, it would not be uncommon to find that the actual behavior is not performed. For example, Harland et al. (1999), in a review of literature, noted self-reported measures of behavior as well as intentions can differ from actual performance. Further discussion on this topic can be found in Tarrant and Cordell (1997).

Norms were found to be significant in conjunction with attitude, before the addition of PBC for packing out trash, and the strongest predictor to tree cutting in the final model. The latter may be explained by the influence exerted by the Uttarakhand Forest Department (UFD). According to its website (<http://www.uttarakhandforest.org/>), the department manages much of the state's forests and leases most of the beaches along rivers that support rafting. The UFD provides guides and adventure tour operators with a list of rules and regulations when applying for various permits. (In the purview of the researcher, Garhwal-based guides participating in the current study were aware of a widely known ban on fires and harvesting trees within forested areas and consciously gathered downed wood for fires.)

PBC was the strongest predictor of packing out trash and burying human waste behavior. The findings suggest that the more control a guide feels they have over performing the behavior, the greater their intention to perform it. What is considered basis for control by Gahrwali guides was not examined in this paper. An investigation into control beliefs would shed light on to these findings. Behavioral beliefs are believed to provide the cognitive and affective foundations of attitudes toward a given behavior,

though they do not directly influence intentions (Martin & McCurdy, 2009).

The role of past behavior was of interest due to the cumulative nature of environmental impacts stemming from negative environmentally significant behavior. Despite its impressive resume, past behavior did not prove to be a significant predictor of intentions in this study. Past behavior had medium to medium-high correlations with intention, especially packing out trash and tree cutting behaviors and may be a noteworthy topic for future research. A review of literature on the measurement of past behavior used in this study was conducted and compared to other studies (Cheung et al.; Rossi & Armstrong, 1999) and was found unsophisticated but not indicative of a measurement error. An explanation for an inconsistency could be the lack of systematic reinforcement of these specific behaviors which results in a lack of habit formation (Verplanken et al., 1998). Behaviors of habit among guides in Garhwal are burning trash (Figure 6) and leaving food scraps behind for animals to eat (Figure 7).



⁷Figure 7. The common result of burning trash, Gangotri National Park.



⁸Figure 8. Food scraps left for the animals, Gangotri National Park.

LNT attempts to instill what Verplanken et al. (1998) called “wanted habits” (p. 126). Yet, with little to no reinforcement politically, socially, or culturally these “new” habits may likely continue to be inconsistent. Yet, it was surprising that the most known regulated activity, tree cutting, was a slightly lower contributor to its model than packing out trash. It should be noted, however, that relatively new minimal impact codes in the region do exist and, in a roundabout way, state to pack out one’s “garbage” (Uttarakhand Forest Department, n.d., Tribune News Service, 2005).

Limitations

Several limitations to this study should be mentioned. First, the TOPB typically requires a pilot study be conducted prior to performing TOPB research to ascertain if intercorrelations between predictor variable constructs were high. A sample of whitewater and trekking guides in the United States was surveyed prior to India to gauge

questionnaire length clarity of questions. It was decided that the significant cultural difference between American and Indian guides rendered the pilot study ineffective. The questionnaire was then worded in a general fashion to extract non-specific, yet valuable, TOPB-based data. Further, considering time and resource constraints, it was decided to conduct an exploratory study within the original population interest. A shortened version of questionnaire, including the addition of the elicitation study, was produced and then translated while in India. Second, it was found during analysis that intention to pick out trash was accidentally measured with one unit rather than two. Harlan (1999) also used a single construct to measure intention to perform behavior without reportable consequences. Third, missing values were abnormally high for Attitude constructs. A combination of subjects not reading the directions, poor question design, and not checking for questionnaire completeness were factors. MI was used reluctantly, but found to be less biased than case deletion. Lastly, many of the studies referenced in this work were not based on Indian guide populations and tourists due to availability of such research. Comparisons between indigenous guide populations should be made with caution. Further research on this and similar topics should seriously consider the cultural and societal context of the indigenous population studied in order to make a meaningful contribution to the population of interest.

Conclusions/Implications

These findings contribute to a growing body of literature on environmentally

significant behavior and enhance the understanding of the TOPB's capabilities in developing societies. More importantly, this study begins to address the perceived recreation resource role of whitewater and trekking guides in Garhwal. Guides show overwhelmingly favorable attitudes towards pro-environmental behaviors as individuals who intend to take action are more inclined to do so than those who have no such intention (Hines et al., 1986). Garhwal-based guides of all ranks (Junior through Senior), as well as porters (not included in this study due not knowing their role in tourism before the study), should be included in the establishment of any environmental education because of their repeated engagement in environmentally related behaviors. However, this research argues that the implementation of any related training in Garhwal should be tailored to how whitewater and trekking guides cognitively and culturally approach the performance of environmentally significant behaviors. To establish the performance of consistent pro-environmental behavior and for related programming to achieve the desired result in Gahrwal further research should determine if students first have acknowledged a threat to the environment (Kottak, 1999). In addition, it should also be determined how aware guides are of environmental hazards and issues and "how do, can, and will they respond" to these hazards on a daily basis (Hines et al., 1986; Kottak, 1999, p. 28). For academics and land managers to assume that Garhwal-based guides react in a similar fashion to like guide populations that have been studied in other parts of the globe would be a mistake that could obstruct ongoing efforts to curb environmental impacts. (The same sentiment should also hold for the largely domestic tourist population

traveling to Garhwal as further research should achieve a better understanding of tourist expectations in Gahrwal pertaining to their guide staff and the natural environment.)

This research discovered possible impediments that may hinder the consistent performance of pro-environmental behavior among guides in Garhwal; this was found to be similar to minimizing construction industry waste. Teo & Loosemore (2001) developed nine impediments that inhibited the adoption of waste reduction activities. Several of these impediments were found to cross-over to pro-environmental behavior within the Garhwal guide industry and may be found useful in establishing behavioral consistency. Instillation and enforcement of an industry norm or performance standard, increased managerial and colleague commitment and support, increased expertise on the benefits of pro-environmental behavior in the wilds of Garhwal, and increased availability of materials (e.g. a shovel) to perform such behaviors appear to be essential to build upon what guides appear to already possess (positive attitudes toward pro-environmental behavior).

In summary, Garhwal-based guides (and porters) have an opportunity to partake in a community-based resource management endeavor, where the guides and porters are “working with what they have, with what they know, and what they can do” (Nietschmann, 1997, p. 223) to achieve an outdoor ethic they agree is representative of their vision and culture. Land managers, such as the UFD, could benefit from a partnership with guides and porters where their intentions and attitudes, influence, ideas, and alliance can help manage Garhwal’s natural resources in a grass-roots fashion.

Guides with an outdoor ethic have the opportunity to address cross cultural issues with tourists as well as provide them with an intimate and authentic experience. Research has indicated that a guide's interpretation of the value of the natural environment may be desired by tourists (Howard et al., 2001). Accepting and ultimately changing or streamlining behavior may be easier if the pro-environmental behavior engaged in is culturally grounded in some fashion. Rooting Garhwal-based guides' natural resource role in cultural heritage, rather than a protection-minded approach ethic may increase the likelihood that these changes remain to enhance the guiding profession, tourist experience, and the wilds of Garhwal.

Lessons Learned

The exploratory study conducted was centered on the Garhwal Division of Uttarakhand, India, but challenges common land management and scholarly approaches and assumptions to recreation resource management in developing areas. This study summarized the need to incorporate a cognitive, social, and cultural approach to recreation resource management in developing societies. These manuscripts argued that social scientists and land managers have supplanted local resource management approaches rooted in local beliefs, attitudes, and intentions with those based on rationale and experience not relevant to the population of interest. Consequently, effective transfer of environmentally-based information may not convey from trainer to guide, guide to tourist as well as may be anticipated. Moreover, any outdoor ethic rooted in culture is passed over. Researchers must get their hands dirty and studies must go further and dive deeper than ever before. Swift one-pass studies that conclude with a call for environmental education are not adequate.

As Gahrwal attempts to instill habit forming behaviors such as refraining from bringing plastic into national parks (Figure 9) and packing out trash, the case presented has laid the groundwork to explain and understand recreation resource management in the unique cultural, social, and cognitive context of Garhwal. By exploring guide beliefs, attitudes, norms, perceived behavior control, and past behavior this research sheds light on the recreation resource management role of guides and how to merge their current outdoor ethic fundamentals with modern environmental information like LNT. This study

concludes that Garhwal-based guides can be included to help manage recreation resources. Guides have shown favorable attitudes towards pro-environmental behavior and feel they have much control over performing several behaviors based on a unique set of beliefs. However, an individual “can do” attitude will not be enough to change the culture of environmental degradation in Garhwal. A streamlined and industry-wide ethic must be established.

Still, guides may have social constraints and barriers to contend with making a manifestation of an outdoor ethic or industry standard challenging. Thus, further research is needed to address guide values, personal norms, complex social phenomena, and facilitating factors, as well as barriers and constraints to performing pro-environmental behavior in Garhwal not just among guides, but all populations involved in tourism in Garhwal.



⁹Figure 9. Plastic is banned, Gangotri National Park.

¹ Photo copyright C. Serenari, 2009.

² Figure copyright C. Serenari, 2009.

³ Photo copyright C. Serenari, 2009.

⁴ From “Constructing a TOPB Questionnaire: Conceptual and Methodological Considerations,” by I. Aizen, 2006, Retrieved March, 3, 2009, from University of Massachusetts Web site, <http://people.umass.edu/aizen/>

⁵ From http://en.wikipedia.org/wiki/File:Kumaon_Garhwal.jpg

⁶ From http://en.wikipedia.org/wiki/File:India_Uttarakhand_locator_map.svg,
PlaneMad/Wikipedia

⁷ Photo copyright C. Serenari, 2009.

⁸ Photo copyright C. Serenari, 2009.

⁹ Photo copyright C. Serenari, 2009.

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APPENDIX A

Survey Instrument

This study is examining guide behavior and beliefs. Please read each question carefully and answer it to the best of your ability. There are no correct or incorrect responses; we are merely interested in your personal point of view. Your name is not needed. All responses to this survey are completely confidential. Your supervisor has **nothing** to do with this study and will **not** see your responses. Please be assured that the information you provide in this study will have **no effect on your employment**. *Thank you for your participation in this study.*

Instructions

Many questions in this survey make use of rating scales with 5 responses; circle the number that best describes your opinion. For example, if you were asked to rate "The Weather in Rishikesh" on such a scale, the 5 places should be interpreted as follows:

The Weather in Rishikesh is:

bad: 1 : 2 : 3 : 4 : 5 : good
extremely slightly **neither** slightly extremely

If you think the weather in Rishikesh is extremely good, then you would circle the *number 5*, as follows:

The Weather in Rishikesh is:

bad: 1 : 2 : 3 : 4 : 5 : good

If you think the weather in Rishikesh is slightly bad, then you would circle the *number 2*, as follows.

The Weather in Rishikesh is:

bad: 1 : 2 : 3 : 4 : 5 : good

If you think the weather in Rishikesh is extremely bad, then you would circle the *number 1*.

The Weather in Rishikesh is:

bad: 1 : 2 : 3 : 4 : 5 : good

If you think the weather in Rishikesh is neither good nor bad, then you would circle the *number 3*.

The Weather in Rishikesh is:

bad: 1 : 2 : 3 : 4 : 5 : good

In making your ratings, please remember the following points:

- * **Be sure to answer all items – do not omit any.**
- * **Read the entire question and answer honestly**
- * **Never circle more than one number on a single scale.**

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

Whitewater Guide ☐

Trekking Guide ☐

Screening Questions:

Gender: Male ☐ Female ☐

Age: _____

Trained at a Guide Institute? Yes ☐ No ☐

Years of Guiding Experience: _____

Are you currently employed? Yes ☐ No ☐

1. Have you heard about low impact wilderness travel ethics? Yes ☐ No ☐

2. Are you familiar with the benefits of low impact mountain tourism travel? Yes ☐ No ☐

Measuring Behavioral Intention

3. I plan to bury my human waste during the expeditions that I work

Strongly disagree: __1__ : __2__ : __3__ : __4__ : __5__ : Strongly agree

4. I will try to bury my human waste during the expeditions that I work

Definitely no: __1__ : __2__ : __3__ : __4__ : __5__ : Definitely yes

5. I plan to pack out my trash during the expeditions that I work

Strongly disagree: __1__ : __2__ : __3__ : __4__ : __5__ : Strongly agree

6. I will try to bury my human waste during the expeditions that I work

Definitely no: __1__ : __2__ : __3__ : __4__ : __5__ : Definitely yes

7. I will try to cut living trees for firewood during the expeditions that I work

Strongly disagree: __1__ : __2__ : __3__ : __4__ : __5__ : Strongly agree

8. I plan to cut living trees for firewood during the expeditions that I work

Strongly disagree: __1__ : __2__ : __3__ : __4__ : __5__ : Strongly agree

Measuring Attitudes towards Behavior

9. Burying my human waste during the expeditions that I work is

- | | | |
|-----------------------|---|------------------|
| a. Extremely bad | ___1___:___2___:___3___:___4___:___5___ | Extremely good |
| b. Extremely foolish | ___1___:___2___:___3___:___4___:___5___ | Extremely wise |
| c. Extremely unlikely | ___1___:___2___:___3___:___4___:___5___ | Extremely likely |

10. Packing out my trash during the expeditions that I work is

- | | | |
|-----------------------|---|------------------|
| a. Extremely bad | ___1___:___2___:___3___:___4___:___5___ | Extremely good |
| b. Extremely foolish | ___1___:___2___:___3___:___4___:___5___ | Extremely wise |
| c. Extremely unlikely | ___1___:___2___:___3___:___4___:___5___ | Extremely likely |

11. Cutting living trees for firewood during the expeditions that I work is

- | | | |
|-----------------------|---|------------------|
| a. Extremely bad | ___1___:___2___:___3___:___4___:___5___ | Extremely good |
| b. Extremely foolish | ___1___:___2___:___3___:___4___:___5___ | Extremely wise |
| c. Extremely unlikely | ___1___:___2___:___3___:___4___:___5___ | Extremely likely |

Measuring Subjective Norms

12. People who are important to me think I should bury my human waste during the expeditions that I work

Strongly disagree:___1___:___2___:___3___:___4___:___5___:Strongly agree

13. People who are important to me think I should pack out my trash during the expeditions that I work

Strongly disagree:___1___:___2___:___3___:___4___:___5___:Strongly agree

14. People who are important to me think I should cut living trees for firewood during the expeditions that I work

Strongly disagree:___1___:___2___:___3___:___4___:___5___:Strongly agree

15. The people in my life whose opinion I value would

Disapprove:___1___:___2___:___3___:___4___:___5___: Approve
of my packing out trash during the expeditions that I work

16. The people in my life whose opinion I value would

Disapprove:___1___:___2___:___3___:___4___:___5___: Approve
of me burying my human waste during the expeditions that I work

17. The people in my life whose opinion I value would

Disapprove:___1___:___2___:___3___:___4___:___5___: Approve
of me cutting living trees for firewood during the expeditions that I work

Measuring Perceived Behavioral Control

18. How much control do you have over burying your human waste during the expeditions that you work?

Very Little Control: __1__: __2__: __3__: __4__: __5__: Complete Control

19. For me to bury my human waste during the expeditions that I work is

Difficult: __1__: __2__: __3__: __4__: __5__: Easy

20. How much control do you have over packing out your trash during the expeditions that you work?

Very Little Control: __1__: __2__: __3__: __4__: __5__: Complete Control

21. For me to pack out my trash during the expeditions that I work is

Difficult: __1__: __2__: __3__: __4__: __5__: Easy

22. How much control do you have over cutting living trees for firewood during the expeditions that you work?

Very Little Control: __1__: __2__: __3__: __4__: __5__: Complete Control

23. For me to cut living trees during the expeditions that I work is

Difficult: __1__: __2__: __3__: __4__: __5__: Easy

24. In the last month, how often have you packed out your trash during the expeditions that you have worked?

__Every time __Almost every time __Rarely __Never

25. In the last month, how often have you buried your human waste during the expeditions that you have worked?

__Every time __Almost every time __Rarely __Never

26. In the last month, how often have you cut living trees for firewood during the expeditions that you have worked?

__Every time __Almost every time __Rarely __Never

Elicitation of Behavioral Beliefs

27. What are the advantages of packing out trash during the expeditions that you work?

28. What are the disadvantages of packing out trash during the expeditions that you work?

29. What are the advantages of burying your human waste during the expeditions that you work?

30. What are the disadvantages of burying your human waste during the expeditions that you work?

31. What are the advantages of refraining from cutting living trees for firewood during the expeditions that you work?

32. What are the disadvantages of refraining from cutting living trees for firewood during the expeditions that you work?

Elicitation of Normative Beliefs

33. Who would approve of your packing out trash during the expeditions that you work?

34. Who would disapprove of your packing out trash during the expeditions that you work?

35. Who would approve of your burying your human waste during the expeditions that you work?

36. Who would disapprove of your burying your human waste during the expeditions that you work?

37. Who would approve of your refraining from cutting living trees for firewood during the expeditions that you work?

38. Who would disapprove of your refraining from cutting living trees for firewood the expeditions that you work?

Elicitation of Control Beliefs

39. What are the factors or circumstances that enable you to pack out trash during the expeditions that you work?

40. What are the factors or circumstances that make it difficult for you to pack out trash during the expeditions that you work?

41. What are the factors or circumstances that enable you to bury your human waste during the expeditions that you work?

42. What are the factors or circumstances that make it difficult for you to bury your human waste during the expeditions that you work?

43. What are the factors or circumstances that enable you refrain from cutting living trees for firewood during the expeditions that you work?

44. What are the factors or circumstances that make it difficult for you to refrain from cutting living trees for firewood during the expeditions that you work?

45. In the course of the last month, how often have you burned your trash during the expeditions that you have worked?

___Every time

___Almost every time

___Rarely

___ Never