

THE ROLE OF OBSERVATIONAL LEARNING IN DEVELOPING  
ECOTOURISTS' ENVIRONMENTALLY RESPONSIBLE BEHAVIORAL  
INTENTIONS

by:

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## **ABSTRACT**

This study applied Bandura's (1986) four-step observational learning process (i.e., engagement, observation, reproduction and reinforcement) to investigate how tour guides, peer ecotourists and local community members influence ecotourists' environmentally responsible behavioral (ERB) intentions. A total of 207 completed questionnaires (59% response rate) were obtained from ecotourists immediately after their ecotourism experience in Korea. A path analysis indicated that the hypothesized model predicted ecotourists' ERB intentions moderately well. Positive reinforcement and reproduction of observed ERBs during the ecotourism experience were important predictors of participants' ERB intentions at the end of their experience. Reproduction occurred, in turn, from observation and engagement of tour guides, peer ecotourists, and local community members. Results supported Bandura's (1986) four-step observational learning process and its ability to explain ecotourists' ERB intentions. Implications include that tour guides should model ERBs for participants, ensure opportunities for participants to engage in ERB's during the ecotourism experience, and provide positive feedback for doing so. Insights from this study and our model may help others, outside of the tourism sector, with ways to encourage ERBs and to build a more environmentally responsible constituency.

**KEY WORDS: Observational learning, Ecotourism, Role Model, Environmentally Responsible Behaviors, Korea, Social Learning Theory**

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## INTRODUCTION

As ecotourism continues to grow, there is mounting interest in the relationship between participating in ecotourism and ecotourists' subsequent environmentally responsible behaviors (ERB). Mismanagement of ecotourism activities in sensitive natural areas can exacerbate environmental degradation, which can lead to an array of negative impacts on entire ecosystems or individual species (Boo, 1990; Stephenson, 1993; Ceballos-Lascurain, 1996; International Union for Conservation of Nature [IUCN], 2005; Weaver, 2008; Wearing & Neil, 2009). Despite this trend, however, many experts also suggest that the industry is beginning to meet the rising demand for more environmentally and socially responsible tourism (CREST, 2016). This shift in awareness and demand has also prompted researchers to explore the nexus between tourism and sustainability. A growing number of these researchers have been especially interested in the effects of ecotourism participation on ecotourists' consequent ERB (Lee & Moscardo, 2005; Powell & Ham, 2008; Lee, 2011; Chiu, Lee & Chen, 2014). While these studies explore a range of factors that influence environmental behaviors, including individual characteristics, cognition, affect and social norms (Cottrell, 2003; Hungerford & Volk, 1990) and apply several well-researched behavioral theories (i.e. Ajzen and Fishbein's (1980) Theory of Reasoned Action or Ajzen's (1991) Theory of Planned Behavior), there is a gap in understanding the learning processes that occur during an ecotourism experience. To address this gap we applied Bandura's (1986) four-step observational learning process to explore to what extent various role models (i.e. tour guides, peer ecotourists and local community members) may influence ecotourists' ERB intentions. We measured intention because it is the best proxy measure for behavior in situations where it is not possible to measure revealed behavior (Parcel, 1984).

### *Ecotourism*

What qualifies as ecotourism is contested among academic scholars, tourism providers and tourists. Many have offered definitions of ecotourism (Bjork, 2000; Blamey, 2001; Weaver, 2002; Buckley, 2009), but an accepted definition remains elusive. Proponents argue that ecotourism is a more sustainable form of travel when compared to mass tourism and is an appropriate form of rural development, especially when associated with natural resource protection (Budeanu, 2000; Ham & Weiler 2012). Furthering this position, Powell and Ham (2008) describe ecotourism as a balancing act between tourism development and resource protection. Bjork (2000) goes further still, he portrays ecotourism as a collaborative partnership between authorities (i.e. state and local government), the tourism industry, ecotourists and the local community; all of whom make it possible for tourists to admire, enjoy and learn about nature in a manner that does not exploit the resource, but instead, engenders sustainable development. Bjork (2000) also emphasizes the associated learning and enjoyment opportunities that ecotourism experiences tend to afford to visitors. Consistent with the above authors, we define ecotourism as travel to a predominantly nature-based destination that emphasizes environmental education, enjoyment, and appreciation of a natural or cultural

resource in a manner that promotes ecological, socio-cultural and economic sustainability.

Our definition is consistent with three core principles of ecotourism that are emerging across the literature; i.e. that ecotourism should be nature-based, education-focused and sustainability-based (Blamey, 2001; Weaver, 2002; Weaver & Lawton, 2007; Lee, Lawton, & Weaver, 2012). “Nature-based” refers to a site that features an ecotourism experience in a relatively undisturbed natural setting. We concede that virtually no “natural” areas remain that are untouched or unchanged by humans (Cronon, 1996). We also acknowledge that cultural attractions are often considered a secondary characteristic of an ecotourism site, but may still adhere to our presented definition (Weaver, 2008). “Learning-based” suggests that education is at the center of any ecotourism experience. During an ecotourism experience, learning can occur in a variety of ways, ranging from structured educational programs to unstructured, spontaneous informal interactions. The last of the three principles, “sustainability-based,” emphasizes ecological, socio-cultural and economic sustainability.

The three core principles of ecotourism offer a conceptual framework to which we can compare an ecotourism site or experience for authenticity. It is also important to note that ecotourism is socially constructed, meaning that ecotourism may take on many different forms across cultures, perspectives and geographical contexts (Conway & Cawley, 2016). Conway & Cawley (2016) further suggest that ecotourism definitions are typically created by tour operators, policy-makers who are directly involved in ecotourism development, international organizations such as the United Nations World Tourism Organization (UNWTO) or The International Ecotourism Society (TIES), or academics who seek to define the term as it relates to specific research projects. It is for these reasons that a universally accepted definition does not exist today.

### *Korean Ecotourism*

The Korean Government views ecotourism as a way to manage natural areas, which is an idea echoed across existing research. Fennell, Buckley and Weaver (2001) describe ecotourism as a “management philosophy” that uses natural and cultural attractions to generate revenue that can then be used in environmental protection and management planning. Stein, Clark and Rickards (2003) also regard ecotourism as an important component of development for rural communities, but suggest that policy-makers should use collaborative planning methods in order to address competing priorities (i.e. economic benefits versus environmental conservation). Understanding this need for balance within tourism development the Korean Ministry of Environment (MOE) has allocated significant resources and effort into developing ecotourism sites throughout their country since 2001 (Kim & Park, 2016). The Korean government views ecotourism development as a vehicle to protect natural and cultural wonders, and as a viable educational opportunity. Based on a Critical Discourse Analysis (CDA) of 206 South Korean peer-reviewed

academic articles, Lee et al. (2012) described the South Korean model of ecotourism using the three principles of ecotourism presented earlier. The CDA suggested that “nature-based” tourism attractions reflect unity between humans and the environment, a sentiment that stems from Confucian, Zen Buddhist and Taoist philosophies. The second principle of ecotourism, “learning-based,” reveals a deep connection to the Confucian concept of self-cultivation for worldly development; highlighting the collective role that education plays in the development of Korea. The third principle of ecotourism, “sustainability-based,” can be seen in the Confucian idea of creative transformation for harmony, a view that emphasizes the role of planning and management to mitigate the negative impacts of ecotourism. Once again, it is important to note that ecotourism is manifested differently across cultures and geographical locations. The Korean Model of ecotourism is inherently different from some of the more Western-based models used in many parts of the world. For example, large-scale development and drastic physical alterations to land are accepted and often celebrated in East Asian ecotourism settings. This diverges sharply from Western conservation ethics where any large-scale development in nature remains culturally inappropriate (Buckley et al., 2008). The ecotourism sites in this present study align with the Korean model of ecotourism, which features several large-scale developments (i.e. information centers, viewing platforms and established walking paths) and emphasizes nature, education and sustainability. Each study site is also consistent with the presented definition above as a predominantly nature-based destination that emphasizes environmental education, enjoyment, and appreciation of natural or cultural resources in a manner that promotes ecological, socio-cultural and economic sustainability.

### *Environmentally Responsible Behavior (ERB)*

ERBs are defined here as behaviors that seek to minimize negative impacts on and are comparatively better for the ecological environment (Stern, 2000; Bamberg and Möser, 2007; Krajhanzl, 2010; Osbaldison & Schott, 2012). Early research on ERB tested the popular, simplistic assumption that environmental knowledge predicts ERB, (see Cottrell & Graefe, 1997, for a full review of this literature). Hines et al. (1986-87) were among the first to show that this is not the case and their meta-analysis identified numerous additional predictors of ERB including: attitudes, locus of control, personal responsibility, knowledge of issues and action strategies, action skills, intention to act and situational factors. A more recent meta-analysis (Bamberg & Möser, 2007) confirmed and extended this list of predictors to include attitude, problem awareness, perceived behavioral control, intention, social and moral norm, guilt, and attribution. Intentions to engage in ERB, our study’s dependent variable of interest (see Figure 1), are, in turn, ecotourists’ self-reported plans to engage in a range of specific ERBs after an ecotourism experience (Powell & Ham, 2008; Powell, et al., 2009) and can be understood as a subjective willingness to engage in specific, stated behaviors (Hines et al., 1987; Hungerford & Volk, 1990).

A number of studies have found that ecotourism participation can lead to various ERBs. Singh et al. (2007) explored individual ecotourist’s level of environmental

commitment, attitudes toward the environment, environmental knowledge and environmental behaviors during two birding festivals in a southern state of the USA. Based on their findings, participation in a structured ecotourism experience (i.e. organized, service-oriented) can foster “activism” behaviors that support environmental conservation through three specific activities: volunteering at wildlife and/or nature venues, contributing financially to conservation efforts and educating others about the importance of wildlife and nature. Powell and Ham (2008) suggest that well-designed and delivered environmental interpretation during an ecotourism experience can increase environmental knowledge of a natural area, attitudes towards environmental issues affecting a natural area and ERB intentions including philanthropic support of conservation efforts. Furthermore, Lee (2011) measured ERB based on place attachment (i.e. a positive or negative relationship that a person has with a specific location), recreation involvement (i.e. the degree to which an ecotourist engages in a specific activity) and conservation commitment (i.e. willingness to support conservation efforts over a specific time period). Lee’s (2011) study of ecotourists visiting wetlands in Taiwan found that all three variables directly or indirectly predicted ERBs. Chiu et al. (2014) proposed a behavioral model in which perceived value, satisfaction, and activity involvement during an ecotourism experience directly influenced ecotourists’ ERB. Chiu et al (2014) measured ERB using seven items such as acceptance of rules and regulations of the wetland, local economic contributions, recycling, or maintaining local environmental quality. Chiu et al.’s (2014) study found that these predictors led to ERB, emphasizing that perceived value is a strong predictor of satisfaction and activity involvement, and is a necessary first step towards ERB.

Although the above studies found links between ecotourism participation and ERB, other studies have not. For example, Kersetter, Hou and Lin (2004) explored the motivations of tourists during an ecotourism excursion in the wetlands of Taiwan. A factor analysis revealed three types of motivations that were used to profile three distinct groups of tourists (i.e. experience-tourists, learning-tourists and ecotourists). They then compared these groups using nine ERB intentions. The results showed that experience-tourists were less likely to indicate their intention to engage in ERBs (e.g. purchase environmentally friendly products or help maintain local environmental quality) when compared to “eco” seekers (Kersetter et al., 2004). Their results also suggest that domestic (Taiwanese) tourists may not view environmental conservation efforts at the local site as their responsibility. Similarly, Lee and Moscardo (2005) explored ecotourists’ environmental knowledge, awareness, attitudes and behavioral intentions during an ecotourism experience in Australia. Using a pre- and post-test design, their study failed to find evidence that ecotourism influenced ecotourists’ environmental attitudes, beliefs, or behavioral intentions to engage in environmentally friendly travel choices (Lee & Moscardo, 2005).

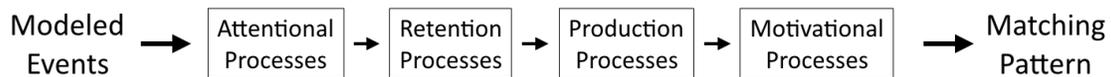
Finally, Ardoin, Wheaton, Bowers, Hunt and Durham (2015) conducted a systematic review of 30 empirical studies that explored nature-based tourism’s ability to foster participants’ long-term stewardship behavior. This review focused on the

relationships between knowledge, attitudes, intentions and actual behavior. The results showed that out of 17 studies that measured ERB intentions, six studies reported positive changes and nine studies reported partially positive changes (Ardoin et al., 2015). It is important to note that Ardoin et al. (2015) were only able to code 17 of 21 studies that measured ERB intentions based on the information present in these studies, and of these 21 studies, seven reported no change in ERB intentions. This further highlights the need for additional research into the link between ecotourism participation and ERB intentions. Finally, Ardoin et al. (2015) found that out of 10 studies that measured overt environmental behavior, none reported positive outcomes across all measured items or at all points in time (i.e. pre-, post- and follow-up assessments); however, seven studies found partial positive findings.

Ardoin et al. (2015) suggests that knowledge is built on previous experiences outside of an isolated ecotourism trip and is constructed and reconstructed through social processes that occur before, during and after an ecotourism experience. Their review calls for researchers to explore how both social and place-based practices impact an ecotourism experience and, in turn, influence visitor's ERB. To better understand ecotourism's link to ERB intentions, our study looks to explore these social interactions during an ecotourism experience by exploring to what extent Bandura's (1986) four-step observational learning process, a key element of Social Learning Theory (also called Social Cognitive Theory) (Bandura, 1977), explains ecotourists' intentions to engage in ERB after an ecotourism experience. Figure 1 provides an overview of the hypothetical model our study sought to test and the following paragraphs describe its features.

### *Observational Learning*

Bandura (1986) suggests that both time and resource availability limit the number of situations and activities that individuals can directly experience. Fortunately, however, most people also learn through observation, including various forms of modeling (Bandura, 1986). By observing the behavior of others in a given situation, individuals like ecotourists can build cognitive models that can influence their future actions including ERBs. At the same time, ecotourists cannot master a behavior, such as composting solely by observing others. Social learning originates from work by Millard and Dollard (1941), whose research posits that learners must be provided with examples of behavior and must also have the opportunity to emulate this example and receive positive reinforcement in return. Bandura continues to expand upon social learning research and theory from 1962 to the present. Specifically, Bandura (1986) proposes a four-step process for acquiring new skills through observational learning, he refers to these steps as attentional, retention, production and motivational.



**Figure 1: Bandura’s (1986) observational learning model**

In the present study, we describe each step using language consistent with existing ecotourism and environmental interpretation literature. Thus, from this point forward, this study will refer to this four-step process using the following terms respectively: *engagement*, *observation*, *reproduction* and *reinforcement* (see Figure 2 for the hypothesize model). It is important to note that for the purpose of this study, “*observational learning*” refers to the primary theoretical process underlying the study’s hypothetic model, whereas “*observation*” refers to the second step in the observational learning process. Each of the four observational learning steps are described in great detail next:

### *Engagement*

Individuals cannot acquire new information through observational learning if they do not recognize and engage with the essential features of a modeled behavior (Bandura, 1977). Ecotourists must therefore pay attention and engage in self-directed learning to build and develop new mental models or perceptions of a given situation. These perceptions are often guided by past experiences or preconceptions of a particular event (Kaplan & Kaplan, 1989). Past experiences determine what is selectively observed based on individuals’ memory of a given situation. For example, individuals may remember seeing their tour guide recycle during a previous ecotourism experience. This memory may determine the degree to which they recognize and engage in recycling behaviors during future ecotourism experiences.

In a project report for the U.S. National Park Service, Stern et al. (2012) examined which environmental interpretation practices were most consistently associated with the desired outcomes of park program visitors. The report recommended three main types of engagement in a list of ‘best practices’ to inform interpretive training, assessment and monitoring of the programs available at U.S. National Parks: physical, cognitive and verbal (Stern et al., 2012). *Physical engagement* is the extent to which individual ecotourists physically engage in participatory experiences with nature (i.e. touching or interacting with natural resources) (Stern at al., 2012). Physical interaction is often cited as a “best practice” within environmental interpretation literature (Tilden, 1957; Moscardo, 1999; Beck & Cable, 2002; Knudson et al., 2003). Consistent with Bandura’s (1986) theory, engagement can be increased by physically accentuating the essential features of an experience, which may occur while hiking or during a demonstration. *Verbal engagement* is the extent to which individual ecotourists verbally engage with tour guides, local community members or peer ecotourists (i.e. dialogue or a two-way conversations about an environmental issue) (Tilden, 1957; Moscardo, 1999; Beck & Cable, 2002; Knudson

et al., 2003). Bandura (1986) suggests that attention-directing narration can help foster engagement toward a modeled behavior. *Cognitive engagement* is the extent to which individual ecotourists cognitively engage with their experience beyond simply listening (i.e., use imagination, reflection or mindfulness) (Tilden, 1957; Sharpe, 1976; Moscardo, 1999; Beck & Cable, 2002; Knudson et al. 2003; Veverka, 2011). For example, an ecotourist may stop to think about the environmental behaviors of others or they may imagine what a specific ecotourism site or feature looked like in the past. Our hypothesized model suggests that these three categories of *engagement* are critical because they lead to the *observation* of ERB.

### *Observation*

Individuals cannot be influenced by modeled behaviors if they have no recollection or memory of these behaviors occurring (Bandura, 1977). There are several ways that an individual recalls imaginative symbols for future use within the learning process. Bandura (1986) presents two sub-categories of observation: imaginal and verbal. In imaginal observation, when observers are exposed to modeled behaviors, they start to produce stimuli through a process of sensory conditioning; through this process, vivid images are used for cognitive rehearsal (Bandura, 1986; Bandura, 2001). For example, an ecotourist might recall an image of a specific activity (e.g. hiking or recycling), a place (e.g. Jeju Island or Busan) or a thing (e.g. litter or a water bottle). These imaginative symbols are abstractions of actual events rather than stored mental images of past experiences or observations (Bandura, 1986) and through a repetitive process, observers begin to form complex behavioral intentions. The second sub-category of observation is verbal coding of observed behaviors; which in certain situations can overpower visual processes (Bandura, 1986). For example, a tourist might observe a composting demonstration during their experience. The details of the step-by-step process demonstrated by a role model can be learned and replicated at a later time through a verbal code describing the series of steps (e.g. shred, mix, water and move) rather than recalling visual images that often include irrelevant details (Bandura, 1986).

For observation to take place, there must be a role model to demonstrate a desired behavior. As the central role model in most ecotourism experiences, tour guides are often described as information providers, sources of knowledge, mentors, teachers, surrogate parents, pathfinders, leaders, mediators, cultural brokers and even entertainers (McKean, 1976; DeKadt, 1979; Nettekoven, 1979; Schuchat, 1983; Cohen, 1985). It is because of these roles that tour guides play such important roles during an ecotourism experience (Moscardo et al., 1998; McIntosh & Prentice, 1999; Moscardo et al., 2004). Several studies suggest that ecotourism participation that combines the services of a tour guide with an environmental interpretation program can increase environmental awareness, knowledge, positive attitudes, behavioral intentions and even overt ERBs (Powell & Ham, 2008; Powell et al., 2009; Stern et al., 2012; Skibins et al., 2012). Existing tourism and environmental interpretation research focuses primarily on tour guides as the key facilitators between ecotourists and the environment. Our hypothetical model therefore includes tour guides as one

of the role models shaping visitor behavior. At the same time, tour guides are not the only potential role models during an ecotourist experience. Our model hypothesizes that peer ecotourists and local community members may also serve these roles.

### *Reproduction*

During *reproduction*, conceptual models of observed behaviors guide learners' action and they have the opportunity to rehearse modeled behaviors. For example, ecotourists must have the opportunity to observe another ecotourist recycling before they may choose to practice recycling. Learners must practice these modeled behaviors if they are to replicate them at a later point in time (Bandura, 1977). During an ecotourism experience, the process of observational learning relies heavily on individuals' ability to reconstruct and perform modeled behaviors that will then be compared with their conceptual model for accuracy (Bandura, 2001). This comparison can come in the form of *reinforcement* (i.e., positive or negative feedback) from the original role model or other role models. It is important to note that while our study measured self-reported *reproductive* behavior, we are specifically interested in how the overall process of observational learning and its underlying variables influence ERB intentions.

### *Reinforcement*

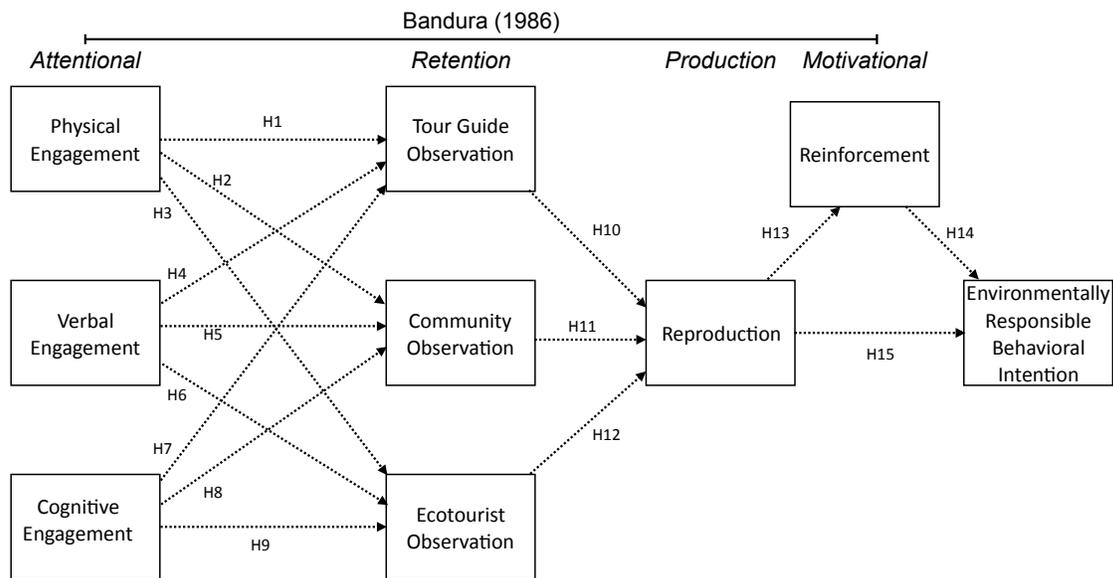
*Reinforcement* suggests that individuals may acquire the knowledge or skills necessary for accurate reproduction of modeled behaviors, but this learning alone may not be enough to adopt these behaviors if the individual receives negative feedback after performance of this behavior (Bandura, 1977). According to Bandura (1986), people do not always turn knowledge or skills into action, especially when the behavior has little relevance to individuals' daily life. However, when individuals receive positive reinforcement, modeled behaviors that would otherwise not be engaged in, may turn into action (Bandura, 1986). Ecotourists often interact with a wide range of actors throughout their experience (i.e. tour guides, local community members, peer ecotourists) and these exchanges result in various social reactions. Social reactions can range from a negative (i.e. disapproval or expressed anger toward someone who litters) to positive (i.e. praise of someone using a reusable water bottle). In the present study, social reactions were measured to assess the reinforcement or feedback ecotourists' received for ERBs during their ecotourism experience.

As part of our hypothesized model, we explore the extent to which *reproduction* may directly influence *reinforcement* as well as the extent to which *reproduction* and *reinforcement* may directly influence *ERB intentions*. Even without *reinforcement*, *reproduction* may lead to *ERB intentions* after the ecotourism experience. Consistent with research on temporal spillover effects, an ERB performed in time 1 may affect the same behavior at time 2, resulting in increased (or decreased) action of the original behavior (Nilsson, Berquist & Schultz, 2016). Further research suggests that

if individuals develop a sense of ‘pro-environmental identity’ after performing an ERB, then positive spillovers are more likely to occur in the future (Van der Werff, Steg and Keizer, 2014). For example, after contributing financially to a local conservation project during an ecotourism experience, an ecotourist may identify as a ‘pro-environmental ecotourist,’ which may result in a positive temporal spillover (i.e. contributing funds to other conservation programs in the future.) In contrast, the same ecotourist may feel as if they did their ‘share’ of work toward protecting the environment through their original financial contribution and will therefore abstain from contributing funds toward conservation programs in the future, causing negative temporal spillover. The present study acknowledges the potential effect of temporal spillover on our hypothesized model through the inclusion of a direct path from *reproduction* to *ERB intentions*.

### Present Study

Observational learning within the context of ecotourism has not been explicitly explored to date. To address this gap and importantly, in light of the potential the four-step observational learning process has for informing how ecotourism programs can foster ERBs during and after these experiences, our study set out to investigate the hypothesized relationships between *engagement, observation, reproduction, reinforcement* and *ERB intentions* (Figure 2). The primary purpose of this study is to apply Bandura’s (1986) four-step process for observational learning within an ecotourism setting to examine to what extent this process predicts ecotourists’ environmentally responsible behavioral intentions.



**Figure 2: This study’s Ecotourist Observational Learning Model**

## METHOD

### *Study Sites*

Five study sites in Korea were selected for data collection. These sites are consistent with the study's definition of ecotourism as travel to a predominantly nature-based destination that emphasizes environmental education, enjoyment, and appreciation of a natural or cultural resource in a manner that promotes ecological, socio-cultural and economic sustainability. Three sites were located on Jeju Island and two sites in the southern region of mainland Korea. Jeju Island is designated as a UNESCO World Natural Heritage Site, recognized under UNESCO's Man and the Biosphere (MAB) Programme and is certified as one of the UNESCO Global Geoparks.

One of the three Jeju sites is Dong Baek Dong San, also known as Saeonheul Gotjawal. Saeonheul is designated as an "ecotourism village" by Ecotourism Korea and is also a designated Ramsar Convention Wetland. It is known for community-based ecotourism centered on the wetland ecosystem and the cultural history of the area.

Another one of the three Jeju sites is Geomun Oreum. Also designated a UNESCO World Natural Heritage Site, Geomun Oreum is known for its ancient volcanic rock formations, pristine forests and popular breeding grounds for local birds. The Ministry of Environment selected Geomun Oreum as one of the "20 Ecotourism Destinations" in 2009 and as one of the "10 Korean Ecotourism Models" in 2010. This location is famous for trekking among ancient volcanic craters and through archaic lava caves.

The third Jeju location is the Jeoji oreum in Jeoji-ri. This site is part of the Jeju Island UNESCO certifications and features scenic hiking opportunities through a network of public trails.

The fourth study site, Nakdonggang River Estuary, also known as Elsukdo Migratory Bird Park, is located near the city of Busan, in the southern part of the Korean mainland. Elsukdo is certified by Ecotourism Korea as an "ecotourism site" and was designated as one of the 25 Wonders of Nature at the 2012 IUCN World Conservation Congress in Korea (2012 World Conservation Congress & Korean Ministry of Environment, 2012). Elsukdo is comprised of reed beds, mudflats and sand dunes, which provide shelter and habitat for a wide range of migratory birds.

Upo Wetlands, the fifth study site, is located in Changnyeoung in the southern part of the Korean Peninsula. Upo was designated an Ecology Protection Area in 1997 and registered as a Ramsar Convention Wetland in 1998 (Ramsar, 2016). It is also a Wetlands Protection Area, a Natural Monument and was named one of the 25 Wonders of Nature at the 2012 IUCN World Conservation Congress. Many ecotourists visit this site for bird watching and hiking in this largest Korean wetland

### *Sample*

Data for this study were collected from a convenience sample of ecotourists drawn from the five study sites over three months during summer 2015. Ecotourists willing to participate in the study received and completed the questionnaire at the end of their eco-tour. In total, 391 ecotourists were approached and 232 questionnaires were collected, resulting in a 59% response rate. After removing incomplete questionnaires, the final sample size was 207.

Table 1 summarizes select respondent characteristics. The majority of respondents were female. With only one exception, our entire sample was Korean. The ages varied greatly, but the plurality of respondents were between 35-44 years old. Income ranged from less than \$30,000 to greater than \$100,000 with the majority of respondents falling between \$30,001 and \$100,000 per year. The majority had a bachelor's degree and almost all of our participants were members of an environmental organization. For many, this was their first ecotourism experience, but the majority had participated in an ecotourism excursion one or more times. About half of our sample took a day trip and the rest were distributed between 1-6 or more days.

**Table 1: Ecotourist Profile**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<i>Gender (n=205)</i>		
Male	84	41
Female	119	58
I'd rather not say	2	1
<i>Country of Origin (n=205)</i>		
Korea	203	99
United States of America	1	<1
Other	1	<1
<i>Age (n=205)</i>		
18-24	25	12
25-34	41	20
35-44	70	34
45-54	41	20
55 and older	28	14
<i>Income (n=200)</i>		
<\$30,000	50	25
\$30,001-50,000	62	31
\$50,001-100,000	59	30
>\$100,001	29	14
<i>Education (n=201)</i>		
Secondary school	4	2
High school diploma	37	18
Bachelor's degree	126	63
Master's degree	25	12
Doctorate degree or higher	9	5
<i>Environmental Org. Membership (n=207)</i>		
Yes	188	91
No	19	9
<i>Previous Ecotourism Experience (n=203)</i>		
First time	52	26
1 time	33	16
2 times	50	25
3-4 times	42	21
5-6 times	7	3
7 or more times	19	9
<i>Duration of Experience (n=207)</i>		
Day Trip	112	54
1 night, 2 days	16	8
2 nights, 3 days	22	11
3 nights, 4 days	17	8
4 nights, 5 days	8	4
5 nights, 6 says or longer	17	8
Other	15	7

## Measurement Scales

The questionnaire we developed was originally in English, and then translated into Korean. It was also back-translated into English to ensure that each item was translated conceptually and culturally, rather than literally (Sperber, 2004). The draft questionnaire was shared with five ecotourism professionals in Korea and revised based on feedback regarding content and cultural compatibility. The instrument consisted primarily of closed-ended questions.

Nine items were developed to measure the level of *physical engagement* (i.e. physically interacting with a resource), *cognitive engagement* (i.e. thinking about the environmental behaviors of others) and *verbal engagement* (i.e. having an informal conversation about environmental issues) of ecotourists visiting the study sites. These items were based on the findings of Stern et al. (2012). Eleven items were created to measure *tour-guide*, *community* and *ecotourist observation* (i.e. observing demonstrated ERBs from three types of tour guides, local community members and ecotourists respectively). Nine *reproduction* (i.e. producing ERBs during ecotourism participation) items were adapted from studies of ERB in ecotourism (Lee & Moscardo, 2005; Powell & Ham, 2008; Chiu et al., 2014; Kil et al., 2014). The 29 *engagement*, *observation* and *reproduction* items were measured using a seven-point Likert scale ranging from (1) never to (7) frequently (Wade, 2006). The six *reinforcement* (i.e. whether or not ecotourists received positive reinforcement from others) items were also developed based on existing studies of ERB in ecotourism (Lee & Moscardo, 2005; Powell & Ham, 2008; Chiu et al., 2014; Kil et al., 2014). This factor was measured using a seven-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree. *Environmentally responsible behavioral intentions* (i.e. intention to engage in ERBs within one year of completing the ecotour) included 14 items based on studies by Smith-Sebasto and D'Costa (1995), Lee & Moscardo, (2005), Powell & Ham (2008), Chiu et al. (2014), and Kil et al. (2014). A seven-point Likert scale was used to measure respondents' likelihood of engaging in these specific ERBs over the next year. This scale ranged from (1) extremely unlikely to (7) extremely likely. Several sustainable tourism studies suggest a correlation between ERB intentions and ERB (Smith, Broad, & Weiler, 2008; Ballantyne, Packer, and Falk, 2011; Hughes, 2013).

## Analysis

After Pearson's correlation coefficients between the study's factors verified that the respective constructs' measures were correlated with each other (see Appendix 1, Table 5), confirmatory factor analyses were conducted using Stata v.14. The observed variables were found to measure the study's latent variables of interest (Harrington, 2008), with factors loadings ranging from 0.48 to 0.97 (Table 2). Reliabilities were also strong with Cronbach's  $\alpha$  ranging from 0.78 to 0.92. Factor means were included in the subsequent path analysis, which was also conducted using Stata v. 14. The path analysis explored to what extent the constructs in the

hypothesized model directly and indirectly explained tourist's *environmentally responsible behavioral intentions*. Modification indices were used to develop the final model. Model fit was assessed using Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) (Kline, 2011). The CFI should be above 0.95 and RMSEA less than 0.08 for a good model fit (Hu & Bentler, 1999) and TLI should not be below 0.9 (Hu & Bentler, 1999).

**Table 2. Confirmatory factor analysis results for all factors**

	Factor Score
<b>Physical Engagement (Factor Name: PhysEngagement)</b>	
How often did you experience the following activities during you current ecotourism experience...	
...Hiked with a tour-guide within a natural area	0.87
...Hiked with other ecotourists within a natural area	0.86
...Hiked within a natural area where local community members were present	0.48
<i>Chronbach's Alpha</i>	0.78
<b>Verbal Engagement (Factor Name: VerbEngagement)</b>	
How often did you experience the following activities during you current ecotourism experience...	
...An informal discussion with a tour guide about environmental issues	0.81
...An informal discussion with other ecotourists about environmental issues	0.99
...An informal discussion with local community members about environmental issues	0.74
<i>Chronbach's Alpha</i>	0.87
<b>Cognitive Engagement (Factor Name: CogEngagement)</b>	
How often did you experience the following activities during you current ecotourism experience...	
...Thought about the environmental behaviors demonstrated by the tour guide	0.85
...Thought about the environmental behaviors demonstrated by other ecotourists	0.92
...Thought about the environmental behaviors demonstrated by local community members	0.89
<i>Chronbach's Alpha</i>	0.92
<b>Tour Guide Observation (Factor Name: GuideObservation)</b>	
How often did you observe the following behaviors during you current ecotourism experience...	
...The tour guide recycling	0.76
...The tour guide teaching others about the environment	0.69
...The tour guide conserving water (e.g. using minimal water to wash hands)	0.88
...The tour guide demonstrating composting techniques	0.81
...The tour guide conserving energy (e.g. turning off lights when leaving a room)	0.78
<i>Chronbach's Alpha</i>	0.89
<b>Community Observation (Factor Name: CommObservation)</b>	
How often did you observe the following behaviors during you current ecotourism experience...	
...Local community members conserving water	0.78
...Local community members recycling	0.8
...Local community members gardening (e.g. vegetables or flowers)	0.97
<i>Chronbach's Alpha</i>	0.89
<b>Other Ecotourist Observation (Factor Name: TouristObservation)</b>	
How often did you observe the following behaviors during you current ecotourism experience...	
...Other ecotourists using reusable containers for water	0.69
...Other ecotourists picking up litter	0.77
...Other ecotourists reading books, publications and other material about environmental issues	0.79
<i>Chronbach's Alpha</i>	0.78
<b>Reproduction (Factor Name: Reproduction)</b>	
How often did you engage in the following behavior during your current ecotourism experience...	
...Read books, publications and other material about environmental issues	0.65
...Picked up litter off the ground	0.65
...Recycled	0.66
...Composted biodegradable waste	0.72
...Conserved water (e.g. turning off the tap while brushing teeth)	0.64
...Conserved energy (e.g. turning off the lights when leaving a room)	0.59
...Financially contributed to local conservation efforts	0.74
...Encouraged other ecotourists to protect the environment	0.72
...Encouraged local community members to protect the environment	0.65
<i>Chronbach's Alpha</i>	0.89
<b>Reinforcement (Factor Name: Reinforcement)</b>	
To what extent do you agree with the following statements about your current ecotourism experience:	
...The tour guide offered positive recognition to those who used reusable water bottles	0.88
...The tour guide offered positive recognition to those who recycled	0.91
...Local community members offered positive recognition to those who conserved resources (e.g. water and energy)	0.92
...Local community members offered positive recognition to those who picked up litter	0.72
...Other ecotourists offered positive recognition to those who financially contributed to local conservation efforts	0.69
...Other ecotourists offered positive recognition to those who read books, publications and other material about environmental issues	0.7
<i>Chronbach's Alpha</i>	0.92
<b>Environmentally responsible behavioral intention (Factor Name: Intention)</b>	
How likely is it that you will engage in the following behaviors within the next year...	
...Read books, publications and other material about environmental issues	0.66
...Watch TV programs or documentaries about environmental issues	0.76
...Enroll in a nature-based educational program	0.68
...Sort my trash to separate no-recyclable material from recyclable material	0.72
...Use reusable containers (e.g. water bottles)	0.7
...Encourage others to protect the natural environment	0.76
...Encourage others to engage in eco-friendly travel	0.8
<i>Chronbach's Alpha</i>	0.89

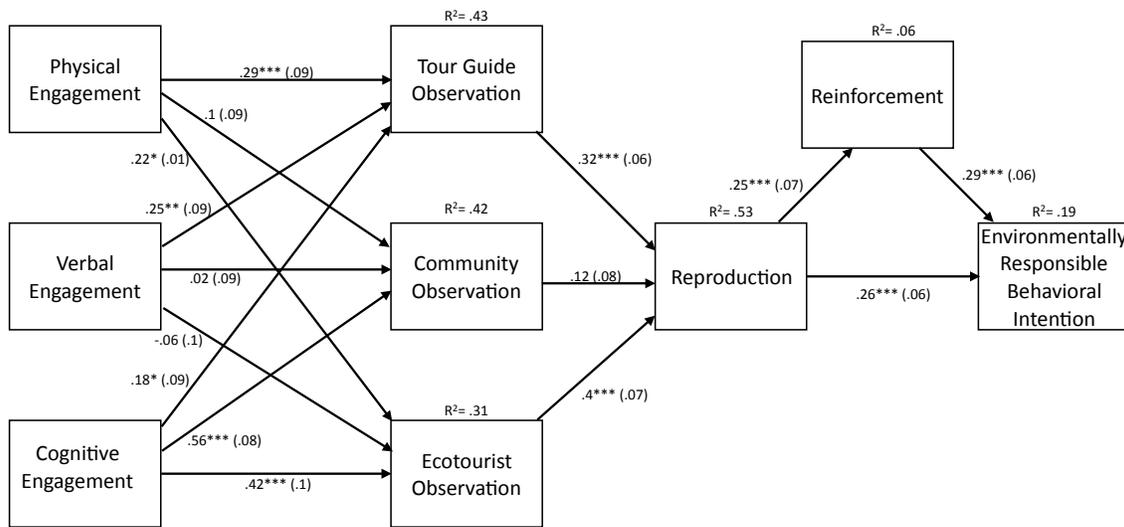
## RESULTS

### *Descriptive statistics*

Participating ecotourists reported a moderate level of *physical and cognitive engagement* and slightly lower level of *verbal engagement* during their ecotourism experience (means = 3.48, 3.65, 2.94 respectively). The three *observation* factors were rated moderately as well, with *community observation* and *ecotourist observation* rated slightly higher than *tour guide observation* (means = 3.84, 3.68 and 3.15, respectively). *Reproduction* was reported near the middle of the scale (mean = 3.91). *Reinforcement* and *environmentally responsible behavioral intention* were higher (means = 5.67 and 4.92 respectively)(see).

**Table 3: Descriptive Statistics for all factors**

<b>Factor Name</b>	<b>n</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Response Options</b>
Physical Engagement	196	3.48	1.63	Never (1) - Frequently (7)
Verbal Engagement	190	2.94	1.68	Never (1) - Frequently (7)
Cognitive Engagement	198	3.65	1.85	Never (1) - Frequently (7)
Tour Guide Observation	192	3.15	1.61	Never (1) - Frequently (7)
Community Observation	192	3.84	1.75	Never (1) - Frequently (7)
Ecotourist Observation	195	3.68	1.61	Never (1) - Frequently (7)
Reproduction	205	3.91	1.42	Never (1) - Frequently (7)
Reinforcement	207	5.67	1.12	Strongly Disagree (1) - Strongly Agree (7)
Environmentally Responsible Behavioral Intention	207	4.92	1.32	Extremely Unlikely (1) - Extremely Likely (7)



**CFI = .97, TLI =.94, RMSEA = 0.07,  $\chi^2 = 30.25$ , p = 0.01**

OIM standard errors are presented in parentheses.  
 The path size is statistically significant at \* p < 0.05 \*\* p < 0.01 \*\*\* p < 0.001 H<sub>0</sub>: Standardized path coefficient = 0.

### Figure 3. Ecotourist Observational Learning Model results

Goodness-of-fit indices indicated a strong model fit (CFI=0.97, TLI=0.94, RMSEA=0.07,  $\chi^2=30.25$ , p=0.01) (Figure 2). Almost all factors were predicted quite well (R<sup>2</sup> range: .31-.53), with the exception of *reinforcement* (R<sup>2</sup>=.06). Only four of the 15 hypothesized direct paths were not statistically significant (i.e., physical engagement -> community observation, verbal engagement -> community & ecotourist observation, community observation->reproduction.) (Figure 3, Table 4).

Table 4 provides an overview of the factors' direct and indirect effects in the path model. The following paragraphs address results these results in greater detail.

**Table 4: Summary of direct and total effects for factors in the final path model**

Outcome Variable <- Predictor Variable	DIRECT Effects		INDIRECT Effects		R <sup>2</sup>
	Standardized Coefficient	p	Standardized Coefficient	p	
Community Observation					0.42
<-Physical Engagement	0.1	0.26	<i>n/a</i>	<i>n/a</i>	
<-Verbal Engagement	0.02	0.83	<i>n/a</i>	<i>n/a</i>	
<-Cognitive Engagement	0.56	0.000***	<i>n/a</i>	<i>n/a</i>	
Tour Guide Observation					0.43
<-Physical Engagement	0.29	0.001***	<i>n/a</i>	<i>n/a</i>	
<-Verbal Engagement	0.25	0.01**	<i>n/a</i>	<i>n/a</i>	
<-Cognitive Engagement	0.18	0.04*	<i>n/a</i>	<i>n/a</i>	
Ecotouist Observation					0.31
<-Physical Engagement	0.22	0.02*	<i>n/a</i>	<i>n/a</i>	
<-Verbal Engagement	-0.06	0.59	<i>n/a</i>	<i>n/a</i>	
<-Cognitive Engagement	0.42	0.000***	<i>n/a</i>	<i>n/a</i>	
Reproduction					0.53
<-Community Observation	0.12	0.13	<i>n/a</i>	<i>n/a</i>	
<-Tour Guide Observation	0.32	0.000***	<i>n/a</i>	<i>n/a</i>	
<-Ecotourist Observation	0.4	0.000***	<i>n/a</i>	<i>n/a</i>	
<-Physical Engagement	<i>n/a</i>	<i>n/a</i>	0.19	0.003**	
<-Verbal Engagement	<i>n/a</i>	<i>n/a</i>	0.06	0.4	
<-Cognitive Engagement	<i>n/a</i>	<i>n/a</i>	0.29	0.000***	
Reinforcement					0.06
<-Community Observation	<i>n/a</i>	<i>n/a</i>	0.03	0.13	
<-Tour Guide Observation	<i>n/a</i>	<i>n/a</i>	0.08	0.000***	
<-Ecotourist Observation	<i>n/a</i>	<i>n/a</i>	0.1	0.000***	
<-Physical Engagement	<i>n/a</i>	<i>n/a</i>	0.05	0.02*	
<-Verbal Engagement	<i>n/a</i>	<i>n/a</i>	0.01	0.4	
<-Cognitive Engagement	<i>n/a</i>	<i>n/a</i>	0.07	.006**	
<-Reproduction	0.25	0.000***	<i>n/a</i>	<i>n/a</i>	
Environmentally Responsible Behavioral Intention					0.19
<-Community Observation	<i>n/a</i>	<i>n/a</i>	0.04	0.13	
<-Tour Guide Observation	<i>n/a</i>	<i>n/a</i>	0.11	0.000***	
<-Ecotourist Observation	<i>n/a</i>	<i>n/a</i>	0.13	0.000***	
<-Physical Engagement	<i>n/a</i>	<i>n/a</i>	0.06	0.000***	
<-Verbal Engagement	<i>n/a</i>	<i>n/a</i>	0.02	0.41	
<-Cognitive Engagement	<i>n/a</i>	<i>n/a</i>	0.1	0.001***	
<-Reproduction	0.26	0.000***	0.08	0.000***	
<-Reinforcement	0.29	0.000***	<i>n/a</i>	<i>n/a</i>	
Overall R <sup>2</sup>					0.55

\* p < 0.05 \*\* p < 0.01 \*\*\* p < 0.001

H<sub>0</sub>: Standardized mean coefficient = 0

## *Engagement*

Ecotourism *Engagement* sub-factors (i.e. *Physical*, *Verbal* and *Cognitive*) mostly predicted *Observation* sub-factors (i.e. *Community*, *Tour Guide* and *Peer Ecotourists*) with six significant paths and three non-significant paths. Ecotourists' level of *Cognitive Engagement* had a relatively strong relationship with their level of *Community Observation* ( $\beta = 0.56, p < 0.001$ ) and *Ecotourist Observation* ( $\beta = 0.42, p < 0.001$ ), and a relatively small association with *Tour Guide Observation* ( $\beta = 0.18, p > 0.04$ ). The model indicated that ecotourists' level of *Physical Engagement* is moderately associated with both *Tour Guide Observation* ( $\beta = 0.29, p < 0.001$ ) and *Ecotourist Observation* ( $\beta = 0.22, p < 0.02$ ). Ecotourists' level of *Verbal Engagement* is also moderately associated with *Tour Guide Observation* ( $\beta = 0.25, p < 0.01$ ), but has no statistical association with *Community Observation* or *Ecotourist Observation*.

The model also showed that *Engagement* sub-factors (i.e. *Physical*, *Verbal* and *Cognitive*) indirectly predicted *Reproduction*, *Reinforcement* and *ERB Intentions*. *Cognitive Engagement* (indirect effects  $\beta = 0.29, p < 0.000$ ) and *Physical Engagement* (indirect effects  $\beta = 0.19, p < 0.003$ ) indirectly predicted *Reproduction*. Similarly, *Physical Engagement* (indirect effects  $\beta = 0.05, p < 0.02$ ) and *Cognitive Engagement* (indirect effects  $\beta = 0.07 \pm 0.006$ ) had a very small, but positive, indirect association with *Reinforcement*, which were mediated by *Ecotourist Observation*, *Tour Guide Observation* and *Reproduction*. Finally, *Physical Engagement* (indirect effects  $\beta = 0.06, p < 0.000$ ) and *Cognitive Engagement* (indirect effects  $\beta = 0.1, p < 0.001$ ) also had a very small indirect association with *ERB Intentions*.

## *Observation*

Two of three direct paths from *Observation* sub-factors to *Reproduction* were significant. Ecotourists' level of *Ecotourist Observation* ( $\beta = 0.4, p < 0.001$ ) and *Tour Guide Observation* ( $\beta = 0.32, p < 0.001$ ) had a moderate association with their level of *Reproduction*. *Community Observation's* direct path to *Reproduction* was not significant. The model also indicated that both *Tour Guide Observation* (indirect effects  $\beta = 0.08, p < 0.001$ ) and *Ecotourist Observation* (indirect effects  $\beta = 0.1, p < 0.001$ ) had a small indirect association with *Reinforcement* mediated by *Reproduction*. Additionally, the same two *Observation* factors indirectly predicted *ERB Intentions* with *Tour Guide Observation* (indirect effects  $\beta = 0.11, p < 0.001$ ) and *Ecotourist Observation* (indirect effects  $\beta = 0.13, p < 0.001$ ) having similarly small and indirect associations with *ERB Intentions*. *Community Observation* did not have any significant indirect paths.

## *Reproduction*

Ecotourists' level of *Reproduction* moderately predicted *Reinforcement* ( $\beta = 0.25, p < 0.001$ ). Additionally, ecotourists' level of *Reproduction*, both directly ( $\beta = 0.26, p <$

0.001) and indirectly (indirect effects  $\beta = 0.08, p < 0.001$ ), predicted *ERB Intentions*, resulting in a moderate total relationship ( $\beta = 0.34, p < 0.001$ ).

### *Reinforcement*

Ecotourists' level of *Reinforcement* moderately predicted their level of *ERB Intentions* ( $\beta = 0.29, p < 0.001$ ).

### *Environmentally Responsible Behavioral Intentions*

Our study's main dependent variable, *ERB Intentions* was directly and indirectly predicted by many of the factors in the final model (see Figure 3 and Table 4). As discussed earlier, both *Reproduction* ( $\beta = 0.26, p < 0.001$ ) and *Reinforcement* ( $\beta = 0.29, p < 0.001$ ) directly predicted *ERB Intentions*. Additionally, there are five predictor variables that had small indirect relationships with *ERB Intentions*: *Physical Engagement* (indirect effects  $\beta = 0.06, p < 0.000$ ), *Cognitive Engagement* (indirect effects  $\beta = 0.1, p < 0.001$ ), *Tour Guide Observation* (indirect effects  $\beta = 0.11, p < 0.001$ ), *Ecotourist Observation* (indirect effects  $\beta = 0.13, p < 0.001$ ) and *Reproduction* (indirect effects  $\beta = 0.08, p < 0.001$ ). These indirect effects stem from all prior significant and direct paths presented in the final model (see Figure 3 and Table 4).

## **DISCUSSION**

The primary purpose of this study was to apply Albert Bandura's (1986) four-step process for observational learning within an ecotourism setting, and to examine to what extent this process may predict ecotourists' environmentally responsible behavioral (ERB) intentions. Results showed that observational learning (i.e. *engagement, observation, reproduction and reinforcement*) is a key determinant of ecotourists' ERB intentions. Our findings lend additional evidence to research suggesting that ecotourism can lead to ERB and fill an important theoretical gap by explaining how these experiences can lead to ERBs; i.e. through observational learning (Bandura, 1986). Our study adds additional insight to a growing body of literature that explores the link between ecotourism participation and ERB (Lee & Moscardo, 2005; Powell & Ham, 2008; Lee, 2011; Chiu, Lee & Chen, 2014, Ardoin et al., 2015). These studies explored a range of factors that influence ERBs, including individual characteristics, cognition, affect, and social norms (Cottrell, 2003; Hungerford & Volk, 1990) and applied several well-researched behavioral theories (i.e. Ajzen and Fishbein's (1980) Theory of Reasoned Action or Ajzen's (1991) Theory of Planned Behavior). Our Ecotourist Observational Learning Model provides additional insight into the processes that drive the development of ERBs through ecotourism participation. Specifically, our study sought to fill a theoretical gap within ecotourism scholarship by operationalizing Bandura's (1986) observational learning process within the context of ecotourism.

*Filling the theoretical gap, observational learning in ecotourism and its role in predicting ERB intentions*

As suggested by Bandura's (1986) observational learning theory and confirmed by our empirical results, ecotourists' intention to engage in ERBs after an ecotourism experience is influenced through their observational learning of ERBs during the experience. Furthermore, results showed the need for ecotourists to be actively engaged in ERBs during their experience if they are to learn through observation. These findings support Bandura's (1986) claim that individuals must be engaged with the essential features of a modeled behavior if they are to learn from it. The level of *physical engagement* (i.e. physically interacting with a natural resource) had a positive association with ecotourists' self-reported observation of both tour guides and peer ecotourists demonstrating ERBs. The final model also suggested that *verbal engagement* (i.e. having an informal discussion about environmental issues) significantly influenced self-reported observation of tour-guides demonstrated ERBs. This may be due to the special relationship between ecotourists and their tour guide, as highlighted by Weiler and Ham (2002). Furthermore, *cognitive engagement* (i.e. thinking about ERBs of others) was a strong predictor of all three types of potential observations (i.e., guides, peers, community members), suggesting that ecotourists who actively think about others' ERBs are primed to observe them when they are modeled. It should be noted that all forms of *engagement* (i.e., physical, verbal, cognitive) were significant predictors of observing tour guides' and peers' actions. These findings may be attributable to Korean culture (>99% of our sample were Korean ecotourists). As Lee et al. (2012) suggest, Korean visitors are highly motivated to learn, to help them advance in this competitive East Asian society. Korean ecotourists likely view their tour guide as a teacher and peer ecotourists as competition, as they firmly believe that learning will help them advance socially (Lee et al., 2012). This cultural manifestation may be one possible explanation for the powerful role that observation played in our model. At the same time, research also suggests that interpretive tour guides' behaviors can influence participants' ERB intentions and overt ERBs in the USA (Stern et al, 2012).

Contrary to expectations, observing community members did not have statistically significant relationships with ecotourists' level of physical or verbal engagement or with their reproduction of ERBs during their experience. One possible explanation for this finding is that since our path model included interactions with tour guides and ecotourists (i.e. *tour guide observation* and *ecotourist observation*), the observations of local community members (*community observation*) may have been overshadowed. As stated earlier, there is a special relationship exists between tour guides and ecotourists (Weiler and Ham, 2002), which may offer another possible explanation as to why interactions with local community members were not as influential on ecotourists' ERB intentions as their relationship with tour guides and each other.

### *Implications for Ecotourism Programs*

Proponents of ecotourism believe that when travel is predominantly nature-based and emphasizes environmental education, enjoyment, and appreciation of natural or cultural resources, it can promote ecological, socio-cultural and economic sustainability in that ecotourism setting (Blamey, 2001; Weaver, 2002; Weaver & Lawton, 2007; Lee et al., 2012). To achieve sustainable outcomes as a result of ecotourism and build a more environmentally responsible constituency, it is important that ecotourism stakeholders, including program managers and tour guides understand the implications that various role models have on ecotourists' ERBs during ecotourism participation and plan accordingly. How, for example, can program managers ensure that potential role models for ecotourists are modeling desired ERBs? In addition, it appears to be especially important that tour guides be encouraged to model ERBs throughout the ecotourism experience, encourage ecotourists to engage in similar ERBs, and offer positive reinforcement when ecotourists perform these ERBs. Lastly, our study suggests that engaging participants in multisensory (i.e. *physical, cognitive & verbal*) plays an important role in ultimately leading to ERB intentions. Tour guides therefore will require professional development that will effectively prepare them for doing so effectively.

### *Limitations*

The present study has two notable limitations. First, although we presented a novel approach to explaining how ecotourism may lead participants to form ERB intentions, the model's moderate coefficient of determination ( $R^2 = .19$ ) suggests that observational learning alone does not account for all of the variance in ERB intentions. Second, our study measured behavioral intentions, not overt behavior. Intention to act is one of the best predictors of overt behavior (Hines et al., 1986/87), with a mean correlation of about 0.52 (Bamberg and Möser, 2007). Nonetheless, because we did not measure overt behavior, we cannot address the extent to which observational learning influences this potential longer-term outcome.

### *Future Directions*

In a recent article, Bandura (2016) points out that a common misconception of observational learning is that modeling stifles innovation; he suggests that the opposite is true. Learning through observation can promote creativity and foster innovative styles of thinking and processing information. After people extract the key features of a modeled behavior, they are able to construct new forms of that behavior. These new forms of behavior often go beyond the original modeled behavior. Within the context of ecotourism, for example, an ecotourist may observe a role model using a reusable water bottle. Through the process of observational learning, the ecotourist extracts the key features of this behavior (i.e. reusing a container) and may construct a new form of that behavior (i.e. using reusable bags

at the grocery store). As explained by Bandura (2016), observational learning goes deeper than simple mimicry; it also includes a learner's ability to build on modeled behaviors and extend or translate those behaviors to other settings. Future research should further explore such positive temporal spillover effects, like the previous example, to better understand how observational learning predicts ERBs after ecotourism participation.

Our initial study's findings are promising with regard to the role of observational learning (i.e. Ecotourist Observational Learning Model) in explaining ecotourists' ERB intentions. Additional studies are needed to test the model within different manifestations of ecotourism across the world. For example, it would be valuable to explore this model with a different population of ecotourists (i.e. outside Korea), in a different geographical location or within alternative forms of ecotourism (i.e. whale watching tours, trekking tours or wildlife sites). Furthermore, as suggested by Ardoin et al. (2015), future studies should also aim to empirically document actual ERB in the context of ecotourism. Lastly, although our path model operationalized Bandura's (1986) four-step observational learning process within the context of ecotourism, our model may also hold promise for those outside of the ecotourism sector looking for ways to empirically measure the role of social learning processes in the development of ERBs.

## APPENDICIES

### *Appendix 1: Supplemental Tables and Figures*

**Table 5. Pairwise correlations of path model factors**

#	Factor Name	1	2	3	4	5	6	7	8	9
1	Verbal Engagement	-								
2	Cognitive Engagement	<b>0.74</b>	-							
3	Physical Engagement	<b>0.72</b>	<b>0.74</b>	-						
4	Tour Guide Observation	<b>0.6</b>	<b>0.61</b>	<b>0.57</b>	-					
5	Community Observation	<b>0.51</b>	<b>0.51</b>	<b>0.64</b>	<b>0.62</b>	-				
6	Ecotourist Observation	<b>0.47</b>	<b>0.43</b>	<b>0.54</b>	<b>0.58</b>	<b>0.7</b>	-			
7	Reproduction	<b>0.5</b>	<b>0.5</b>	<b>0.49</b>	<b>0.61</b>	<b>0.59</b>	<b>0.66</b>	-		
8	Reinforcement	0.04	0.02	0.09	0.09	<i>0.17</i>	<i>0.17</i>	<u>0.26</u>	-	
9	Environmentally Responsible Behavioral Intentions	<b>0.32</b>	<b>0.33</b>	<b>0.31</b>	<b>0.35</b>	<b>0.33</b>	<b>0.3</b>	<b>0.34</b>		-
<b>Boldface</b> indicates the value is statistically at $p < 0.001$ <u>Underline</u> indicates the value is statistically at $p < 0.01$ <i>Italics</i> indicates the value is statistically at $p < 0.05$ Other values are not statistically significant										

## ***Appendix 2: Data Collection Instrument***

[Q1] Are you a member of an environmental organization (e.g World Wildlife Fund for Nature, Federation for Environmental Movement, Green Korea United, The Forest of Life)?

n= 207

- Yes (9%)
- No (91%)

[Q2] Ecotourism is “Responsible travel to natural areas that conserves the environment and improves the well-being of local people.” Examples include: Upo Wetland or Suncheon Bay. How many times have you participated on ecotourism experiences like the current one?

n= 203

- 0 (This is my first time) (26%)
- 1 time (16%)
- 2 times (25%)
- 3-4 times (21%)
- 5-6 times (3%)
- 7 or more times (9%)

What was the duration of your current ecotourism experience?

n= 207

- Day Trip (54%)
- 1 night, 2 Days (8%)
- 2 nights, 3 Days (11%)
- 3 nights, 4 Days (8%)
- 4 nights, 5 Days (4%)
- 5 nights, 6 Days or longer (8%)
- Other (7%)

Did you use an ecotourism company or organization during your present ecotourism experience?

n= 192

- Yes (3%)
- No (97%)

[Q5] How often did you experience the following activities during your current ecotourism experience?

	n	Never (1)	2	3	4	5	6	Frequently (7)	Mean
Hiked with a tour-guide within a natural area	180	29%	12%	7%	25%	12%	5%	10%	3.33
Hiked with other ecotourists within a natural area	181	23%	16%	6%	27%	11%	8%	9%	3.49
Hiked within a natural area where local community members were present	188	21%	15%	10%	24%	14%	8%	9%	3.55
An informal discussion with a tour-guide about environmental issues	179	36%	16%	11%	12%	12%	7%	6%	2.93
An informal discussion with other ecotourists about environmental issues	180	33%	14%	13%	15%	13%	6%	6%	3.02
An informal discussion with local community members about environmental issues	184	37%	13%	11%	18%	12%	4%	5%	2.88
Thought about environmental behaviors demonstrated by the tour-guide	191	21%	12%	9%	20%	13%	10%	14%	3.79
Thought about the environmental behaviors demonstrated by other ecotourists	188	23%	12%	9%	24%	14%	8%	10%	3.57
Thought about the environmental behaviors demonstrated by local community members	188	23%	14%	7%	23%	16%	6%	10%	3.54

[Q6] How often did you observe the following behaviors during your current ecotourism experience?

	n	Never (1)	2	3	4	5	6	Frequently (7)	Mean
The tour-guide recycling	178	39%	12%	12%	20%	7%	7%	3%	2.77
The tour-guide teaching others about the environment	183	30%	10%	9%	19%	14%	8%	10%	3.41
The tour-guide conserving water (e.g. using minimal water to wash hands)	181	27%	10%	12%	21%	12%	8%	11%	3.46
The tour-guide demonstrating composting techniques	175	43%	11%	10%	19%	6%	5%	5%	2.70
The tour-guide conserving energy (e.g. turning off the lights when leaving a room)	177	27%	12%	12%	22%	9%	6%	12%	3.40
Local community members conserving water	185	25%	9%	12%	25%	12%	6%	11%	3.51
Local community members gardening (e.g. vegetables or flowers)	188	13%	11%	12%	24%	14%	9%	19%	4.15
Local community members recycling	185	17%	10%	11%	27%	14%	9%	12%	3.84
Other ecotourists using reusable containers for water	188	12%	13%	11%	24%	13%	10%	17%	4.12
Other ecotourists picking up litter	186	22%	17%	9%	24%	10%	9%	10%	3.49
Other ecotourists reading books, publications and other material about environmental issues	181	22%	15%	13%	24%	12%	8%	7%	3.39

[Q7] How often did you engage in the following behavior during your current ecotourism experience?

	n	Never (1)	2	3	4	5	6	Frequently (7)	Mean
Read books, publications and other material about environmental issues	195	17%	15%	9%	35%	10%	7%	8%	3.58
Picked up litter off the ground	194	7%	15%	8%	29%	12%	11%	18%	4.26
Recycled	196	7%	11%	7%	31%	13%	12%	20%	4.49
Composted biodegradable waste	180	33%	14%	11%	23%	11%	3%	4%	2.91
Conserved water (e.g. turning off the tap while brushing your teeth)	194	7%	8%	10%	30%	13%	10%	22%	4.51
Conserved energy (e.g. turning off the lights when leaving the room)	194	7%	7%	9%	23%	13%	11%	30%	4.82
Financially contributed to local conservation efforts	179	32%	15%	10%	22%	8%	8%	5%	3.03
Encouraged other ecotourists to protect the environment	186	21%	11%	12%	25%	12%	8%	9%	3.68
Encouraged local community members to protect the environment	187	25%	11%	10%	25%	12%	8%	9%	3.46

[Q8] To what extent do you agree with the following statements during your current ecotourism experience:

	n	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)	Mean
The tour-guide offered positive recognition to those who used reusable water bottles	207	1%	1%	2%	12%	17%	31%	34%	5.73
The tour-guide offered positive recognition to those who recycled	206	2%	2%	1%	13%	14%	34%	34%	5.72
Local community members offered positive recognition to those who conserved resources (e.g. water and energy)	205	2%	1%	2%	9%	17%	36%	34%	5.78
Local Community members offered positive recognition to those who picked up litter	205	0%	2%	1%	10%	16%	34%	36%	5.87
Other ecotourists offered positive recognition to those who financially contributed to local conservation efforts	207	1%	1%	3%	20%	18%	27%	29%	5.47
Other ecotourists offered positive recognition to those read books, publications and other material about environmental issues	207	1%	2%	4%	21%	15%	29%	28%	5.46

[Q9] How likely is it that you will engage in the following behaviors within the next year?

	n	Extremely unlikely (1)	2	3	4	5	6	Extremely likely (7)	Mean
Donate money to environmental organizations	207	16%	18%	10%	38%	9%	2%	5%	3.33
Support candidates who have a pro-environmental policy	204	15%	11%	9%	27%	16%	10%	13%	4.00
Write a letter to a politician about environmental issues	204	42%	15%	10%	24%	5%	2%	1%	2.50
Read books, publications and other material about environmental issues	206	8%	14%	12%	26%	14%	14%	13%	4.16
Watch TV programs or documentaries about environmental issues	205	4%	7%	8%	22%	18%	21%	19%	4.83
Enroll in a nature-based educational program	204	13%	13%	9%	29%	13%	10%	13%	3.97
Sort my trash to separate non-recyclable material from recyclable material	206	2%	2%	5%	10%	13%	20%	49%	5.82
Compost my biodegradable waste	206	3%	3%	4%	16%	13%	18%	44%	5.62
Use reusable containers (e.g. water bottles)	205	2%	2%	5%	17%	13%	19%	42%	5.61
Build a vegetable garden at your house	206	15%	6%	9%	26%	12%	13%	19%	4.31
Encourage others to protect the natural environment	206	6%	4%	6%	24%	15%	18%	28%	5.03
Encourage others to engage in eco-friendly travel	206	5%	4%	6%	24%	15%	18%	28%	5.03
Select an eco-friendly tour operator in the future	204	8%	6%	7%	23%	16%	16%	24%	4.74
Purchase carbon offsets when traveling by airplane in the future	207	9%	10%	8%	38%	13%	10%	12%	4.15

[Q10] What is your gender?

n= 205

- Male (41%)
- Female (58%)
- I'd rather not say (1%)

[Q11] In what country have you spent the majority of your life?

n= 205

- Korea (99%)
- China
- Japan
- Russia
- United States of America (>1%)
- England
- Australia
- Other: \_\_\_\_\_

[Q12] What is your age (Western Age)?

n= 205

- 18-24 (1997-1991 birth year) (12%)
- 25-34 (1990-1981 birth year) (20%)
- 35-44 (1980- 1971 birth year) (34%)
- 45-54 (1970- 1961 birth year) (20%)
- 55 and older (1960 birth year or earlier) (14%)

[Q13] What category best describes your income in 2014 before taxes?

n= 200

- <\$30,000 (< ₩33,000,000) (25%)
- \$30,001 - \$50,000 (₩33,000,001 ~ ₩55,000,000) (31%)
- \$50,001 - \$100,000 (₩55,000,001 ~ ₩110,000,000) (30%)
- \$100,001 (> ₩110,000,001) (15%)

[Q14] What is your highest level of education?

n= 201

- Grade school (0%)
- Secondary school (2%)
- High school diploma (18%)
- Bachelor's degree (63%)
- Master's degree (12%)
- Doctorate degree or higher (4%)

### Appendix 3: Complete Replication Syntax

Table 1: Ecotourist Profile using Stata V.4

\*Frequencies of all questions

```
tab1 Q1 Q2 Q3 Q4 Q5_1-Q5_10 Q6_1-Q6_11 Q7_1-Q7_9 Q8_1-Q8_7 Q9_1-Q9_14 Q10 Q11  
Q12 Q13 Q14
```

\*Means for all questions

```
foreach var in Q1 Q2 Q3 Q4 Q5_1 Q5_2 Q5_3 Q5_4 Q5_5 Q5_6 Q5_7 Q5_8 Q5_9 Q5_10 Q6_1  
Q6_2 Q6_3 Q6_4 Q6_5 Q6_6 Q6_7 Q6_8 Q6_9 Q6_10 Q6_11 Q7_1 Q7_2 Q7_3 Q7_4 Q7_5 Q7_6  
Q7_7 Q7_8 Q7_9 Q8_1 Q8_2 Q8_3 Q8_4 Q8_5 Q8_6 Q8_7 Q9_1 Q9_2 Q9_3 Q9_4 Q9_5 Q9_6  
Q9_7 Q9_8 Q9_9 Q9_10 Q9_11 Q9_12 Q9_13 Q9_14 Q10 Q11 Q12 Q13 Q14 {  
sum `var' if inrange(`var',0,7)  
}
```

Table 3: Descriptive Statistics for all factors using Stata V.4

\*Frequencies of all factors

```
tab1 PhysEngagement VerbEngagement CogEngagement GuideObservation  
CommObservation TouristObservation Reproduction Reinforcement Intention_EcoKorea  
sum PhysEngagement VerbEngagement CogEngagement GuideObservation  
CommObservation TouristObservation Reproduction Reinforcement Intention_EcoKorea  
set more off
```

Table 5: Pairwise correlations of path model factors using Stata V.4

\* Pairwise Correlations before Path

```
pwcorr PhysEngagement VerbEngagement CogEngagement GuideObservation  
CommObservation TouristObservation Reproduction Reinforcement Intention_EcoKorea
```

\*\*\*\*\* Path analysis: Factor creation

\*FACTOR 1: Engagement. This is comprised of three sub-factors:

\*Physical, Verbal and Cognitive Engagement

\*Sub-factors Engagement together

```
sem (PhysEngagement -> Q5_1 Q5_2 Q5_3)(VerbEngagement -> Q5_4 Q5_5 Q5_6) ///  
(CogEngagement -> Q5_7 Q5_8 Q5_9), nocapslatent latent(PhysEngagement  
VerbEngagement CogEngagement)
```

sem, standardized

estat gof, stats(all)

```
alpha Q5_1 Q5_2 Q5_3 Q5_4 Q5_5 Q5_6 Q5_7 Q5_8 Q5_9, item label asis std
```

```
alpha Q5_1 Q5_2 Q5_3, item label asis std
```

```
alpha Q5_4 Q5_5 Q5_6, item label asis std
```

```
alpha Q5_7 Q5_8 Q5_9, item label asis std
```

```
egen PhysEngagement=rowmean(Q5_1 Q5_2 Q5_3)
```

```
egen VerbEngagement=rowmean(Q5_4 Q5_5 Q5_6)
```

```
egen CogEngagement=rowmean(Q5_7 Q5_8 Q5_9)
```

\*FACTOR 2: Observation. This is comprised of three sub-factors:

\*Guide, Tourist and Community

```

*Sub-factor Observation ran together
sem (GuideObservation -> Q6_1 Q6_2 Q6_3 Q6_4 Q6_5)(CommObservation -> Q6_6 Q6_7
Q6_8) /// (TouristObservation -> Q6_9 Q6_10 Q6_11), nocapslatent
latent(GuideObservation CommObservation TouristObservation)
sem, standardized
estat gof, stats(all)
alpha Q6_1 Q6_2 Q6_3 Q6_4 Q6_5 Q6_6 Q6_7 Q6_8 Q6_9 Q6_10 Q6_11, item label asis std
alpha Q6_1 Q6_2 Q6_3 Q6_4 Q6_5, item label asis std
alpha Q6_6 Q6_7 Q6_8, item label asis std
alpha Q6_9 Q6_10 Q6_11, item label asis std
egen GuideObservation=rowmean(Q6_1 Q6_2 Q6_3 Q6_4 Q6_5)
egen CommObservation=rowmean(Q6_6 Q6_7 Q6_8)
egen TouristObservation=rowmean(Q6_9 Q6_10 Q6_11)

```

```

*FACTOR 3: Reproduction
sem (Reproduction -> Q7_1 Q7_2 Q7_3 Q7_4 Q7_5 Q7_6 Q7_7 Q7_8 Q7_9), nocapslatent
latent(Reproduction) ///
cov(e.Q7_2*e.Q7_3) cov(e.Q7_5*e.Q7_6) cov(e.Q7_8*e.Q7_9)

```

```

sem, standardized
estat gof, stats(all)
alpha Q7_1 Q7_2 Q7_3 Q7_4 Q7_5 Q7_6 Q7_7 Q7_8 Q7_9, item label asis std
egen Reproduction=rowmean(Q7_1 Q7_2 Q7_3 Q7_4 Q7_5 Q7_6 Q7_7 Q7_8 Q7_9)

```

```

*FACTOR 4: Reinforcement
sem (Reinforcement -> Q8_1 Q8_2 Q8_3 Q8_4 Q8_5 Q8_6), nocapslatent
latent(Reinforcement)
sem, standardized
estat gof, stats(all)
alpha Q8_1 Q8_2 Q8_3 Q8_4 Q8_5 Q8_6, item label asis std
egen Reinforcement=rowmean(Q8_1 Q8_2 Q8_3 Q8_4 Q8_5 Q8_6)

```

```

*FACTOR 5: DV: Intention
*Factor Intention_EcoKorea

```

```

sem (Intention_EcoKorea -> Q9_4 Q9_5 Q9_6 Q9_7 Q9_9 Q9_11 Q9_12), ///
nocapslatent latent(Intention_EcoKorea) cov(e.Q9_11*e.Q9_12) cov(e.Q9_4*e.Q9_5)
sem, standardized
estat gof, stats(all)
alpha Q9_4 Q9_5 Q9_6 Q9_7 Q9_9 Q9_11 Q9_12, item label asis std
egen Intention_EcoKorea=rowmean(Q9_4 Q9_5 Q9_6 Q9_7 Q9_9 Q9_11 Q9_12)

```

Figure 3: Ecotourist Observational Learning Model results using Stata V.4

\*\*\*\*\*Final Path Analysis\*\*\*\*\*

```

sem (PhysEngagement -> CommObservation, ) (PhysEngagement -> GuideObservation, )
(PhysEngagement -> TouristObservation, ) (VerbEngagement ->CommObservation, )
(VerbEngagement -> GuideObservation, ) (VerbEngagement -> TouristObservation, )
(CogEngagement -> CommObservation, ) (CogEngagement -> GuideObservation, )
(CogEngagement -> TouristObservation, ) (CommObservation -> Reproduction, )
(GuideObservation -> Reproduction, ) (TouristObservation -> Reproduction, )
(Reproduction -> Reinforcement, ) (Reproduction -> Intention_EcoKorea, ) (Reinforcement
-> Intention_EcoKorea, ), method(mlmv) cov( PhysEngagement*VerbEngagement
PhysEngagement*CogEngagement VerbEngagement*CogEngagement
e.GuideObservation*e.CommObservation
e.GuideObservation*e.TouristObservation.TouristObservation*e.CommObservation)
nocapslatent
sem, standardized
estat gof, stats(all)

```

Table 4: Summary of direct and total effects for factors in the final path model using Stata V.4

```

estat teffects, standardized
estat eqgof

```

## Appendix 4: IRB Human Subjects Approval Documentation

4/6/2015 Print: HUM00099486 - Observational learning in ecotourism: an investigation into ecotourist's environmentally responsible behavior in South Korea.



Date: 4/6/2015, 3:05:15 PM

Print Close

### 01. General Study Information

All questions marked with a red asterisk (\*) require a response. Questions without a red asterisk may or may not require a response, depending on those questions' applicability to this study.

#### 1.1\* Study Title:

Observational learning in ecotourism: an investigation into ecotourist's environmentally responsible behavior in South Korea.

#### 1.1.1 Full Study Title:

Observational learning in ecotourism: an investigation into ecotourist's environmentally responsible behavior in South Korea.

#### 1.1.2 If there are other U-M studies related to this project, enter the eResearch ID number (HUM#) or IRBMED Legacy study number. Examples of related projects include, but are not limited to:

- Projects funded under the same grant
- IRBMED Legacy study being migrated into eResearch
- Previously approved Umbrella applications (such as Center Grants or approvals for release of funding)
- Previously approved projects for which this is a follow up study

#### 1.2\* Principal Investigator:

Benjamin Morse

**Note:** If the user is not in the system, you may [Create A New User Account...](#)

#### 1.3 Study Team Members:

Study Team Member	Study Team Role	Appointment Dept	Appointment Selection Complete?	Student	Friend Account	COI Review Required	Edit Rights	Accepted Role?	PEERS Human Subjects?
<a href="#">Benjamin Morse</a>	PI		No	yes	No	no	yes	N/A	yes
<a href="#">Rebecca Hardin</a>	Faculty Advisor	Sch of Nat Resources & Environ	Yes	no	No	no	yes	Yes	yes
<a href="#">Michaela Zint</a>	Faculty Advisor	Sch of Nat Resources & Environ	Yes	no	No	no	yes	Yes	yes

#### 1.8\* Project Summary:

My goal is to support ecotourism's contribution to environmental sustainability by conducting research that will advance ecotourism theory and improve ecotourism practice. This proposed study is my first step towards this goal and my lifelong passion. I plan to apply Social Learning

**1-2.6.1\* List the peer-review organization(s).**

Peer Review Organization

Faculty advisor, thesis committee, other student review

**1-2.7\* Is this a clinical trial?**

Yes  No

**01-7. Student Research Information**

**1-7.1\* This application is being submitted by a:**

Select all that apply:

Student for a dissertation/thesis

**1-7.2 Indicate course number here:**

**Study Team Detail**

**1.4 Team Member:**

Benjamin Morse

Preferred email: babmorse@umich.edu

Business phone

Business address: 48109

**1.5 Function with respect to project:**

PI

**1.6 Allow this person to EDIT the application, including any supporting documents/stipulations requested during the review process:**

yes

**1.7 Include this person on all correspondences regarding this application: (Note: This will include all committee correspondence, decision outcomes, renewal notices, and adverse event submissions.)**

**Credentials: Required for PI, Co-Is and Faculty Advisors**

**Upload or update your CV, resume, or biographical sketch.**

Name	Version
<a href="#">Benjamin_Morse_Resume</a>   <a href="#">History</a>	0.01

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**Conflict of Interest Detail: Required for all roles except Administrative Staff**

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---

**Current Disclosure Status in M-Inform:** *This study team member has not yet disclosed in M-Inform.*

**D1 Do you have an outside interest or relationship with a non-UM entity that relates to this research in one of the following ways:**

- The entity is sponsoring this research
- The entity's products are used in this research
- The entity has licensed your invention (e.g. device, compound, drug, software, survey, evaluation or other instrument) being used in this research
- Part of the work on this project will be subcontracted to the outside entity
- Other relationship not listed above

no

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---

**D2 If "Yes" to the question above, name the entity or entities and provide a brief description of the relationship(s).**

---

---

**Study Team Detail**

**1.4 Team Member:**

Rebecca Hardin

Preferred email: rdhardin@umich.edu

Business phone 734-647-5947

Business address: Sch of Nat Res & Eviron 1544 Dana 48109-1115

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---

**1.5 Function with respect to project:**

Faculty Advisor

---

---

**1.6 Allow this person to EDIT the application, including any supporting documents/stipulations requested during the review process:**

yes

---

---

**1.7 Include this person on all correspondences regarding this application: (Note: This will include all committee correspondence, decision outcomes, renewal notices, and adverse event**

---

---

### **Credentials: Required for PI, Co-Is and Faculty Advisors**

---

---

#### **Upload or update your CV, resume, or biographical sketch.**

Name	Version
<a href="#">HardinCV2011.doc   History</a>	0.10

---

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---

### **Conflict of Interest Detail: Required for all roles except Administrative Staff**

---

---

**Current Disclosure Status in M-Inform:** *This study team member has not yet disclosed in M-Inform.*

#### **D1 Do you have an outside interest or relationship with a non-UM entity that relates to this research in one of the following ways:**

- The entity is sponsoring this research
- The entity's products are used in this research
- The entity has licensed your invention (e.g. device, compound, drug, software, survey, evaluation or other instrument) being used in this research
- Part of the work on this project will be subcontracted to the outside entity
- Other relationship not listed above

no

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---

#### **D2 If "Yes" to the question above, name the entity or entities and provide a brief description of the relationship(s).**

---

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## **Study Team Detail**

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### **1.4 Team Member:**

Michaela Zint

Preferred email: [zintmich@umich.edu](mailto:zintmich@umich.edu)

Business phone 734-763-6961

Business address: Sch Of Natural Res & Env 2045 Dana 48109-1115

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### **1.5 Function with respect to project:**

Faculty Advisor

---

---

**1.6 Allow this person to EDIT the application, including any supporting documents/stipulations requested during the review process:**

yes

---

---

**1.7 Include this person on all correspondences regarding this application: (Note: This will include all committee correspondence, decision outcomes, renewal notices, and adverse event submissions.)**

---

---

**Credentials: Required for PI, Co-Is and Faculty Advisors**

---

---

**Upload or update your CV, resume, or biographical sketch.**

Name	Version
<a href="#">Zint CV   History</a>	0.02

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---

**Conflict of Interest Detail: Required for all roles except Administrative Staff**

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---

**Current Disclosure Status in M-Inform:** *This study team member has not yet disclosed in M-Inform.*

**D1 Do you have an outside interest or relationship with a non-UM entity that relates to this research in one of the following ways:**

- The entity is sponsoring this research
- The entity's products are used in this research
- The entity has licensed your invention (e.g. device, compound, drug, software, survey, evaluation or other instrument) being used in this research
- Part of the work on this project will be subcontracted to the outside entity
- Other relationship not listed above

no

---

---

**D2 If "Yes" to the question above, name the entity or entities and provide a brief description of the relationship(s).**

---

---

## 02. Sponsor/Support Information

The following sections request details about the current or pending sponsorship/support of this study. Consider all of the choices below and complete the appropriate sections.

\* Note: At least one of the following sections must be answered. Multiple sponsors or sources of support must be added one at a time.

---

### 2.1 External Sponsor(s)/Support:

Type	Name	Other Direct Sponsor/Support	Support Type	Has PAF?
There are no items to display				

---

### 2.5 Internal UM Sponsor(s)/Support: [Including department or PI discretionary funding]

Type	Department Sponsor	Support Type
<a href="#">View</a> UM Institutional - Department, Pilot Grant Program, or other Institutional funding source	Rackham Development	Financial

---

### 2.8 Check here if the proposed study does not require external or internal sponsorship or support:

---

## Internal Sponsor Detail

---

### 2.6\* Department Sponsor/Support:

Rackham Development

---

#### 2.6.1\* Sponsor Type:

UM Institutional - Department, Pilot Grant Program, or other Institutional funding source

If other, please specify:

---

#### 2.6.2\* Support Type:

Financial

---

#### 2.6.3\* Is the support confirmed?

Yes  No

---

### 2.7 Upload Supporting Documentation

Name	Version
There are no items to display	

---

## 03. UM Study Functions

---

### 3.1\* Indicate all functions that will be performed at University of Michigan locations.

Select all that apply:

Primary or secondary analysis (data/specimen)

If other, please specify.

---

## 5-3. Research Design - Exempt Project

Completion of this section is required based on the response provided to question 1-1.1

---

### 5-3.1 Upload scientific protocol if one is available.

Name	Version
<a href="#">IRB Proposal</a>   <a href="#">History</a>	0.01

---

### 5-3.2\* Describe the objective and specific aims of the project. *If included in the attached protocol, please indicate the section.*

Introduction

---

### 5-3.3\* Describe the scientific design of the project. *If included in the attached protocol, please indicate the section.*

Methods and Design

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### 5-3.4\* Describe the subject population for the project.

The subject population will consist of adult (over the age of 18) ecotourists from a multitude of countries that could include, but are not limited to: Korea, Taiwan, China, Japan, Australia, New Zealand, Russia, England, Canada and the United States.

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### 5-3.5\* Will the study involve recruitment and/or participation of subjects in order to produce new data (e.g., surveys, interaction, intervention)?

Yes  No

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### 5-3.6\* How will the study team interact with human subjects?

With the permission of local (Korean) ecotourism operations, Benjamin will work closely with his Korean counterparts, research assistants and tour operations to approach ecotourists as they conclude their participation in an ecotourism experience on Jeju Island. The optional questionnaire will be administered via Qualtrics, an online survey distribution service. Ecotourists will either access the survey on their own personal device (e.g. smart phone, tablet or computer) or we will provide them with a tablet or computer to complete the questionnaire. If the ecotourist decides at any point to stop taking the questionnaire, the research assistant will thank them for their time.

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### 5-3.7\* How will the study team be recruiting subjects?

The study team and/or the tour operator will request that ecotourists complete the optional questionnaire using face-to-face interactions immediately upon completion of their ecotourism experience. The questionnaire will be postulated as an optional activity to engage in after the tour. Additionally, the questionnaire will be administered via Qualtrics in order to protect and maintain privacy for each participant.

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### 5-3.8\* Describe the setting for the research.

The research will take place on Jeju Island during June, July and August of 2015. We are partnering with 2-3 ecotourism operations on the island that engage in ecotourism activities such as hiking and learning about nature. The questionnaire and the semi-structured interviews will be conducted in accordance with local traditions and customs as to not disturb both local community members and ecotourists themselves. This research has been designed through a participatory approach facilitated by several Korean international partners (Dr. Mihee Kang and Catherine

Germier-Hamel.)

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**5-3.9\* Indicate which of the following established subject pools, if any, will be used for recruitment.**

Select all that apply:

N/A

**Provide Related UM IRB Project Number or Subject Pool Description:**

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**5-3.10\* Indicate which methods will be used for recruitment?**

Check all that apply:

Face-to-face contact (e.g. during a health care visit or an interview at a home address, etc.)

**If Other, please indicate below:**

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**5-3.11\* Risk Level**

Click "Add" to enter the risk level associated with this study.

Level Of Risk

View [No more than minimal risk](#)

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**5-3.12\* Will the research involve the access, collection, use, maintenance, or disclosure of University of Michigan protected health information (PHI)? PHI is:**

- information about a subjects past, present, or future physical or mental health, the provision of healthcare to a subject, or payment for the provision of healthcare to a subject; AND
- that is maintained by a University of Michigan school, department, division, or other unit that is part of the University's HIPAA-covered component (e.g. healthcare provider, healthcare plan, or healthcare clearinghouse).

Yes  No

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**5-3.13\* Will subjects receive payment or other incentives for their participation in the study?**

Yes  No

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**5-3.11.1 \* What is the level of risk of harm to the subjects resulting from this research?**

No more than minimal risk

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## 12. Exemption Category

Completion of this section is required based on the response provided to question 1-1.1.

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**12.1\* Which of the following exemption criteria applies to the study?**

**EXEMPTION #2 of the 45 CFR 46.101.(b):**

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement),

survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

## 12-2. Exemption Category 2/3

Completion of this section is required based on the response provided to question 12.1.

**12-2.1\* Does the research involve children as subjects (including subject pool students under age 18)?**

Yes  No

**12-2.1.2\* Does the research involve only: educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or the observation of public behavior?**

Yes  No

**12-2.2\* Upload tests, surveys and/or interview questions.**

Name	Version
<a href="#">English Questionnaire</a>   <a href="#">History</a>	0.01
<a href="#">Korean Questionnaire</a>   <a href="#">History</a>	0.01
<a href="#">Semi-Structured Interview Questions</a>   <a href="#">History</a>	0.01

**12-2.3\* Will the research generate information that, if revealed, might place the subjects at risk of personal safety, criminal or civil liability, or damage to their financial standing, employability, or reputation?**

Yes  No

## 45. End of Application

The form was successfully submitted. Click 'Exit' or 'Finish' to leave the form.

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