

## **ABSTRACT**

MATISOFF, CRAIG SAMUEL. Environmental Attitudes, Intentions, and Behaviors: The Effects of an Environmentally Focused Study-Abroad Program. (Under the direction of Dr. Roger L. Moore).

Study-abroad programs can provide unique opportunities for environmental education. However, little is known about how environmentally focused study-abroad programs influence environmental attitudes and behaviors. The purpose of this exploratory study was to examine the immediate and potential lasting effects of an environmentally focused study-abroad program on individual environmental attitudes, intentions, and behaviors. Participants in a university environmentally focused study-abroad program were examined using a mixed-methods research design. Quantitative and qualitative data were collected in the form of pre-test/post-test questionnaires and semi-structured follow-up interviews 5-6 months later. The quantitative findings indicated the program led to significant immediate and positive changes in environmental attitude and intention. Major themes emerging from the qualitative data included study abroad as a positive and transformative growth experience; enduring changes in environmental attitudes, intentions, and behaviors; and positive effects of the experiential field-based model for study abroad. Results from this study are intended to aid study-abroad program administrators in understanding program effects and improving curricula. This research also aimed to provide insights for researchers and practitioners into the potential relationships between program participation and environmental attitudes, intentions, and behaviors in the context of the Theory of Reasoned Action.

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Environmental Attitudes, Intentions, and Behaviors: The Effects of an  
Environmentally Focused Study-Abroad Program

by  
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A thesis submitted to the Graduate Faculty of  
North Carolina State University  
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**DEDICATION**

For Amy

Words cannot express what you mean to me.

## **BIOGRAPHY**

Craig was born and raised in East Lansing, Michigan. From a young age, he was interested in science and the outdoors. He attributes his love of travel and new experiences to his parents and adventurous older sister. While attending Michigan State University, he had the incredible opportunity to study abroad in Argentina and Antarctica with a focus on Antarctic system science. Originally planning to attend medical school, Craig shifted his focus to the environment after the completion of his study-abroad program.

After graduating from Michigan State University in 2009 with a B.S. in Psychology, Craig spent time as an Executive Division Intern with the Michigan Department of Environmental Quality. His duties included working with environmental educators across the state as well as reviewing environmental education and natural resource policy. This experience further crystalized his desire to pursue a career related to the environment and ultimately led him to North Carolina State University to pursue his Master of Science in Natural Resources. After receiving his degree, Craig hopes to continue to contribute to environmental education and natural resource management by connecting individuals to scientific information and the world around them.

## ACKNOWLEDGMENTS

Many individuals have contributed in so many ways as I have pursued my Master of Science in Natural Resources at North Carolina State University. I would not have reached this point without each of them. First, I would like to thank my advisor and friend, Dr. Roger L. Moore. Without your guidance and constant support throughout the last two years, I would not be the student or researcher I am today. With Annette, you allowed me to join you on an incredible journey to conduct my research and gain invaluable field experience. For your words of encouragement throughout this process and beyond, I will always be grateful. I would also like to thank Drs. Dorothy Anderson and Karla Henderson for their direction, input, and suggestions as I have conducted this research. Your advice has proven vital to my success thus far and I truly appreciate all of the support (institutional and otherwise) I have received from the Department of Parks, Recreation and Tourism Management at NCSU. I also owe a debt of gratitude to the 27 students who participated in this research during and after their study-abroad experience in Australia. While our trip was fantastic and I appreciate you having me as a teaching assistant, your willing participation in this study was tremendous. I truly appreciate the time you took to share your experiences with me. Thank you.

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## **CHAPTER 1**

### **Introduction**

Research suggests that students from the United States (U.S.) are commonly participating in short-term study-abroad programs (i.e., programs less than one academic semester or quarter in length) in a wide variety of disciplines (Chieffo & Griffiths, 2009). According to the Institute of International Education (2011a) and the Open Doors Report on International Educational Exchange, 37.8% of U.S. student study-abroad participation in 2009/2010 occurred during the summer term, whereas 47.7% occurred during one semester or less during the academic year. While the majority of U.S. students who study abroad are participating in short-term programs, university study-abroad programs of any length can provide an opportunity for environmental education. Occurring in a culture and location often much different than the student's home country, instruction and hands-on activities can take place within the natural environment of the host nation(s). Through environmentally focused study-abroad programs, a form of environmental education, students can be exposed to a curriculum highlighting environmental issues and topics in an unfamiliar and often non-traditional classroom setting. These distinct circumstances and settings offer educators additional opportunities to positively affect their students and meet environmental education goals.

The stated or implied goals of environmentally focused study-abroad programs are often consistent with those of traditional environmental education programs. These goals include raising awareness, increasing environmental knowledge, and developing responsible citizens with respect to environmental issues (Stapp et al., 1969). Ultimately, environmental

education should provide individuals with the tools needed to make responsible decisions related to the environment. Although environmental education programs can be effective in raising awareness and knowledge levels (Armstrong & Impara, 1991; Bradley, Waliczek, & Zajicek, 1999), there is likely room for program improvement in helping students make thoughtful decisions upon their return from a study-abroad experience. It is important to note that the development of pro-environmental attitudes and even facilitating pro-environmental behaviors may not be explicitly stated in the purpose statement or written goals of an environmentally focused program. However, the development of an environmentally responsible citizen (i.e., someone who is aware of and willing to take action regarding environmental issues) hinges on formation of positive environmental attitudes and exhibition of pro-environmental behaviors. If the goals of a particular environmental education program include increasing environmentally responsible behavior and preparing students to address the environmental issues facing society, the literature suggests that programs should focus more on influencing environmental attitudes and intentions than simply raising awareness and increasing knowledge (Pooley & O'Connor, 2000). Furthermore, in the face of global environmental issues such as climate change, resource scarcity, and population growth, developing a deeper understanding of the impacts of different types of environmental education such as the effects of an environmentally focused study-abroad program on individual participants could be valuable.

Motivated in part by personal experience in an environmentally focused study-abroad program, I became interested in the effects participation in a study-abroad program might have on environmental attitudes, intentions, and behaviors. An incomplete understanding of

factors influencing how (if at all) such programs affect environmental attitudes and behaviors may limit program effectiveness and achievement of environmental education goals. Further insight into program outcomes can be accomplished through an investigation of attitudes and intentions immediately after participation as well as how environmental attitudes, intentions, and behaviors change over time.

### **Research Questions**

My exploratory research examined the influence of one short-term environmentally focused study-abroad program and the effects it had on the environmental attitudes, intentions, and behaviors of individual participants. The following research questions were addressed:

1. What are the immediate effects of participation in an environmentally focused study-abroad program on environmental attitudes and intentions?
2. How (if at all) do environmental attitudes, intentions, and behaviors change over time after participation in an environmentally focused study-abroad program?

### **Conceptual Framework**

The conceptual framework for this exploratory research was informed by the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1972, 1977; Fishbein & Ajzen, 2010).

Drawing from social psychology, the TRA provides a map of how and why behaviors are exhibited by individuals. According to the theory, attitudes, social norms, and perceived behavioral control lead to the development of behavioral intentions. Attitudes (defined in this

study as thoughts and feelings toward a specific object or entity) are considered to be the most significant marker of behavioral intentions (i.e., one's willingness to perform a specific behavior) and intentions the best indicator of exhibited behavior. The reasoned action approach forms the basis of the conceptual model in Figure 1, set within a study-abroad context. First, program participants come into a study-abroad experience with a specific set of individual characteristics such as their age, gender, academic standing, or major. These characteristics might influence their motivations or intent to study abroad and participate in the environmentally focused program. The next phase of the conceptual model after program participation involves potential outcomes and highlights the hypothesized relationships among them. Within the context of an environmentally focused study-abroad program, two potential effects of participation are increased awareness and increased knowledge of environmental topics and issues. The third potential effect is a change in environmental attitudes. Following the reasoned action approach, this change in attitudes leads to changes in intention and potentially pro-environmental behavior.

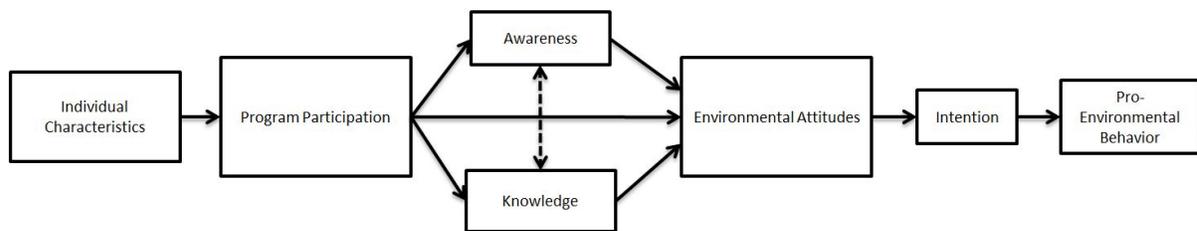


Figure 1. Modified Reasoned Action Approach within an Environmentally Focused Study-Abroad Program Context

## **Methodological Rationale**

To address the two research questions and examine the potential effects of participation in an environmentally focused study-abroad program as highlighted in Figure 1, I made a number of methodological choices. While previous research examining study-abroad programs has employed primarily quantitative methodologies, my exploratory study aimed to provide deeper insight into the potential effects of one environmentally focused program. I collected baseline measurements of environmental attitudes and intentions through a quantitative pre-test and then compared to measurements at the end of the program (i.e., post-test). To examine the potential lasting effects of the program on individual participants, a task that has not been rigorously accomplished or reported in the existing empirical research, I used qualitative data collected through semi-structured interviews with program participants. Employing this inductive data collection process in addition to the quantitative measurements enabled me to develop interview questions and focus the follow-up interviews on specific topics as appropriate after the program was complete. The flexibility provided by the qualitative approach allowed me to discuss or redirect the interviewee to topics of interest during the discussion. I was able to modify the process and specific questions to enhance the effectiveness of the data collection as concepts and themes emerged during the initial phases of the qualitative analysis. Adapting the data collection process proved essential since an assessment of this type had not been reported prior to my study. Mixed-methods were employed in this study to provide a deeper understanding of the effects of study-abroad participation beyond potential changes that could be measured at the end of the program.

## CHAPTER 2

### Literature Review

This literature review is focused on four areas: social psychology, environmental education, study abroad, and mixed-methods research. Examining literature in social psychology helped deepen understanding of the relationships between attitudes and behaviors. The literature review then focused on general environmental education and program outcomes including increased levels of knowledge and awareness as well as changes in environmental attitudes and behaviors. An examination of literature related to these outcomes, both expected and unexpected, helped highlight the role environmental education can play in attitude formation and behavior exhibition. Exploring study abroad and international education research provided insight into what aspects of study-abroad experiences have been examined and what information was lacking. As my exploratory study examined a particular environmentally focused study-abroad program and its participants, developing an understanding of past and current study-abroad research was essential. Finally, previous studies that employed a mixed-methods research design were investigated to inform the approach undertaken in this study.

### Social Psychology

Attitudes and behaviors have been examined within social sciences and particularly in the field of social psychology. The conceptual basis for my research was the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1972, 1977; Fishbein & Ajzen, 2010). The reasoned action approach is a widely accepted and commonly used social psychological

framework describing the attitude/behavior relationship. Fishbein and Ajzen (1972, 1977, 2010) used a social psychology perspective when developing the Theory of Reasoned Action (TRA). Initially, they hypothesized an individual's intention to perform a behavior was comprised of their attitude (i.e., positive or negative evaluation of performing an action) toward the behavior and what others thought of the behavior (termed "normative beliefs"). According to the early forms of the TRA, an individual's attitude toward a specific behavior was "proposed to be a function of the act's perceived consequences and of their values to the person" (1972, p.1). Upon examining the validity of the TRA in situational examples presented to study participants, Fishbein and Ajzen found that attitude had significant effects on behavioral intention, whereas normative beliefs did not significantly affect intent (1972). In further iterations, Fishbein and Ajzen added another variable to the behavior equation, perceived behavioral control. Perceived behavioral control, or self-efficacy, refers to whether individuals feel they can or cannot successfully carry out a specific behavior, based on what Fishbein and Ajzen called "control beliefs" (2010, p. 21). These findings help affirm the importance of further understanding attitudes in relation to intentions and subsequent behaviors in future research incorporating the reasoned action model.

In its current form, the TRA posits that an individual's attitude, perceived social norms, and perceived behavioral control lead to a behavioral intention, "or readiness to perform the behavior" (Fishbein & Ajzen, 2010, p. 21). The stronger the intention, the more likely the individual is to carry out the specific behavior. With a focus on attitudes and their influence on levels of intent and subsequent behaviors, the TRA provides a foundation from which to analyze the relationships between attitude and intent as precursors to behavior.

Incorporating this social psychological framework provides important background information regarding the selection of modes of measurement, analysis, and interpretation. For this current study, the TRA served as the framework for how attitudes could contribute to the formation of intentions and, ultimately, whether behaviors are exhibited after participation in an environmentally focused study-abroad program.

### **Environmental Education**

Previous research focused on environmental education was also examined to inform my exploratory study. Hungerford and Volk (1990) described the purpose of education systems in shaping individual behavior. They proposed that education efforts are directed at developing responsible citizens who will act a certain way (i.e., exhibit desired behaviors). While the behavioral outcomes of education systems may not be stated explicitly, the expectation of positive outcomes typically does exist. Environmental education programs are often designed to produce particular intended outcomes such as raising awareness of environmental issues or increasing environmental knowledge. However, these outcomes do not necessarily result in changes in environmentally responsible or pro-environmental behaviors.

Hungerford and Volk (1990) stated that environmental education programs and practices directed toward behavior change outcomes must move past simply raising awareness and increasing knowledge. A meta-analysis of research on responsible environmental behavior found several additional factors that contribute to positive behavior outcomes (Hines, Hungerford, & Tomera, 1987). This meta-analysis yielded a proposed

model of responsible environmental behavior, including variables such as attitude, personal responsibility, knowledge of issues and action strategies, intention to act, and situational factors leading to the potential outcome of responsible environmental behavior. Further, Vaske and Kobrin, (2001) noted that increasing individuals' levels of awareness is not enough to generate positive environmental behavior. Pooley and O'Connor (2000) suggested focusing on the foundations of attitude development when designing and administering environmental education programs because "identifying the determinants of environmental behavior can better inform environmental education programs" (p. 713). The results of their study suggested that both cognition (i.e., knowledge and beliefs) and affect (i.e., emotion) contribute to the development of environmental attitudes. Additionally, they recommended that environmental educators interested in changing behavior focus on emotions and beliefs, rather than simply providing new knowledge, to achieve intended outcomes. While it may not be the responsibility of environmental educators to change attitudes and behaviors, it is clear that an important aim of much of environmental education is to motivate students to ultimately "take responsible action" (Bogner, 1998, p. 27). This responsibility can be accomplished through providing new knowledge, raising awareness, developing responsible citizens with respect to environmental issues, and ultimately providing participants with the tools they need to make complex decisions.

Newhouse (1990) discussed potential consequences of attitude and behavior research for the promotion of environmental conservation. She noted the importance of the attitudinal influence on behavior, while similarly defining attitude as a "positive or negative feeling about some person, object, or issue" (p. 26). Through a discussion of techniques to influence

attitudes and behaviors, Newhouse focused attention on environmental education.

Concluding that a focus on attitudes is an essential aspect of behavior modification, she suggested environmental education should provide individuals with the tools necessary to make decisions about dynamic issues. Finally, after examining attitude-behavior research related to conservation, Newhouse cautioned that although most researchers believe attitudes influence behavior, careful examination is required about how attitudes and behaviors are operationalized and measured.

Other research in environmental education has focused on the impacts of environmental education programs on the participants. Shepard and Speelman (1986), for example, examined the impact of participation in an outdoor environmental education program on participants' attitudes toward the environment. Employing a pre-test/post-test survey methodology, their study found no significant difference between experimental and control groups in overall environmental attitude after participation in the educational program. However, they did find that program length and some socio-demographic variables (e.g., age, previous camp experience, area of residence) were associated with changes in individuals' attitudes. Concluding that first-time participants had the greatest potential to develop positive attitudes, Shepard and Speelman suggested that further research should address the relationship between these variables and attitude change. Also incorporating pre-test/post-test examination of environmental attitudes, Leeming, Porter, Dwyer, Cobern, and Oliver (1997) assessed outcomes of an environmental education program compared to control groups of non-participants. Focusing on the environmental attitudes of children, they found that the program had a significant positive effect on participant environmental

attitudes. Bogner (1998) examined the influence of short-term outdoor ecology education on long-term measures of environmental perspective. The programs evaluated were 1-day and 5-day educational courses that had the same learning objectives, included the same teaching methods, and covered the same topics. Both lengths of programs influenced attitudes as measured in pre/post surveys, however only the 5-day program significantly influenced reported environmental behaviors.

As the goals of environmental education often include increasing knowledge about the environment, previous research on these education programs has examined the relationship between knowledge and attitude. Armstrong and Impara (1991) used a pre-test/post-test design and found partial support for a positive relationship between exposure to the educational programs and knowledge (i.e., one out of four educational treatments had a positive effect on participant knowledge). Armstrong and Impara noted that participants generally demonstrated positive attitudes after the environmental materials were presented in the classroom. In another study investigating the relationship between knowledge and attitude, Bradley, Waliczek, and Zajicek (1999) found that high school students exhibited significant differences in both knowledge gained and attitudes after participation in a 10-day environmental science course. Student knowledge scores increased after the course and were significantly correlated with post-test attitude change. Additionally, prior to application of the experimental treatment in their study (i.e., during the pre-test), “students having more knowledge about the environment tended to have more favorable environmental attitudes” (p. 20).

Field-based courses focused on experiential education have also been highlighted as having positive effects on participants. Stating that experiential education and field-based learning environments can improve education systems, Wright (2000) argued that many traditional teaching models do not result in a complete appreciation or understanding of the environment and its components. Specifically, if students do not develop an emotional connection to the issues they are learning about, they will not be inclined to do anything about them. Further, Wright notes that incorporating experiential learning can lead to numerous benefits for instructors, the community, as well as the students directly engaging in the learning process, such as the ability to transfer what they learn to different environments or situations. Alagona and Simon (2010) discussed their experiences administering a field-based environmental science course and findings from field notes, student surveys, and interactions with other instructors. Overall, they found that three aspects of the field course, “the field immersion experience, the small-group dynamic, and the curriculum design” (p. 203) contributed to increased student engagement and interest. Stern, Powell, and Ardoin (2010) explored the effects of residential environmental education programs incorporating field-based learning on urban and non-urban middle school students. Focused on outcomes related to character development, attitudes towards school, and environmental responsibility, their study found significant increases in all three metrics. Additionally, program participants in their study reported high levels of satisfaction with their experiential education experiences.

### **Study Abroad and International Education**

The next research area reviewed focused on study abroad and international education. As Katula and Threnhauser (1999) noted, study-abroad programs are a form of experiential education that can be integrated within the undergraduate curriculum. Study-abroad programs incorporate a variety of learning activities, last different durations, and focus on diverse subjects. Topics and learning activities often depend on the appropriateness or suitability of the learning activity to the topic under examination (Duke, 2000). Study-abroad topic areas include, but are not limited to, language, business, fine arts, culture, and the environment. Learning activities may include, but are not limited to, lectures, quizzes, tests, site visits, journaling, research projects, and reflections. Through university-led study-abroad programs, students have a variety of options to choose from if they are interested in pursuing education abroad.

Previous study-abroad research has examined factors associated with and students' motivations for program participation (Doyle et al., 2010; Goldstein & Kim, 2006; Nyaupane, Paris, & Teye, 2011; Salisbury, Paulsen, & Pascarella, 2010a; Salisbury, Paulsen, & Pascarella, 2010b; Salisbury, Umbach, Paulsen, & Pascarella, 2009; Stroud, 2010). Nyaupane et al. (2011) assessed motivations, intentions, and attitudes toward destinations of students who had recently studied abroad. Results suggested that social ties and academic motivations were important as the students chose a destination for study abroad and ultimately contributed to attitude formation. Goldstein and Kim (2006) followed both study-abroad participants (at least semester or year-long program participants) and non-participants in a longitudinal study at a small liberal arts university. By the end of their senior years, 61

individuals had participated in study abroad as defined by the researchers while 105 did not participate. No differences were found between the two groups “in terms of academic major, concern about graduating on time, or expectations about how study abroad would be viewed by future employers” (p. 517). Expectations of study abroad and intercultural variables were more important in determining who studied abroad than other factors such as academics or career plans. Doyle et al. (2010) examined students from New Zealand. Focusing on exchange programs (i.e., long term international student exchange programs, typically a semester or longer in length), the authors identified factors associated with study-abroad program participation through student surveys, institution case studies, and stakeholder interviews. The results indicated the most important benefit from participation in a study-abroad program was exposure to a new culture or language. The authors also explored participant-perceived obstacles to study-abroad participation and found the financial cost of the program to be most important. Additional obstacles included, but were not limited to, studying in a different language and the desire to finish a degree on time (i.e., students were concerned that participation in a study-abroad program would increase the length of their degree program), whereas time to degree completion was not a concern of program participants in previous research (Goldstein & Kim, 2006).

In another study exploring individual participation, Stroud (2010) investigated the intent of students to engage in study-abroad programs. Stroud examined a sample of undergraduates from the University of Massachusetts-Amherst and found that students interested in learning about other countries and cultures were more likely to study abroad than those who indicated this knowledge was not important. Intent to study abroad also was

stronger for students whose permanent home was more than 100 miles from the university. However, students with an interest in future graduate education (i.e., pursuing a master's degree) were less likely to intend to study abroad. Stroud also found that enrollment in some academic majors was negatively associated with intent to study abroad. For example, students whose field of study included engineering, architecture, medicine, or nursing were less likely to intend to study abroad. Stroud suggested that the rigid academic requirements and sequenced course structures of these and other professional majors could result in students not considering study abroad during undergraduate studies.

It is also important to note that study-abroad programs vary in length from the short-term (i.e., 1-week to 4-weeks), to semester, or year-long experiences. While a short-term study-abroad program involves less time in-country, Lewis and Niesenbaum (2005) suggested that the short-term program model is a good alternative for many students and may in fact lead to longer-term study-abroad participation in the future. Following their assessment of short-term study-abroad programs, Lewis and Niesenbaum found short-term programs can help “students overcome the psychological barriers to study abroad” (p. 258). Requiring less time commitment on the part of the student, short-term programs also offer opportunities for students whose academic programs do not allow the flexibility to travel away from their home campus for longer periods of time. Overall, developing an understanding of why and how students choose to participate in study-abroad programs can provide insight when examining and comparing program outcomes.

Further research on the effects of study-abroad programs could provide a deeper understanding of the influence these programs have on the individual participants. Donnelly-

Smith (2009) noted that little formal research had been conducted regarding study-abroad program outcomes or how to best develop and implement short-term programs. Previously, topics such as intercultural competence and sensitivity (Behrnd & Porzelt, 2011; Carlson & Widaman, 1988; Clarke, Flaherty, Wright, & McMillen, 2009; Pedersen, 2010; Williams, 2005; Poole & Davis, 2006), career development (Norris & Gillespie, 2008), knowledge and awareness (Carley, Stuart, & Dailey, 2011; Lumkes Jr., Hallett, & Vallade, 2012; Smith, 2009), and fostering global citizenship (Lewin, 2009; Tarrant, 2010; Tarrant, Stoner, Borrie, Kyle, Moore, & Moore, 2011) have dominated the limited outcome-oriented empirical research on study-abroad programs. Clarke et al. (2009) found that a semester abroad developed students into “more globally minded individuals” (p. 176) and study-abroad participants were more sensitive to other cultures compared to an on-campus control group. Additionally, Clarke et al. found that students who participated in study abroad were significantly more open to diversity than students in the control group.

To examine the role of study abroad in fostering global citizenship, Tarrant (2010) developed a conceptual framework drawing from social-psychological theories such as Value-Belief-Norm (VBN) Theory (Stern, Dietz, Abel, Guagnano, & Kalof, 1999) and the Theory of Reasoned Action (Fishbein and Ajzen, 1972, 1977, 2010). Tarrant stated the framework could help faculty who develop and administer study-abroad programs evaluate program-specific outcomes such as increases in global citizenship. Tarrant also proposed that important next steps to empirically validating his adapted VBN model and the educational value of study-abroad programs include quantitative and qualitative assessments of the experience and its lasting impacts.

Taken together, study-abroad programs are diverse and offer an array of educational opportunities. However, study-abroad programs focused on the environment have not been examined in great detail. McLeod and Wainwright (2009) called for increased diligence in the examination of study-abroad programs, noting that “questions regarding how study-abroad programs affect students’ personality, social adjustment, and academic performance need to be more rigorously tested so that program decisions will no longer be based merely on anecdotal evidence” (p. 67). They also suggested that quality research focused on study-abroad outcomes could provide useful information to administrators and result in increased institutional support. More specifically, examining if and how environmentally focused programs influence participant knowledge, awareness of the environment, and whether or not they lead to the development of environmentally responsible citizens could be helpful to justify program resources in times of tightening university budgets.

### **Mixed-Methods**

The previous literature suggests more empirical research is necessary to address the current knowledge gap regarding the effects of study-abroad programs (Donnelly-Smith, 2009; McLeod & Wainwright, 2009; Tarrant, 2010). Tarrant (2010) noted both quantitative and qualitative assessment methods would be useful to gain insights into the impact of study-abroad programs on individuals. Employing both quantitative and qualitative data collection in the same study, or mixing methods, is an approach growing in popularity in the social sciences.

To address the first research question in my study regarding the potential immediate effects of study-abroad participation, quantitative assessment was used. Part of a larger research effort, the quantitative instruments used in my study were based on two instruments developed by Dr. Michael Tarrant at the University of Georgia. As my research focused on environmental attitudes, intentions, and behaviors, three measurement scales were incorporated in a quantitative instrument administered during a pre-test and post-test. To examine attitudes toward the environment, the New Ecological Paradigm Scale (Dunlap, Van Liere, Mertig, & Jones, 2000) was used. In response to the environmental movement, Dunlap and Van Liere (1978) identified a shift from the then dominant social paradigm. They called this new way of thinking the “New Environmental Paradigm” and developed a 12-item instrument to assess related emerging environmental attitudes. The New Environmental Paradigm scale (original NEP) has been one of the more commonly used measurements of environmental attitudes since its development. In 2000, Dunlap et al. redesigned the original NEP scale and updated and expanded it to include 15 items. Their stated goal in developing the revised scale, termed the “New Ecological Paradigm Scale,” was to “update and broaden the scale’s content...with the growing salience of broad *ecological* (as opposed to narrower, more specific, and less systemic *environmental*) problems” (pp. 431-432).

Hawcroft and Milfont (2010) performed a meta-analysis of research over the last 30 years using the original NEP and the New Ecological Paradigm. Through their examination of 69 studies that included either of the scales as a measure of environmental attitudes, they found limited information in the published studies describing how the original and/or revised versions were being administered to study participants, the make-up of study samples, or the

internal reliability of scale measurements. Hawcroft and Milfont were particularly concerned that many studies did not adequately report reliability results. They suggested that studies using these scales incorporate discussion of internal reliability and consistency. They also stressed the importance of understanding the possible impact of sample demographics (e.g., race, gender, income, level of education) on subsequent measurements. While noting shortfalls of past research incorporating the original scale and the New Ecological Paradigm to examine the human-environment interaction and associated attitudes, they recommended the continued use of the revised scale “as a standardized measure of environmental attitudes” (2010, p. 151). Therefore, in my exploratory research general environmental attitudes were measured with the 15-item New Ecological Paradigm scale (titled “New Ecological Paradigm” in the quantitative instruments), using a 7-point Likert-like Scale ranging from 1 = “strongly disagree” to 7 = “strongly agree.”

A second measurement scale was adapted prior to being incorporated into my research which was meant to examine general environmental intentions. This measurement scale was developed by Stern, Dietz, Abel, Guagnano, and Kalof (1999) in their application of a value-belief-norm theory for the environmental movement. Stern et al. aimed to provide a framework for assessing public support for the environmental movement. Before its use in the pre-test/post-test questionnaire this scale was adapted from the past-tense used in the original environmental citizenship scale to read as a measure of environmental behavior intentions (i.e., future-tense). Prior to this adaptation and as presented by Stern et al., respondents were asked if they had performed certain behaviors related to environmental citizenship. For example, the participants in this current research were asked how likely it

was that in the next 12 months they would perform a certain action, such as signing a petition in support of protecting the environment. Adapting the environmental citizenship scale items in this manner allowed for a quantitative measure of environmental behavior intentions, providing the first component of individual baseline intention data. In the quantitative instruments, this scale was titled “Environmental Intentions.”

A third measurement scale examining environmental behavior intentions was also included in the quantitative questionnaires. Roberts and Bacon (1997) examined the relationship between general environmental concern as measured by the original NEP and consumer behaviors. For their research, they employed a 30-item scale examining ecologically conscious consumer behavior intentions. Ten items from this scale were chosen during the initial instrument development for this research. This scale, titled “Consumer Intentions,” represented a variety of environmentally oriented consumer behaviors. The items included in both the Environmental Intention and Consumer Intention scales were measured using a 7-point Likert-like Scale ranging from 1 = “not at all likely” to 7 = “extremely likely,” and assessed the intent of each respondent to carry out particular environmental behaviors in the future. For example, items from the consumer intention scale asked study participants the likelihood of driving their car less to save energy and using a recycling center to recycle household waste.

To address the second research question regarding the potential lasting effects of program participation on environmental attitudes, intentions, and behaviors, qualitative data were collected through semi-structured interviews. In addition to the quantitative data, the qualitative data helped explain and describe the changes the students experienced after

participating in the program under investigation. Previous research has employed similar mixed-methods and found that such a design can provide additional insight as opposed to incorporating a single methodology.

Nieto and Booth (2010) used a mixed-methods design in their study investigating the impacts of cultural competence on teaching and learning processes for teachers and students. They collected quantitative data through surveys of cultural awareness and intercultural sensitivity. Their qualitative data was collected using open-ended survey questions and personal interviews. They employed a mixed-methods research design because it provided “the study with new insights, consistency of findings, and detailed results” (p. 412). Each participant in the study completed a survey containing multiple quantitative scales (e.g., Intercultural Sensitivity Scale, Student Cultural Awareness Inventory) and each was offered the opportunity to participate in the interview process. The purpose of the interviews was to obtain more detail from the participants regarding the questions in the quantitative survey. Nieto and Booth primarily used the qualitative data to support the statistical analyses of the quantitative data. For example, a comment was made in an interview that teachers should be open and honest with students. This quote was used by the authors to support the correlation between an item addressing the need for teachers to help international students feel more welcome and the overall score on the Intercultural Sensitivity Scale.

Other published research has incorporated quantitative (e.g., Likert scales, close-ended responses) and qualitative questions (i.e., open-ended responses) in a single questionnaire. For example, Negev, Sagy, Garb, Salzberg, and Tal (2008) developed a survey to evaluate environmental literacy of sixth and twelfth graders in Israel. This survey

consisted of four sections with the first three sections containing close-ended questions such as Likert scales and multiple-choice items. The fourth section of the survey focused on open-ended responses. The authors included the open-ended response section because they felt it allowed for “assessment of higher level cognitive skills in evaluating environmental issues” (p. 6). Negev, Garb, Biller, Sagy, and Tal (2009) further described the qualitative data collection process. The open-ended portion of the survey focused on environmental problems, causes, and possible solutions. The authors analyzed the responses through an open coding process in relation to environmental literacy as measured in the quantitative data collection. Additionally, they felt incorporating qualitative data collection in a mixed-methods design allowed them “to map the landscape of problems, solutions, and assessments of origins of environmental problems as they are perceived by the respondents themselves, rather than on the basis of categories and questions [they] had set in advance” (p. 113).

Duerden and Witt (2010) studied the impact of direct and indirect nature experiences on adolescent environmental knowledge, attitudes, and behavior. They also found qualitative approaches offered new insights when included in a mixed-methods research design. Quantitative data were collected through a questionnaire including three scales measuring subjects’ attitudes and knowledge. The qualitative data collection included the use of focus groups, interviews, and open-ended questionnaire responses. These data collection efforts occurred together, though the primary emphasis was on the quantitative data. Duerden and Witt also noted that without the opportunity to participate in focus groups or interviews, many of the participants would not have had the opportunity to openly evaluate and reflect on their experiences.

Mixed-methods research designs have also been used to evaluate environmental education program outcomes. Dettmann-Easler and Pease (1999) employed a quantitative pre-test, quantitative post-test, delayed quantitative post-test, and interviews to evaluate the efficacy of residential environmental education programs in developing positive attitudes toward wildlife. One interesting aspect of their use of interviews and qualitative data analysis in conjunction with a quantitative survey was that it allowed them to explore how the students felt about the residential program. The authors found the qualitative data provided a deeper understanding of the effectiveness of the residential programs.

As a final example of related research using a mixed-methods approach, Sosu, McWilliam, and Gray (2008) examined teachers' commitment to environmental education. A quantitative survey was used to identify what determines the level of commitment for teachers, whereas qualitative interviews explored methods of increasing individual commitment to teaching environmental education. The authors felt the complexity of the phenomenon of teacher commitment necessitated a mixed-methods approach to achieve "a more holistic understanding of the phenomenon" (p. 170). Sosu et al. stated that with a mixed-methods approach they were able to examine specific and general factors contributing to teacher commitment to environmental education. The quantitative data allowed the authors to empirically evaluate constructs within their chosen conceptual framework (i.e., the model of environmental education commitment), whereas the qualitative data were helpful in identifying issues for teachers involved in environmental education as perceived by the teachers themselves. Overall, the mixed-methods approach used in their study helped them

increase their understanding of difficulties teachers faced regarding the inclusion of environmental education in the classroom.

### **Summary**

The existing literature provided a foundation from which to examine a short-term environmentally focused study-abroad program. The previous research in international education suggested that only limited outcome-focused assessment of short-term study-abroad programs had been conducted. An understanding of the potential lasting effects of such programs was also found to be limited due to the lack of follow-up with program participants over time after returning from the study-abroad experience. To address the identified knowledge gaps, I incorporated components of the TRA in the conceptual framework of this exploratory study to highlight the traditional relationships between attitudes, intentions, and behaviors. Specifically, this research incorporated measurement and analysis of individual attitude, intention, and behavioral dimensions as they relate specifically to the environment to allow for a more detailed assessment of program outcomes. My study was informed by previous research employing mixed-methods approaches, answering the call for more rigorous and supportive research examining study-abroad program outcomes. The intent underlying my research was that it aid program administration and design while also contributing to our understanding of the broader attitude and behavior relationship.

## **CHAPTER 3**

### **Methodology**

A review of studies in environmental education that incorporated mixed-methods showed support for a mixed-methods design for my study-abroad research. I employed a mixed-methods approach to examine the effects of participation in an environmentally focused study-abroad program on environmental attitudes, intentions, and behaviors. Assessing the immediate effects of participation in an environmentally focused study-abroad program on environmental attitudes and intentions was accomplished through the use of established quantitative measurements (e.g., New Ecological Paradigm scale). Quantitative data collection established baseline attitude and intention measures through accepted and commonly used scales.

Qualitative data collection in the form of semi-structured interviews was employed to examine if, how, and why environmental attitudes, intentions, and behaviors changed over time after participation in an environmentally focused study-abroad program. For example, interviews allowed for explanation of affective (i.e., emotional) components of attitude as respondents reflected on their experience later and had an opportunity to think aloud. Moreover, incorporating multiple methods in such an exploratory study allowed for the integration of quantitative and qualitative data. Overall thematic elements and individual retrieved text segments from the qualitative analysis could, therefore, be compared to findings from the quantitative pre/post questionnaire results. This comparison provided a greater understanding of the effects of program participation.

## **Study Program**

During June and July of 2011, two faculty members at North Carolina State University (NCSU) and I, serving as the program graduate assistant, led 27 students (26 from NCSU, 1 from Virginia Tech University; 16 female, 11 male) to North Queensland, Australia. This environmentally focused study-abroad program was titled “Sustaining Human Societies and the Natural Environment” and lasted three and a half weeks. The program participants enrolled in two concurrent courses, “Human Dimensions of Natural Resources in Australia” and “Sustaining Natural Environments in Australia,” for a total of six credit hours. The courses were taught together as part of the program and had overlapping learning objectives. For example, the program sought to help students understand the impacts of human actions on natural systems, human responses to environmental changes, and ultimately to promote global environmental citizenship. During the program, the students were introduced to topics such as natural history, marine and terrestrial biology, and ecological and cultural diversity within the context of Australia and a variety of learning environments.

Prior to the program, participants were required to purchase a program reading packet that served as the textbook and framework for the program. The packet contained five modules, each corresponding to a different geographic location and/or theme. The modules included lessons and readings on cultural adaptation to the Australian landscape, indigenous and contemporary relationships to the environment, the Great Barrier Reef and marine resource management, the tropics and rainforest management in a human-dominated landscape, and sustainability at home. During the three-and-a-half-week program, each

participant was responsible for reading and responding to questions posed at the end of each module in an essay format. Lectures by program faculty and field guides took place in locations such as the Daintree World Heritage Rainforest, the Atherton Tablelands, Magnetic Island, and the Great Barrier Reef. Additionally, the program consisted of a farmstay and a variety of other activities including, but not limited to, snorkeling and hiking.

### **Quantitative Data Collection**

This exploratory study incorporated quantitative pre-test and post-test questionnaires that were administered to a census of all 27 students participating in the program on the first and last days of the program, respectively. Prior to embarking on the program with the students I submitted the pre-test and post-test questionnaires along with an informed consent form for Institutional Review Board (IRB) approval. The quantitative pre-test/post-test questionnaire (described in detail in Chapter 2) were based on pre-test and post-test instruments developed by Dr. Michael Tarrant at the University of Georgia to evaluate study-abroad programs similar to the program under investigation in this research. In addition to collecting the demographic information regarding gender, race, age, and undergraduate major, the questionnaire included three existing scales designed to measure environmental attitudes and intentions.

As previously described, the New Ecological Paradigm Scale, a commonly used measure of general environmental attitudes (Dunlap & Van Liere, 1978; Dunlap, Van Liere, Mertig, & Jones, 2000; Hawcroft & Milfont, 2010) was used to assess students' general environmental attitudes. A second measurement scale included in the quantitative

questionnaire examined environmental intentions, primarily civic action-based intentions such as joining an environmental organization, and was adapted from Stern et al. (1999). The final quantitative measurement scale assessed environmental consumer intentions and was adapted from Roberts and Bacon (1997). This scale, titled “Consumer Intentions,” focused on students’ intentions to perform consumer-based behavior such as purchasing environmentally friendly products.

The quantitative data collected through the pre-test and post-test questionnaires were analyzed using the statistical software PASW 18 (IBM, 2009) and Stata 11 (StataCorp LP, 2009). The demographic, environmental attitude, and environmental intention item responses were entered into the statistical software followed by the computation of descriptive and inferential statistics. Individual missing values within the three scales were imputed using the “impute” command within the Stata 11 statistical software package. This command fills in missing values based on other responses for that item and missing-value regressions. There were six missing responses (three in pre-test and three in post-test) within the three scale items, with no respondent requiring multiple imputations. Next, additive indices were developed for each of the three scales (even number NEP items required reverse coding) by summing the scale items and dividing by the number of items in the scale.

Inferential statistics were used to examine the pre-test and post-test mean scores for the three measurement scales. First, a Wilcoxon signed-rank test was conducted to examine the direction of mean score change from pre-test to post-test, highlighting pairs resulting in positive, negative, or zero change. Second, a Somers’ D calculation was executed to further evaluate the direction and likelihood of a change in mean score for each of the three scales

from pre-test to post-test. Finally, paired t-tests were conducted to examine the differences between pre-test and post-test mean scores for each of the three measurement scale indices and individual scale items.

As this research study was conducted in conjunction with other ongoing research projects, several other measurement scales were included on both of the quantitative instruments. However, for the purposes of my research, only the three measurement scales identified above were examined. The pre-test and post-test quantitative questionnaires are included in Appendix A.

### **Qualitative Data Collection**

After returning home from the program, I developed a qualitative semi-structured interview. The interview questions, potential prompts, and a second informed consent form were sent to IRB for approval. After receiving IRB approval, I collected the qualitative data in the form of individual audio-recorded interviews with willing and available 2011 program participants approximately five to seven months (i.e., December 2011 – February 2012) after returning home from the study-abroad program. Multiple attempts were made to contact all 27 students via email and social media. The qualitative data collection occurred between the end of the Fall semester and the beginning of the Spring semester overlapping with the university Winter break. Due to scheduling issues and non-response, only 17 (11 female, 6 male) willing and available respondents were included in the final qualitative sample. Pseudonyms were used to protect the anonymity of the interview participants and maintain confidentiality (see Appendix C for a description of interview participants). There is no

reason to suspect any systematic bias in terms of the 17 students who agreed to participate in the follow-up interviews and the 10 who did not, as the distributions of gender, academic standing, and academic majors for the interview participants were similar to those of the program participants overall. The 5-6 month time interval between program completion and the interviews was meant to allow the students' lives to return to normal after returning home (i.e., they would have completed or nearly completed their first semester back in the United States or begun the next phase of their lives if they had graduated). This interval also allowed for targeted interviews (i.e., questions were focused on specific topics or issues) based on observations made during the program, discussions with program faculty, and the results of the quantitative analysis.

Semi-structured interviews are widely used in qualitative data research to provide the opportunity to examine phenomena in greater detail at a later date (Patten, 2009). Qualitative methods such as semi-structured interviews can provide "intricate details of phenomena that are difficult to convey with quantitative methods" (Strauss & Corbin, 1990, p. 19). The semi-structured interviews used for my research incorporated questions about the study-abroad program experience; changes in environmental awareness, knowledge, and attitude; intent to perform general and specific pro-environmental behaviors; and whether or not the participants felt they had exhibited any pro-environmental behaviors since completing the program and returning home. I also asked the students to think about five different timeframes: before the program, during the program, at the end of the program, at the time of the interview, and the future. The study interview structure (i.e., the guide the researcher used to conduct the interviews) is provided in Appendix B.

The final component to the qualitative methods was my written record of interactions and observations made during the study-abroad program. This record took the form of a journal kept throughout the program. As the program teaching assistant, I had direct involvement with the program curriculum, input on the activities, and ongoing interaction with the student participants. The purpose of the journal was to record any observations of interest during the program, interactions with program participants, and to note any potential influence of my presence (e.g., conversations with students) during the program. Overall, this journal was used to inform the development of the interview structure. It also helped ensure trustworthiness during the coding process and provided a written record of observations made during the program that could be compared to the thematic elements that emerged during the analyses.

To assist with the qualitative analysis process, the interview audio files were transcribed by the researcher and entered into MAXQDA, a qualitative data management and analysis software (VERBI Software, 2012). The qualitative data collected from the 17 2011 program participants were then analyzed using a grounded theory approach, in which open, axial or descriptive, and selective or thematic coding were applied. The open-coding process illuminated and identified many concepts and topics in the form of individual text segments as they emerged in the data. Next, axial codes were developed. This involved grouping similar concepts to form descriptive categories. The process of forming axial codes involved combining the individual categories formed in the open-coding process and grouping them into larger broader categories. This process was accomplished by comparing the individual concepts identified and grouped in open coding to each other. It is important to note,

however, that these two elements of the qualitative analysis (i.e., open and axial coding) do not always occur as two distinct processes (Corbin & Strauss, 2007). For example, if it was clear that a group of topics or concepts was forming during the open-coding phase, they were grouped before the entire data set was open coded, forming an initial axial code or descriptive category. Next, I deciphered the broader categories formed in the axial coding process through the identification of patterns, relationships, and themes using thematic or selective coding.

Throughout the process, conceptual and topical memos were composed and attached to certain example statements or segments of the interviews. These memos provided insight during the qualitative analysis and helped to guide the examination of the written text as an inductive process. Memos were also helpful in the creation of axial or descriptive codes as they allowed the researcher to compare and “talk” through the open-coding process. Through the creation of memos, I could write out thoughts and develop hypotheses about the potential relationships among the open codes. Additionally, the memos aided in the development of themes from the data. This approach to qualitative data analysis allowed for the examination of the interview data in its written form (i.e., transcriptions of the audio recorded interviews). Further, this inductive process allowed the researcher to examine and identify themes that emerged from the qualitative data “to elicit meaning, gain understanding, and develop empirical knowledge” (Corbin & Strauss, 2007, p.1).

### **Comparing the Quantitative and Qualitative Data Sets**

Both quantitative and qualitative data were collected and examined in this exploratory research design. While the data were collected independently, they were examined together to provide a deeper understanding of the effects of study-abroad participation on individual environmental attitudes, intentions, and behaviors. For example, the items contained within three measurement scales incorporated in the quantitative assessment related directly to the questions asked of the participants during the qualitative semi-structured interviews. Furthermore, significant changes identified from the analysis of the quantitative measurement results were compared to the patterns and examples provided by the students throughout the interviews. These comparisons were also used to determine if the changes identified through the quantitative assessment persisted after the program until the time of the interviews and ultimately, whether or not they would likely continue into the future. In my research examining a particular environmentally focused study-abroad program, employing both quantitative and qualitative methodologies helped explain as much variance as possible while providing a deeper understanding of the constructs under investigation.

### **Delimitations & Limitations**

It is important to note several delimitations of this exploratory research. First, my study examined a single environmentally focused study-abroad program. Other programs with varied focus areas, locations, and lengths were not examined. Second, my research is guided by a conceptual framework incorporating only three components of the TRA. The scope of the TRA in my research was limited to the examination of attitudes, intentions, and

behaviors. Social norms and perceived behavioral control were not explicitly examined in this study. Therefore the validity of the full TRA within the context of study abroad must be examined further before broader conclusions can be drawn. Next, this study was designed to address the two research questions stated earlier and focused specifically on issues related to the environment. Therefore, findings relating to other aspects of the study-abroad experience need to be confirmed and extended with future research focused in those areas.

Several limitations of this study must also be noted. One limitation is a small sample size; the program under investigation in this study had only 27 participants, all of whom were undergraduate students. More than one program will need to be examined extend the findings presented here. Further, multiple programs should be examined and compared with control groups, such as programs on campus or programs focused on other topics. Another limitation of this study is that the researcher was also the program's graduate assistant. While this assisted in the development of a rapport with the individual program participants, it is important to note that this could have introduced bias, for example, in the form of social desirability (i.e., students responding in a manner they thought I would find acceptable). An additional limitation was the potential introduction of a pre-test response bias that might have influenced the post-test quantitative results as the two instruments were administered only three and a half weeks apart. The qualitative semi-structured interviews, therefore, included discussion of environmental attitudes and intentions at the end of the program to confirm the quantitative findings to help address possible bias.

**Summary**

This chapter described the methodology used to address the two primary research objectives in my research related to an environmentally focused study-abroad program. After describing the program under investigation, I discussed the quantitative and qualitative data collection processes. Further, I explained how data were analyzed in each phase of my research. This chapter also outlined how the quantitative and qualitative data sets were compared during my mixed-methods examination. Finally, I reported several delimitations and limitations for my research.

## CHAPTER 4

### Results

This chapter describes the quantitative and qualitative findings from this mixed-methods study. First, the results of the quantitative pre-test and post-test data questionnaires are presented with descriptive as well as inferential statistics. Second, themes and subthemes that emerged from the qualitative analysis of the semi-structured interview data are discussed in detail with example statements that ultimately led to the formation of three key themes.

#### Quantitative Measurements

Table 1 provides the gender breakdown of 2011 study-abroad program participants. The greater percentage of female participants for the study program is consistent with the typical U.S. study-abroad student gender distribution over the past decade (Institute of International Education, 2011b). The mean age of the 27 program participants from 2011 was 20.7 years ( $SD=0.9$ ). The youngest student had their 19th birthday during the program while the oldest participant was just over 23 years old.

Table 1

#### Program Participant Gender

Gender	Frequency	Percentage
Male	11	40.7
Female	16	59.3

Table 2 compares the means of the individual items that comprise the New Ecological Paradigm (NEP) scale. The change (measured as post-test mean minus pre-test mean) is reported along with the results of the paired t-test for each item. For example, when comparing the pre-test and post-test means for the first item an increase of 1.2 was found. Overall, 11 of the 15 items increased, two had no change, and two decreased between the pre-test and the post-test. Three of the NEP scale item changes (all increases) were statistically significant: “We are approaching the limit of the number of people the earth can support” (+1.2,  $p < .001$ ), “The earth is like a spaceship with very limited room and resources” (+1.1,  $p < .001$ ), and “If things continue on their present course, we will soon experience a major ecological catastrophe” (+0.9,  $p < .01$ ).

Table 3 presents the means of the individual Environmental Intention (EI) scale items from the pre-test and post-test. The change (measured as post-test mean minus pre-test mean) is also presented for each item. Overall, seven of the eight items increased and one decreased between the pre-test and the post-test. Six of the EI scale item changes (five increases and one decrease) were statistically significant: “Write a letter or call your member of Congress or another government official to support strong environmental protection” (+1.4,  $p < .001$ ), “Boycott or avoid buying the products of a company because you feel that the company is harming the environment” (+1.3,  $p < .001$ ), “Sign a petition in support of protecting the environment” (+1.0,  $p < .01$ ), “Become a member of any group whose main aim is to preserve or protect the environment” (+0.7,  $p < .01$ ), “Give money to an environmental group” (+0.7,  $p < .05$ ), and “Consider changing the car/vehicle you normally drive to a smaller engine size” (-0.7,  $p < .05$ ).

Table 4 presents the individual items from the Consumer Intention (CI) scale and their mean scores from the pre-test and post-test as well as the change, again measured as post-test mean minus pre-test mean. All 10 items increased between the pre-test and the post-test. Six of these CI scale item increases were statistically significant: “To reduce our reliance on foreign oil, I will drive my car as little as possible” (+1.2,  $p < .001$ ), “I will convince members of my family or friends not to buy some products which are harmful to the environment” (+1.1,  $p < .001$ ), “To save energy, I will drive my car as little as possible” (+1.1,  $p < .001$ ), “When I purchase products, I will always make a conscious effort to buy those products that are low in pollutants” (+0.9,  $p < .01$ ), “I will switch products for ecological reasons” (+0.9,  $p < .05$ ), and “I will try to only buy products that can be recycled” (+0.8,  $p < .05$ ).

Table 5 presents the non-parametric comparisons of the pre-test and post-test mean scores for the three measurement scales as reported by the 27 program participants and the results of the Wilcoxon signed-rank test. One student did not respond to the NEP during the pre-test, apparently due to skipping that page in the questionnaire. The statistical test for this scale was conducted with listwise deletion, resulting in one less respondent for the NEP comparisons ( $n=26$ ). The results show a statistically significant increase from the pre-test mean scores to the post-test mean scores for each of the three measurement scales. Further, a Somers’ D statistic was calculated to evaluate the direction and likelihood of change from the pre-test to post-test mean scores for each of the three scales. For the New Ecological Paradigm, Environmental Intention, and Consumer Intention scales, these directional results indicate with 95% confidence the likelihood of increase from pre-test to post-test falls within

[.247, .809], [.119, .637], and [.231, .751], respectively. For example, 20 participants reported increased NEP scores from the pre-test to the post-test (i.e., negative sign as a result of the pre-test mean score minus the post-test mean score) and we are 95% confident that the likelihood of an increased NEP score is within [.247, .809].

Table 6 presents the paired t-test comparisons of the pre-test and post-test mean scores for each of the three measurement scales. For each of the three measurement scales, the post-test mean score value was greater than the pre-test mean score value and each of these increases was statistically significant. In the case of the NEP, this means that overall there was a significant increase ( $p=.0009$ ) in positive (i.e., pro-environmental) attitude at the end of the program. Regarding the two intention measurement scales, the statistically significant increases (EI,  $p=.0018$ ; CI,  $p=.0003$ ) indicated a greater likelihood (i.e., increased intent) that the program participants would carry out the specific behaviors described within each scale at the end of the program.

Table 2

New Ecological Paradigm Scale Item<sup>1</sup> Mean Comparisons

Scale Item	Pre-test Mean ( <i>SD</i> )	Post-test Mean ( <i>SD</i> )	Change <sup>2</sup> ( $\Delta$ )	<i>t</i>
We are approaching the limit of the number of people the earth can support	5.3 (1.2)	6.5 (1.0)	+1.2	4.7***
The earth is like a spaceship with very limited room and resources	4.3 (1.2)	5.4 (1.4)	+1.1	3.8***
If things continue on their present course, we will soon experience a major ecological catastrophe	5.5 (1.1)	6.4 (0.9)	+0.9	3.5**
When humans interfere with nature it often produces disastrous consequences	4.7 (1.2)	5.1 (1.3)	+0.4	1.3
Human ingenuity will insure that we do NOT make the earth unlivable <sup>3</sup>	3.2 (1.4)	3.6 (1.7)	+0.4	1.9
Humans are severely abusing the environment	5.6 (1.1)	5.9 (1.2)	+0.3	1.0
The earth has plenty of natural resources if we just learn how to develop them <sup>3</sup>	2.7 (1.3)	3.1 (1.4)	+0.3	1.2
Humans were meant to rule over the rest of nature <sup>3</sup>	4.3 (1.5)	4.7 (1.7)	+0.3	1.0
Plants and animals have as much right as humans to exist	5.8 (1.0)	6.0 (1.0)	+0.2	1.1
Despite our special abilities humans are still subject to the laws of nature	5.8 (1.1)	6.0 (0.9)	+0.2	1.0
The balance of nature is very delicate and easily upset	4.8 (1.5)	5.0 (1.4)	+0.2	0.7
The balance of nature is strong enough to cope with the impacts of modern industrial nations <sup>3</sup>	5.0 (1.2)	5.0 (1.3)	0.0	0
The so-called “ecological crisis” facing humankind has been greatly exaggerated <sup>3</sup>	5.2 (1.4)	5.2 (1.7)	0.0	0.1
Humans have the right to modify the natural environment to suit their needs <sup>3</sup>	4.2 (1.2)	3.8 (1.2)	-0.4	-1.5
Humans will eventually learn enough about how nature works to be able to control it <sup>3</sup>	4.8 (1.4)	4.5 (1.3)	-0.4	-0.9

<sup>1</sup>Measured on a 7 point Likert-scale from 1=“strongly disagree” to 7=“strongly agree”

<sup>2</sup>Change = (post-test mean) – (pre-test mean)

<sup>3</sup>Item reverse coded prior to analysis

\*Significant at .05 level; \*\*Significant at .01 level; \*\*\*Significant at .001 level

Table 3

Environmental Intention Scale Item<sup>1</sup> Mean Comparisons

Scale Item	Pre-test Mean ( <i>SD</i> )	Post-test Mean ( <i>SD</i> )	Change <sup>2</sup> ( $\Delta$ )	<i>t</i>
Write a letter or call your member of Congress or another government official to support strong environmental protection?	2.5 (1.2)	3.9 (1.4)	+1.4	4.6***
Boycott or avoid buying the products of a company because you feel that the company is harming the environment?	3.9 (1.8)	5.2 (1.4)	+1.3	4.1***
Sign a petition in support of protecting the environment?	3.9 (1.4)	4.9 (1.8)	+1.0	3.1**
Become a member of any group whose main aim is to preserve or protect the environment?	4.3 (1.6)	5.0 (1.3)	+0.7	2.8**
Give money to an environmental group?	3.7 (1.5)	4.4 (1.6)	+0.7	2.6*
Vote for a candidate in an election at least in part because he or she was in favor of strong environmental protection?	5.3 (1.2)	5.6 (1.4)	+0.3	1.8
Read any newsletters, magazines or other publications written by environmental groups?	4.6 (2.0)	4.7 (1.7)	+0.1	0.4
Consider changing the car/vehicle you normally drive to a smaller engine size?	3.6 (1.8)	2.9 (1.4)	-0.7	-2.1*

<sup>1</sup> Measured on a 7 point Likert-scale from 1="not at all likely" to 7="extremely likely"

<sup>2</sup> Change = (post-test mean) – (pre-test mean)

\*Significant at .05 level; \*\*Significant at .01 level; \*\*\*Significant at .001 level

Table 4

Consumer Intention Scale Item<sup>1</sup> Mean Comparisons

Scale Item	Pre-test Mean ( <i>SD</i> )	Post-test Mean ( <i>SD</i> )	Change <sup>2</sup> ( $\Delta$ )	<i>t</i>
To reduce our reliance on foreign oil, I will drive my car as little as possible	4.4 (1.6)	5.6 (1.2)	+1.2	4.2***
I will convince members of my family or friends not to buy some products which are harmful to the environment	4.5 (1.6)	5.6 (1.3)	+1.1	4.8***
To save energy, I will drive my car as little as possible	4.5 (1.5)	5.6 (1.2)	+1.1	4.0***
When I purchase products, I will always make a conscious effort to buy those products that are low in pollutants	4.7 (1.3)	5.6 (1.3)	+0.9	3.6**
I will switch products for ecological reasons	4.7 (1.3)	5.6 (1.2)	+0.9	2.7*
I will try to only buy products that can be recycled	4.6 (1.3)	5.4 (1.2)	+0.8	2.6*
I will use a recycling center or in some way recycle some of my household trash	6.0 (1.5)	6.4 (0.9)	+0.4	1.7
I will not buy household products that harm the environment	4.7 (1.0)	5.0 (1.2)	+0.3	1.3
I will purchase household appliances which use less electricity than other brands	5.8 (0.9)	6.0 (0.9)	+0.2	0.9
I will buy high-efficiency light bulbs to save energy	6.2 (0.8)	6.3 (0.9)	+0.1	0.2

<sup>1</sup> Measured on a 7 point Likert-scale from 1="not at all likely" to 7="extremely likely"

<sup>2</sup> Change = (post-test mean) – (pre-test mean)

\*Significant at .05 level; \*\*Significant at .01 level; \*\*\*Significant at .001 level

Table 5

Results of Wilcoxon Signed-rank Test<sup>1</sup> and Somers' D Confidence Interval

Scale	Sign <sup>2</sup>			z	p	Somers' D Confidence Interval
	Positive	Negative	Zero			95% Confidence Interval
NEP	20	4	2	3.330	0.0009	[.247, .809]
EI	19	6	2	3.117	0.0018	[.119, .637]
CI	22	4	1	3.606	0.0003	[.231, .751]

<sup>1</sup>H<sub>0</sub>: post-test mean score = pre-test mean score<sup>2</sup>Sign determined as (post-test mean score) – (pre-test mean score)

Note: New Ecological Paradigm Scale (NEP); Environmental Intention Scale (EI); Consumer Intention Scale (CI)

Table 6

Pre-test/Post-test Mean Scores and Paired t-Test<sup>1</sup> Results

Scale	Pre-test Mean (SD)	Post-test Mean (SD)	n	Change <sup>2</sup> (Δ)	t	p
NEP <sup>3</sup>	4.7 (0.6)	5.1 (0.6)	26	+0.4	3.9003	0.0006
EI <sup>4</sup>	4.0 (0.9)	4.6 (0.9)	27	+0.6	3.6144	0.0013
CI <sup>4</sup>	5.0 (1.0)	5.7 (0.9)	27	+0.7	4.3588	0.0002

<sup>1</sup>H<sub>0</sub>: mean difference = 0<sup>2</sup>Change = (post-test mean) – (pre-test mean)<sup>3</sup>Measured on a 7 point Likert-scale from 1="strongly disagree" to 7="strongly agree"<sup>4</sup>Measured on a 7 point Likert-scale from 1="not at all likely" to 7="extremely likely"

### **Summary of quantitative results.**

The non-parametric and parametric results of the quantitative pre-test and post-test data indicated statistically significant increases in environmental attitude (i.e., toward a more positive or favorable environmental attitude), environmental intention, and consumer intention. More specifically, there was a significant positive shift in both environmental attitudes and intentions from the beginning to the end of the program. This suggests that the program was effective in fostering positive growth in environmental attitudes as well as environment-based behavioral intentions.

### **Qualitative Themes**

Throughout the documented interviews with program participants and the examination of the 17 interview transcripts during the qualitative coding process, several main themes emerged: study abroad as a positive and transformative experience; changes in environmental attitudes, intentions, and behaviors; and the positive effect of the experiential field-based model for study abroad. The main themes and their subthemes are discussed in detail below, with example statements from program participant interviews used to support the thematic development.

#### **Studying abroad in Australia as a transformative and positive experience.**

Overall, the first theme highlighted the finding that students enjoyed the study-abroad program experience as well as the program destination. The subthemes that underscored this theme include the effects of being removed from their comfort zone, the social outcomes of

study-abroad participation, reliving aspects of the experience, and identity development. During the interviews, students often discussed their positive thoughts and feelings. In addition to describing studying abroad in Australia as “one of the best experiences of my life” and saying that “overall it was awesome,” Linda described her initial reaction upon arriving in Australia:

It was like surreal. Just um, wanted to do that for so long and I was actually there. I remember I was on the side of the boat and I was hanging off and the wind blowing my face and it was just amazing. So pretty seeing everything. I was just really excited.

Several students described the study-abroad opportunity as a positive one that other people should be aware of during their time in college. For example, after declaring that studying abroad was a positive experience, Lisa noted that “a lot more people need to [have] that experience.” She went on to say “I think it’s a really eye opening experience that people should be more aware about.”

The study-abroad program also influenced many of the participants on a personal level. This influence took many forms. Several students explained that the experience as a whole influenced their potential career path or affected their motivations or career goals. Already engaged in an academic major related to the environment Helen specifically discussed her motivations related to her prospective career:

I guess it does influence, like my motivations to be an environmental engineer because like, one of the last discussions we had was how do you think this will help you or how do you think you can help maintain the environment. So I was just like

yeah, I'm doing environmental engineering so I guess I will just keep on doing that...It's helped me become more motivated towards my career path, which I was unenthusiastic about before.

For Helen, the experience provided support for the realm of study she was currently engaged in on campus. Similarly, Jane mentioned that she wanted “to do something with conservation and the environment, so um, it just further enhanced what I wanted to do.” Further, Bob discussed his desire to work in a field related to the environment after the program:

Hopefully...it's gonna have something to do with the environment, whether it's more efficient machinery or even solar panels or something like that...I hope I see myself doing something with my career that has even the littlest bit to do with the environment.

The above statement highlights one important point of emphasis during the program: People live in a world where everything is related to the environment in some way. Bob also indicated that he hoped to be involved with the environment in some capacity throughout his career. When discussing their academic majors or their intended career paths, several students discussed the possibility of working in Australia or another country outside of the United States. Bob said that he “would love to work in Australia. That would be sweet.” It was clear that after returning home from the program and experiencing another culture, different perspectives, and learning how the environment fits into the daily lives of Australians, many students were more open to career choices (i.e., working outside of the United States or working in a different field) they had not necessarily thought of before.

*Effects of being removed from comfort zone.*

Contributing to the positive and transformative nature of this program was the immersion of students in an unfamiliar environment forcing them to adapt to a new culture while relying on each other and what they were learning. Several students discussed the eye-opening nature of the experience. “I think it just opened my eyes to a lot of things and in turn has made me open my eyes to other things also” said Linda. She followed by saying that the study-abroad experience “changed how I view the world.” Further, many of the students described being out of their comfort zone as contributing to the positive nature of their study-abroad experience. For example, Debra noted the benefits of stepping outside of her home environment during study abroad:

How other people live and see[ing] what other people do, how things work and not in my own little world. It was kind of like a reality check... it pushes you outside your comfort zone but not to the point where you feel awkward. It kinda just pushes you to experience things you wouldn't do on your own which was really nice.

Jane also described the process of being removed from her comfort zone while attempting to summarize the entire experience:

Study abroad meant to me, especially on this trip, to just go out of my comfort zone and go to a different place, an adventure, meet new friends, see a different lifestyle.

Um, and just be like fully engaged with it. I felt like I got a lot out of it.

Lisa described what it was like to learn more about the students on the program:

Well I'm definitely more aware about other people's situations and how it's so unique. I think like also being around those people, not just because we were in

Australia but other Americans, like watching how everyone in our group acted. It was most definitely eye opening. It's not like you can say everyone in America is just like them, but there were enough people that you could see differences. I think the way that everyone handled being there was eye opening in a good way.

While learning took place and new knowledge was gained about the cultures and environments they were exploring, it was also eye-opening to share the experience with other American students as they learned from and about each other. Ruth shared her thoughts about learning from the group she was traveling with, the individuals she met in Australia, and how she is now more open to new experiences after the program:

I think it made me more accepting of other lifestyles than mine. Just because my head has been in athletics and sports since I was this tall and like, nothing else, just sports sports sports. I don't know. Not really like an outdoorsy kind of person and so I just never really understood that whole interest. Then being there it made me like, understand, even though people have different interests, they're the same people you know? It just kind of opened my eyes to that... it was my first time out of the country so it was a cool experience in that aspect. I think I grew up a little bit. I don't know. It was fun. I did things I would never have done if I didn't go there. I um, one of my biggest fears is critters in the ocean and I went [snorkeling]. I think I became more accepting of people and lifestyles and uh, environments, the environment. I think it probably opened me up to doing more things that I don't know about in the future... I'm just more accepting, I think, of everything. Open-minded. That's the word.

Another positive outcome for this group of students appeared to be an increased desire to travel, expanding their comfort zones to include new experiences in foreign locations. Many students discussed wanting to travel more after the program. “I really want to go back to Australia and explore New Zealand and stuff,” said Nancy. During and after the program Betty felt “more independent and more adventurous.” She discussed potential international opportunities she might pursue as well as the benefits of a study-abroad experience:

I definitely want to do something like, more, international, definitely. Whether it’s teaching or volunteering or living. Anything like that. I just think that visiting different places like that that are so different than where you are from just makes you more aware of everything and so I definitely want to experience it more... getting to experience something so beautiful in its natural environment I think could just make people realize that there is more to life than getting the most expensive car...or stuff like that.

***Social outcomes of study-abroad participation.***

In addition to getting outside their comfort zone, another lasting effect of the study-abroad experience was the positive social outcomes of study-abroad participation.

Throughout the program I made notes that the students were becoming comfortable with each other and developing friendships. For example, after the first few days together, students began sharing more personal details about their lives back home while more noticeably enjoying each other’s company. For example, sitting around the campfire in the

remote setting of Tyrconnell resulted in the students sharing stories about their lives on campus, their friends, and their families. The students called attention to this during the interviews and discussed enjoying group interactions and making new friends. Betty described what it was like to be with a group of people she had never met:

Getting to know a whole group of people that I have no idea who they are and it's not um, we didn't have so many things in common. I liked it because it again made me step outside my comfort zone and get to know different people and I definitely became friends with people who I wouldn't have without it...I always think it's fun when you get to bond with a group of people that you wouldn't have met otherwise.

Another common reaction was that the students did not "expect to make such close friends on the trip" or come away with the relationships they developed while in Australia. Linda, for example, who described herself as very shy and introverted said:

I think it helped. When I was younger I was always very shy...when we got to the airport, where we all were on the group flight, I'd never met any of them but I'd seen some of them on Facebook. So I was off kind of like sitting by myself and I saw them all like in a little group and I was like I'm pretty sure it's them because I recognize them from Facebook. I was like should I go over there? Kind of nervous. So finally I just got up and went over there and I was like I think we are in the same group and stuff. Then they were like oh yeah I've seen you on Facebook. Um, and then it was like we just started playing cards and all talking and I was really surprised that I did that. And then I feel like we all got along so well and you know, got really close with them. That was nice to help like, get better relationships with people because usually I

have a lot of friends but not a lot of close friends. So I feel like all of them are like my close friends now.

In addition to students developing new and lasting friendships in Australia, Nancy discussed how the experience shaped the friendships she has sought back home, saying, “With my friends, I want friends open to new experience. I want to be open to what they want to teach me.” Some students were even looking forward to the positive social environment during the program. For example, James said:

I knew no one previously to going on the trip. That’s kinda how I wanted it to be. I wanted to have an experience where I knew nothing and really grew as a person and got to grow with these other individuals who go on this trip. It really worked out. It worked out how I had envisioned it working out.

### ***Reliving aspects of the experience.***

Also contributing to the broader theme of study abroad as a transformative and positive experience, many of the participants discussed reliving aspects of the experience since they had returned home. As all of the students took pictures of their adventures, some described looking through those photos and feeling happy or excited. After saying “I look at my pictures like every day,” Lisa described the thoughts and feelings that process evoked, “Oh I get so excited [about] what I was doing. I could remember like standing and taking that exact picture.”

In addition to simply thinking back to the exciting moments captured in the photographs, some of the students expressed that the pictures are tangible reminders of the

lessons they learned. When asked what might facilitate future pro-environmental behaviors, Betty discussed her photographs, noting “It’s just the image of, or like the memories that I have, can be motivation enough to continue to do it.” Eric had a similar thought about the role his pictures played upon returning home:

I made a photo album of everything and I go through those probably once every month or two. That place is awesome. So I think definitely if you go back through those pictures you remember the feelings, you remember what we talked about.

While the pictures provided lasting images of the experience for the students, there appeared to be an overall excitement about all things Australia upon returning home. Carl summed up the pride he felt in traveling to Australia as part of a study-abroad program:

Before I went on the program, I didn't really think much about Australia, just that it was another continent. Since then, it's really opened me up. Whenever I hear anything about Australia, I get all excited about it. Even uh, actually I'm wearing one of the shirts I got, today I'm wearing it. It makes me feel proud that I can show that off to everyone.

### ***Identity development.***

Finally contributing to the overall positive and transformative nature of the experience was evidence of identity development. Throughout the interviews, it seemed to me that many of the students came back from the program thinking and feeling differently about themselves and their surroundings than they had before they left. They had grown as individuals, friends, young adults, students, and world travelers. Carl summed up the

transformation that appeared to take place for many of the participants. He spoke of being “touched” by the program, by the experience, and by the destination itself:

We each have an identity. Like you know, we went to Australia together. It’s something that separates us from the rest of the crowd...I feel like I uh, took something from Australia that you can only have if you've lived there, especially on this kind of trip. And it’s different than just going there for a business trip...going on such a trip like we did, that you know, we kind of, we’re almost like part Australian and we just, what we experienced, what we went through, what we learned, the people we met, the food we ate, um, the sites we saw, it’s part of us now and it’s part of our identity.

**Changes in knowledge, awareness, environmental attitudes, intentions, and behaviors.**

The second main theme that emerged was the changes in knowledge, awareness, environmental attitudes, intentions, and behaviors described by the students at the time of the interviews. The main theme was developed from several subthemes that together illuminated the broader changes experienced by the students after participating in the program: changes in knowledge and awareness, general environmental attitudes, environmental behaviors, environmental intentions, and perceived barriers or facilitating factors to environmental behaviors.

***Knowledge and awareness.***

The students interviewed discussed an increase in knowledge and awareness of the environment and specific issues as a result of the program. The majority of the interviewees highlighted this shift from generally unaware of environmental issues before the program to “more aware and knowledgeable now.” Several students made general statements like “I’m so much more aware now,” while others discussed their awareness and knowledge related to specific topics, such as littering and pollution. Nancy described the importance of her shift in knowledge and awareness:

Well I think learning more about it makes you care more about it and it’s more like, I feel like the more you are outside in nature and it’s not necessarily learning about the bad things, like learning about what happens if you don’t preserve, just learning about nature in nature in general gives you more respect for it and if you respect something you are more bound to take care of it...I definitely know more about like carbon footprints and stuff like that since the program. I was just like, my knowledge was really small when I went there...I think I expanded it a bunch so I learned more about how much more important it is.

Other students were able to highlight differences between the United States and Australia, showcasing what they learned and have become aware of since returning home.

James said:

I definitely was more aware of the environment as far as after that and what I could do as far as my carbon footprint and stuff like that that we had done. I remember that my carbon footprint was like eight, what it would take for eight worlds. I mean I think

for the most part, as Americans, I mean we really overuse and abuse and it's definitely a big difference from their culture as far as our culture is how they look at the environment and recycle and how they treat wildlife and stuff like that. It's definitely a different attitude.

Carl noticed several similarities and differences between the United States and Australia and compared them in terms of sustainability:

I learned a lot of things about sustainability. We encourage it but I've never seen it, that encouragement, so boldly than I did in Australia. That was really different. It was almost like implied. They expect you to do these things. You could see it in some of their facilities. Ways that they incorporate kinda more sustainable use of water, power, electricity...I learned a lot of stuff about them. Hopefully I can put it to good use.

Additionally, Debra emphasized that her quest for knowledge did not end with the program as she stated that she made "more of an effort to find out what is recyclable and what is not" after returning home. These changes in knowledge and awareness might have also contributed to changes in students' general environmental attitudes.

### ***General environmental attitudes.***

As the conversations shifted from environmental attitudes before the trip to those at the end of the trip, many students discussed an overall change in general environmental attitude after participation in the program. While the students had a more difficult time articulating their thoughts and feelings as they tried to describe their attitudes toward the

natural environment, they were able to describe their attitude overall as “changed,” “enlightened,” “different,” “better than it was before,” or “like a whole different mindset.” In each case where a student discussed a change in general environmental attitude it was in the positive or more favorable direction (i.e., an increase in pro-environmental attitude). Lisa noted that she has “more appreciation for the environment” after the program whereas Helen said that “going to Australia like gives you a different perspective on things and makes you more enthusiastic to...make a difference in stuff like the environment.” Ruth described her newfound appreciation for the environment and what contributed to her new attitude:

I think I kinda like reflected on how I felt before. I no longer thought it was just something there for me to be on and just like how everything is connected. I think I just had more of an appreciation for it now that I understood it better and had seen how we can affect it...After the program, like right after we finished, I just had more appreciation. That was probably the strongest just because we had just learned about everything. We're there, you're in it. Felt like I could make a difference by telling other people and getting people to do things and just the little things make a difference.

Several students discussed their environmental attitude before the program as positive while others described the positive attitude they held before the program as unchanged after the program was completed. Further, it is important to note that while the majority of students discussed a newfound positive attitude after the program, sometimes a “fading” of this positive attitude after the program was also discussed. Anna described this transition:

Honestly it's almost like some things are lost. You know when we are over in Australia and we are all together and we are gung-ho about doing certain things but now it almost feels like some of that excitement has kind of dropped off towards we are gonna do this and we are gonna make an effort so I think maybe I need to step back and you know, refresh that attitude that I had while in Australia and learning about all these certain types of things.

***Environmental behaviors.***

After sharing their individual environmental attitudes, the students moved on to discuss their environmental behaviors, defined for them as “anything you do that relates to the environment,” and how they compare to their behaviors before the program. The students discussed engaging in more pro-environmental behavior after participating in the program and often mentioned what they referred to as “the little things,” relatively easy or simple changes to their behavior they tried to implement since returning home. For example, these small or simple changes included actions such as recycling items they would have previously thrown away or encouraging another individual to recycle.

Many behaviors were discussed, but the most common responses related to recycling and reuse behaviors, talking with others about the environment and their behavior, and behaviors related to energy use, resource conservation, and transportation. James described his recycling habits and how the behaviors of his roommates have also changed, “I mean we recycle a lot more. We reuse a lot of stuff a lot more... There's more action as far as that's concerned after being in the program.” Frank talked about the effort he makes to recycle:

Now I make a little more effort, to, I guess, even recycle. Like say I buy a coke on campus I'll put it in my book bag instead of throwing it away, recycle it later. I guess I try to reuse stuff as much as possible instead of throwing it away.

Many of the 17 students interviewed also discussed taking what they had learned or become more aware of after the program and sharing it with others. Linda talked about influencing the recycling behavior of her boyfriend and his roommates and her continued interest in sharing what she learned:

I also made my boyfriend and his apartment recycle. They are not recyclers. But um, you know, just anybody I meet, you know, I try and if it comes up or something I talk to them a lot about it or if they ask about my experience... So I just want to keep continuing to do that and making people aware of really what the problems were, or are.

Nancy has even tried to take her friends outside more since the program. She said, "I've been really trying to get some of my friends, they are more inside creatures, to go out with me more than I did before the program just because I think you learn a lot outside."

Regarding energy and resource use behaviors, some students discussed their behaviors at home and what prompted them to exhibit them. For example, the students described that during the farmstays, the issue of water use and taking shorter showers was emphasized. Nancy said:

I definitely don't take long showers at all. Just because um, in Australia, you really had to think about who you were living with and who was taking care of you. Like

especially the farmstays. They told us not to take more than three or five minute showers.

Other students discussed being “more conscious of unplugging electronics,” having “changed the light bulbs,” or limiting the amount of air conditioning and heat use in their homes.

Additionally, after participating in the program and traveling on foot as a group, a few students discussed their willingness to use alternative transportation instead of their personal car. One student went so far as to purchase a bike after returning home, where others had started carpools to class or work. Several students even mentioned these newfound pro-environmental behaviors as sticking with them since the program ended. For example, Nancy said “I’ve gotten in the habit of it. Little things, like unplugging all my stuff. I don’t think I can stop that. It’s just part of what I do now.” Statements like this further emphasize the more lasting and enduring nature of the behavior changes for many of the students who participated in the interviews.

### ***Behavioral intentions.***

After discussing their environmental attitudes and behaviors, the students were asked to think toward the future. By focusing on the future, the conversation was shifted to a discussion of behavioral intentions. The students highlighted specific intentions such as driving less, using public transportation, spending more time outside, or buying more natural cleaning products, as well as broader, more general thoughts about their future behaviors.

Several students discussed their interest in civic action-oriented behaviors in the future. Betty said:

I plan to eventually do another, not another study abroad, but just like a volunteer trip. Like instead of like the typical where you would work with an orphanage or you would build homes or something I would want to do something more like with the environment.

Other students planned to join environmental clubs or groups around campus or in their workplace. Helen described the benefits joining a club dedicated to the environment could provide:

I figure the more of you there are the more people are willing to listen. If like more people care, then obviously it's something important. But if it's one person, they'll be like, oh, it's just one of those people handing out flyers that I'm gonna throw away anyways... They do a lot of things and hopefully they can show me what else I can do besides just recycling. I mean in environmental engineering, I just want to get more involved so my kids don't have to live in a crappy world.

Others discussed donating to charities focused on environmental issues, while several students discussed the importance of being aware of environmental issues and how that would impact their civic engagement in the future. Frank explained, "When I vote, I'll try and vote for more environmentally friendly [candidates]." Similarly, Bob explained his civic action-based environmental intentions:

I guess now I'm getting so old that legislation is gonna come into play so I, of course, will look more environmentally to politicians and whatnot than I would have even when I could have when I could vote as a sophomore. That'll play a role for sure.

Many of the interviewees also discussed their ongoing intention to share what they had learned with others. This included spreading the word to family and friends about specific behaviors, such as recycling or composting, as well as simply looking forward to discussing environmental topics and issues with anyone who will listen. Linda exclaimed, "I definitely still want to try and tell as many people as possible [about the value of the natural environment]."

***Perceived barriers and facilitating factors to exhibition of environmental behaviors.***

As the students talked about the things they planned or hoped to do in the future (i.e., their intentions), they also perceived barriers as well as facilitating factors for their future behaviors. Mary discussed the difficulties of interacting with others who have different environmental orientations. "Other people that don't share the same respect for the environment," she said, "It's going to be tough to work around." Betty said that while she wanted to get involved, she was just too busy to do more or see herself doing more in the near future:

I'm so busy that I don't have time to get like more involved in a bigger aspect of protecting the environment besides reusing bags. Like I don't really have time to do anything more thoughtful. Just doing the little things is all I really have time for... it's kinda like once school started I just got so busy that I haven't really had a chance to

kinda get involved in anything but, um, I think my wanting to do something has risen a lot. Before it was just like oh that'd be cool...but really having the desire to, when I really do have a little bit of free time to do something, like active to make a positive difference is something that has changed.

Similarly, James discussed falling back into old habits as an additional barrier to changes in attitudes, intentions, and behaviors. He was aware of the challenge he and others face coming back to the United States after a short-term study-abroad program:

I'm much more aware of everything but still I would say my actions are kinda lacking at times because we kinda just got thrown out there but then we just came right back to it. It's hard to put yourself out of the norms of society and then come back into it and keep what you did while you were outside of I guess society's norms when you go back to it...You get back to what you're used to and you fall back into old habits...That's just kinda how it's structured. That's what you're used to, everyone around you it's what they're used to. It's just kinda hard to break out of that...I mean we were a group that was kinda taken out and exposed to a lot of different things but then we were kinda eased back into our lives before.

While the students did perceive barriers, they also discussed things that might facilitate or extend the environmental attitude, intention, and behavior changes they experienced. Several students mentioned that staying in touch with the group would help them maintain what they had learned, providing yet another opportunity to relive the experience and reflect on what they learned, as described above. It was also suggested that everyone get together for group volunteer projects, similar to the service projects the students

participated in during the program. Anna even wished she “had those friendly reminders or encouragement.” Further, she explained the potential a study-abroad group support system could have after returning home from the program:

I think just getting back together with the people that we studied with and had this gung-ho attitude while we were there and we all shared that same experience and if we kinda made an effort to get together and talk about the things we had learned just to refresh our memory and that kind of thing so that it’s not so lost in what we were doing before we went to Australia. Or even just whether it’s having that one person that’s gonna remind you, hey remember we wanted to do this or that kind of thing. A group effort I guess would help.

### **Positive effect of the experiential field-based model for study abroad.**

The final theme that emerged during the qualitative analysis highlighted the positive thoughts, feelings, and overall response to the experiential field-based model for study abroad. The subthemes included the response to the program structure, the format of the learning environment, the role of program leaders, and the influence of specific environments/locations.

#### ***Response to program structure.***

Most students expressed a positive response to the program structure. The varied learning environments, including urban, rural/agricultural, coastal rainforests, the Outback/bush, and the open ocean were particularly enjoyable for the students and perceived

as positive, in part, because they were outside of the traditional classroom environment. The students also appreciated the varied course format that incorporated small group discussions, guided reflections, field lectures, service projects, research projects, as well as quizzes, exams, and essays.

Several students felt the coursework added to the experience. Mary noted, “I think it added to it if anything because otherwise I would have been like a weird tourist not knowing what everything was,” while others discussed the “good balance of work and play.” Lisa described the small group discussions, saying, “That was awesome because we had a conversation. It was like an educational conversation but it didn’t feel like it. It just felt like we were talking. So I thought that was really good.”

With a diverse group of majors in 2011, several of the students discussed the value of the program being outside of their primary academic focus on campus. The students seemed to enjoy the time to learn about the environment and take classes outside of their major. Betty said, “I liked that I combined the school work with a completely different atmosphere and learning and I got to learn about different things, like again that I don’t learn here because of my major.” James described the coursework as “interesting and engaging,” while Frank thought it was “relevant” and related well to current global environmental issues.

### ***Format of learning environment.***

Taking the positive thoughts and feelings about the program structure a bit further, there was an overwhelmingly positive response to the hands-on, “education on the move” nature of the program. Many students discussed the benefits of being able to “relate to

everything around you,” “get down and dirty,” and traveling from place to place. Mary really enjoyed the hands-on experience, declaring “There is nothing better I feel like than getting hands on and actually doing some of the work.” Linda compared the hands-on study-abroad experience to a classroom environment:

It’s not just like drawing a picture on the board or something or explaining it. You are actually seeing what it is and seeing what it is doing in the environment...you can actually I guess like relate to it more. Sometimes when you are just staring at a board and teachers are talking you don’t take everything in and you just get like the main idea and you don’t really see how it relates to real life. But when you’re out there in the world and like looking at these things and seeing how they’re working you can remember it a lot better.

Several students speculated about the differences between their field-based study-abroad experience in Australia and study-abroad programs housed within a partner university. Specifically, Anna said:

I loved that we didn’t have to sit in a classroom. It was outdoors. I don’t really know what an experience would be like to actually go to a university abroad, it might be something different but for our case it was cool to have class outside.

Similar sentiments were offered by other students as they described the sense of immersion offered during the program. Lisa said that “It was just engaging when you are actually using all of your senses and moving and learning in the real world.” James offered an even more detailed description of what the immersion-learning environment meant to him:

You weren't sitting in an auditorium listening to a lecture. You were seeing, interacting, and listening, and hearing, and smelling, and touching all the things you were learning about in their natural environment. I mean it really, it really makes things a lot more understandable and it really makes things, I guess, a lot more, you're really more in touch with everything that you learn... interacting with stuff while you are learning about it really enhances your experience.

***Program leaders.***

In addition to the overall structure of the program, the students seemed to really enjoy specific interactions with the program leaders (i.e., the two program faculty, the graduate assistant, and the field guides/guest lecturers) in distinct environments. Several students made it clear that the different perspectives offered by the program leaders “enhanced the experience” and fostered a positive learning environment. Helen discussed the adaptability of the two program faculty as well as the program curriculum:

They really tried to work with us rather than like against us. They knew what was the difference between plain old busy work and stuff that would actually be interesting to us. Like when we had that first debate that was a little boring and they realized that and when we had group discussions they realized that people were more enthusiastic about it so that was a lot better.

*Influence of particular environments/locations.*

In addition to interactions with the program leaders, three particular locations were discussed by the students as the most enjoyable as well as fostering changes or new insights. These three environments, the goldmine and rustic eco-lodge in the Outback (Tyrconnell), the farmstays in the Atherton Tablelands, and the Great Barrier Reef offered truly unique and enjoyable environments.

Many of the students described the Outback camping experience at Tyrconnell as the highlight of the trip. During this part of the program, the entire group was hosted by a family embracing a remote, “off the grid” lifestyle. Mary said that Tyrconnell “really stuck out” while Linda described her initial reaction to the environment and host family at the goldmine:

I got there and they were very cultured and very nice people and very hospitable. And they knew so much about everything. A lot more than I did. It was just very cool to me. They were just happy people and I liked where they lived. That was cool.

James described Tyrconnell, its role in the group coming together, and what he took away from the host family:

I really liked the gold mine. I enjoyed being out there and it was isolated. That was kinda when we all started to bond because there was nothing to do except talk to each other. I really enjoyed the family we stayed with...They were very conscious as far as the environment. They were really aware of their footprint on the environment.

One student put the Outback camping experience into perspective and compared it to the rest of the locations she visited during the program. While she mentioned enjoying getting to know the host family, Anna summed up the thoughts and feelings of many of the other

students well, saying “I thought Tyrconnell was the most different experience that you probably won’t get anywhere else.”

The students also enjoyed their time in the rural agricultural environment. Over the course of two nights and three days, the students separated into groups of three to four and lived with a host family in the Atherton Tablelands. This experience not only gave the students a break from the larger group, but it allowed them to get to know and experience life in Australia from a local perspective. Helen described her host family as “very friendly and open” as she discussed the farm she visited. She went on to express her own interest in the farming lifestyle, stating “I want a farm now. It was just like all these hills and it was like an adventure every day.” Anna described the “once-in-a-lifetime experience” of staying with a host family, noting “being placed right there with somebody who actually resides in Australia, different culture and way of life. I think that’s the best way to see it.” As many of the students discussed, living with a local family for several days provided them a glimpse of the Australian way of life. They observed the collection of rainwater, different waste management systems (i.e., toilets with different flush levels), as well as the general pro-environmental attitude of their hosts.

The third specific aspect of the program consistently mentioned during the 17 interviews was the Great Barrier Reef snorkeling experience. While the students were unable to complete the scheduled research project during the Great Barrier Reef module due to strong winds and currents in 2011, the time spent on and in the water exploring was still described as enjoyable, eye-opening, and a once-in-a-lifetime experience. Her favorite part of the program, Betty described, “Just seeing that, that’s just something that I don’t think is ever

gonna go away in my mind. That was definitely the best part for me.” Gary offered a similar perspective:

I think the big thing was the Great Barrier Reef. You always hear about that it’s dying and stuff like that, but actually hearing from the people who go out there all the time how they could see a difference and how some of the places you could just kinda see a little bit of bleaching going on or stuff like that, I was like oh no. This can't be happening. This is like amazing. It can't be going away. So that’s something that really hit home for me.

Related to the field-based structure of the program, Brenda described how snorkeling at the reef provided a unique hands-on experience. As she compared classroom learning to snorkeling there, she said “I mean you're not really gonna get that here you know? You're not gonna be able to go look at pictures of these fish and then go snorkeling and actually look at them you know?” Overall, these three specific locations and experiences contributed to the overall response to the program as each location was described in a particularly positive light. While the experiences provided at each location were exceptional, it is also clear that the interactions with the program faculty that occurred throughout the program contributed greatly to the study-abroad experience for the 17 participants interviewed.

### **Summary of qualitative results.**

Most students viewed their participation in the North Queensland, Australia study-abroad program as a transformative and positive growth experience. Increased knowledge and awareness, as well as changes in environmental attitudes, intentions, and behaviors,

appeared to have lasted after the program ended. Specifically, most of the students had maintained their more positive attitudes toward the environment in the 5-6 months after the program. Increased pro-environment behavioral intentions and increased exhibition of pro-environmental behaviors also persisted after the program for most of the students. Overall, the students also had a positive response to the experiential, field-based structure of the program, highlighting specific interactions and experiences that were particularly meaningful.

The qualitative results also supported the quantitative findings and helped to address the two research questions at the heart of this research. The themes and subthemes provided evidence that the significant increases in environmental attitudes and intentions discovered at the end of the program lasted at least until the time of the interviews for most of the students. There were also example statements from the interviews that supported individual items from the quantitative measurement scales. The quantitative results were further extended by the flexibility afforded by the qualitative component of this research. This flexibility allowed each component of the Theory of Reasoned Action included in this study (i.e., attitudes, intentions, and behaviors) to be discussed in greater detail and for several timeframes. Together the combined results revealed the effectiveness of the program in increasing environmental attitudes, intentions, and behaviors.

## CHAPTER 5

### Discussion and Implications

This chapter discusses the results of this exploratory study and implications for future research as well as for study-abroad program development and administration. Employing both quantitative and qualitative methods, my research sought to develop a deeper understanding of the effects of an environmentally focused study-abroad program on individual environmental attitudes, intentions, and behaviors. It explored both the immediate and potentially more lasting effects of one such program entitled “Sustaining Human Societies and the Natural Environment” conducted in North Queensland, Australia during the summer of 2011.

My research also attempted to provide a deeper understanding for researchers and practitioners into the potential relationships between components of the Theory of Reasoned Action (i.e., environmental attitudes, intentions, and behaviors) in the context of a particular short-term, study-abroad program and the effects of the program on individual participants. The two research questions that drove this exploratory study addressed the immediate and potential lasting effects of participation in an environmentally focused study-abroad program on environmental attitudes, intentions, and behaviors. Overall, this research found that the program under investigation did have both immediate and longer lasting (i.e., for at least 5-6 months) effects on participants.

### **The Theory of Reasoned Action and Outcomes of Study-Abroad Participation**

The Theory of Reasoned Action (TRA) was used in my study as the foundation for the conceptual framework described in Chapter 1. Limited research has focused on social psychological outcomes of study-abroad programs, particularly those related to the environment. Therefore, this commonly used and accepted theory informed the research design process and provided a roadmap of potential social psychological outcomes after the students participated in the environmentally focused study-abroad program in Australia. While only three components of the theory were examined in the conceptual framework used here (i.e., attitudes, intentions, and behaviors), I believe the reasoned-action approach helped describe the process and outcomes of study-abroad participation related to the environment.

Focusing on the TRA and its particular components included in this research also helped guide the data collection processes. Both the quantitative and qualitative data collection stages were influenced by and directed towards addressing components of the theory. Specifically, the quantitative pre-test and post-test questionnaires addressed attitudes and intentions related to the environment. The qualitative data collection examined attitudes, intentions, and behaviors related to the environment while focusing on different timeframes to investigate potential longer-lasting changes. Overall, employing the TRA in this fashion, specifically focused on study abroad and international education outcomes, was a unique contribution of my exploratory study.

The results described in Chapter 4 supported the TRA by providing evidence that changes in attitudes lead to related behavioral intentions. Behavioral intentions then lead to the exhibition of specific behaviors. Together the quantitative and qualitative results

confirmed the theorized relationships between general environmental attitudes, intentions, and behaviors within a study-abroad setting. Another important finding is that the significant changes in environmental attitudes, intentions, and behaviors lasted at least until the time of the interviews for most students. However, it is important to note that these changes were subject to some level of “fading,” a phenomenon described by several students that is not frequently noted in environmental education or study-abroad research. Overall, the results of this research show that the TRA can be applied to examine outcomes of participation in an environmentally focused study-abroad program and perhaps other more traditional environmental education settings.

### **Immediate Effects of Participation in an Environmentally focused Study-Abroad Program**

Assessment of the immediate effects of the program occurred through quantitative pre-test and post-test questionnaires, incorporating the measurement scales described earlier. The quantitative data revealed three key findings regarding the immediate effects of the program on environmental attitudes and intentions. First, a statistically significant increase in general environmental attitude at the end of the program occurred. Overall, the post-test mean score for the New Ecological Paradigm (NEP) scale was greater than for the pre-test and inferential statistics indicated the program had an immediate (i.e., at the end of the program) and significant positive effect on the general environmental attitudes of the participants. Moreover, environmental attitudes were examined with a measurement scale (i.e., the NEP) that contained general statements about the environment and human populations. As the scale

items did not relate directly to Australia or specifically to program content, it appears that the students were able to make connections between what they were learning and experiencing in Australia to broader environmental themes (e.g., carrying capacity, sustainability, and resource degradation) in general.

My results were contrary to findings from Shepard and Speelman (1986) who found no significant differences between the attitudes of experimental and control groups after participation in an outdoor environmental education program. However, the quantitative results from my research were similar to those reported by Leeming, Porter, Dwyer, Cobern, & Oliver (1997), in which an environmental education program did result in significant changes in environmental attitude. The significant changes in environmental attitudes found in my research were supported by findings from the qualitative analysis. The students discussed their environmental attitudes during the interviews, describing their increased appreciation and sense of enlightenment at the end of the program. Throughout our discussions it was clear that the students' attitudes had shifted towards more favorable or positive evaluations of the environment. Several students described their environmental attitudes 5-6 months after the program as "changed" and "better than it was before," also indicating that a positive shift in environmental attitudes had occurred.

Second, there was a statistically significant increase in the overall post-test mean score for the Environmental Intention (EI) scale compared to the pre-test value indicating a greater likelihood that the participants intended to carry out the pro-environmental behaviors measured by the EI scale. This significant quantitative findings related to environmental intentions was further supported through the qualitative analysis and specific statements

during the interviews. For example, one student described the volunteer trips she hopes to take in the future specifically related to the environment. Through these trips she intends to participate in civic action-oriented behaviors related to the environment. Similarly, several students discussed their intent to continue sharing what they learned about the environment during the program with friends and family members in the future. Some of the students also described their intent to join environmental groups, further supporting the significant quantitative findings from the EI scale. Another interesting finding was the only statistically significant result from the EI scale to experience a decrease between the pre-test and post-test. This item decreased by 0.7 ( $p < .05$ ) and addressed the likelihood respondents would “Consider changing the car/vehicle you normally drive to a smaller engine size.” Making changes like the one described by this item might require several thousand dollars. A change of this magnitude might be particularly challenging financially for the typical college student, which describes why this item decreased as the students discovered other “little things” that can make a difference.

Third, the Consumer Intention (CI) scale mean scores also increased significantly from the pre-test to the post-test. This change indicated that the program participants experienced an increase in pro-environmental consumer intentions by the end of the program. For example, the second item from the CI scale, which stated “to reduce our reliance on foreign oil, I will drive my car as little as possible,” exhibited a statistically significant positive change or increase from pre-test to post-test (+1.2) overall. Several student responses during the interviews directly related to the increase observed in pro-environmental consumer intentions as they stated they had tried to and plan on continuing to walk more, use

public transportation, and carpool. The students also discussed their intent to buy environmentally friendly products during the interviews. Statements about future consumer intentions were often combined with the students' intent to tell others about the importance of protecting the environment. A combination of such qualitative findings showed support for another statistically significant result from the CI scale, which indicated that after the program the students were more likely to convince family or friends not to purchase products harmful to the environment. Taken together, the quantitative results from the three primary measurement scales, with support from the qualitative data, point to the positive effect of the environmentally focused program on environmental attitudes and intentions at the end of the program.

Several factors may have influenced this immediate positive effect of the program on participants' environmental attitudes and intentions. First, the topics examined and lessons learned were fresh in the minds of the participants as they completed the post-test questionnaire on the last official day of the program. It is also possible that the students were responding to the post-test questionnaire in a state of excitement and enthusiasm as the program was culminating. In this state, they may have responded to the questionnaires in a more positive manner. Since the pre-test and post-test quantitative examinations employed in this research were conducted only three and a half weeks apart, it was important to consider the possibility of pre-test response bias with post-test responses possibly influenced by the completion of the program pre-tests. Therefore, attitudes and intentions before and at the end of the program were discussed with the interviewees and there was no evidence of pre-test

bias. During the interviews, the majority of participants confirmed their attitudes toward the environment had been more positive at the end of the program than at the beginning.

The significant increases in both environmental and consumer intentions from before the program to the end of the program could be explained in a similar fashion to the increase in environmental attitude. As the program had just officially ended, the students were not long removed from the experiences and discussions that transpired during the trip. In fact, many of the students set goals for future behaviors related to the environment at the end of the program. The final set of small group discussions and reflections, which took place at Cape Tribulation several days before the post-test, included the students brainstorming potential changes to their behavior once they returned home based on what they had learned during the program. Asked to reflect on the activities, experiences, and locations throughout the program, each student developed and shared several goals with their small group at the end of the discussion.

Reflection exercises and small group discussions were a regular component of the program, which I believe helped the students process what they were learning and feeling in the field. Through these activities, many students directly addressed their attitudes toward the environment and their intended behaviors moving forward. Each reflective discussion tended to build on the others and potentially contributed to students' significant increases in environmental attitudes. It is also possible that goals and intentions articulated during the reflection exercises contributed to the statistically significant increases in both intention measures from pre-test to post-test. The students also described the benefits of these exercises during the interviews, noting that the reflection exercises and small group

discussions kept them engaged through the formulation of ideas in an open student-driven discussion. Overall, it seems to me that the integration of guided reflection exercises into the study-abroad curriculum, particularly the goal-setting exercises, were especially effective in fostering positive environmental attitude and intention changes, even though such changes were not explicitly stated as program objectives.

The program content and coursework were also specifically designed to help students understand the impacts of human populations on natural systems, study how natural systems change, and examine how humans respond to those changes in a field-based educational setting. During the program, the students investigated topics such as natural history, ecological diversity, sustainability, and environmental education practices in Australia. It was clear to me that the students' knowledge and awareness of environmental issues and program topics increased during the program. These increases were first noticed during my conversations with the students in Australia. The students also noted increases in knowledge and awareness during the interviews. Several students discussed how limited their understanding of the environment had been before the program and described how their knowledge and awareness grew throughout the experience. Other students noted specific differences between Australia and the United States, calling attention to issues of water use, recycling, and sustainability (a major program emphasis). Having completed the two-course program, the students were able to compare what they learned about Australia to the United States and they were better equipped to consider and react to the complex relationships between human society and the natural environment. I think this particular environmentally focused study-abroad program was effective in getting the students to consider the roles of

human populations within natural environments, ultimately resulting in a positive shift in environmental attitudes, intentions, and behaviors. It is also important to note that the students' enthusiasm for the study-abroad experience and their positive changes in environmental attitudes, intentions, and behaviors did endure for at least 5-6 months for most of the participants. This suggests that these changes were not short-term or due to pre-test response bias. Field-based environmental education courses similar to the program under investigation in this study have also been found to be effective by previous research such as Stern, Powell, and Ardoin (2010). In addition to reporting that they were highly satisfied with the field-based environmental education program, their respondents also reported greater environmental responsibility after participating in such a program.

### **Lasting Effects of Participation in an Environmentally Focused Study-Abroad Program**

Both the quantitative and qualitative data showed that there was an immediate effect of participation in an environmentally focused study-abroad program. The qualitative semi-structured interviews sought to build on this result and address the second research question regarding the potential longer lasting effects of participation in the program on environmental attitudes, intentions, and behaviors in the 5-6 months since the end of the program. While investigating the longer lasting effects of study-abroad participation is previously unreported in the literature, results from this study indicated the program had several effects that endured over this timeframe. Several main themes emerged from the qualitative analysis. One theme uncovered through the qualitative analysis related directly to the second research question regarding the potential longer lasting effects of the program. The positive changes in

environmental attitude, intention, and behavior described by the students highlighted the more lasting effects program participation had on the majority of the 17 students interviewed. This theme supports the statistically significant increases in environmental attitudes and intentions found between the quantitative pre-test and post-test. It also extends those findings, indicating that the positive shift in environmental attitudes and intentions lasted at least to the time of the interviews (i.e., 5-6 months after the program). It is important to note, however, that several students discussed their attitudes as primarily positive before the program and unchanged at the end or months later during the interview. Further, several students described the “fading” of their newfound positive attitude (i.e., since the end of the program). That said, most of the students indicated a positive shift in all three domains at the time of the interviews, indicating that the program was successful in fostering longer lasting positive environmental attitudes, intentions, and behaviors.

The students also discussed increased knowledge and awareness of environmental issues during the interviews. Consistent with results in my research, Bradley, Waliczek, and Zajicek (1999) found that students exhibited increases in knowledge after participation in an environmental education course. Increasing knowledge and awareness of environmental issues is also an important component of developing globally responsible citizens with respect to the environment, an explicitly stated program objective. Previous research has also found educational travel such as study abroad to influence aspects of global environmental citizenship. Examining a sample of 623 students, Tarrant et al. (2011) found that participation in programs similar to the one under investigation here influenced participants’ support for environmental policies, contributing to the overall development of globally

responsible environmental citizens. Overall, the students in my research described several aspects of global environmental citizenship development during the interviews, including increased knowledge and awareness of environmental issues, intent to take action, and the exhibition of specific pro-environmental behaviors. The qualitative data also supported the statistically significant quantitative findings of increases in environmental attitudes and intentions. Therefore, findings from my exploratory research shed light on the potential for further global citizenship development, highlighting the role attitudes, intentions, and ultimately exhibited behaviors can play in the growth of study-abroad participants after the program ends and they have returned home.

The two remaining themes, study abroad as a transformative and positive experience as well as the contribution of the experiential field-based learning model for study abroad, revealed participants' longer lasting perceptions of an overall positive program experience. Building on the significant positive shifts identified in the quantitative data, each student discussed the overall program experience as a positive one during the interviews, with some explaining why or how they grew as an individual during and after the program. The general sense of enjoyment and fun during the program was pervasive in observations I made both during the program as well as student comments during the interviews. The development of new friendships and a sense of independence and adventure clearly contributed to the fun and enjoyable environment the students described. The program format focused on experiential field-based learning and the use of hands-on activities also seemed to be well received by the students. Their comments during the interviews suggested that the format of the program contributed to the outcomes such as the positive shifts in environmental attitudes and

intentions. The example statements also suggested that the program format influenced longer lasting changes such as increased knowledge, awareness, and the exhibition of pro-environmental behaviors. Moreover, the students enjoyed the hands-on experiential learning more than the normal classroom environment of a campus-based course and felt it was more effective.

It is possible that both the immediate and more lasting effects of the program are mainly the cumulative result of the students' first-hand experiences. Throughout the program, hands-on activities such as research projects and service projects were woven into the itinerary. For example, rather than just hearing about environmental impacts on reef environments from lecturers, the students were able to have the profound experience of actually seeing those impacts first-hand. The students were able to travel from site to site, snorkeling and comparing the differences among reef management zones. It was quite apparent that first-hand experiences like snorkeling on the Great Barrier Reef contributed to the overall positive experience for the students. In addition to contributing to students' increased environmental attitude and intention scores at the end of the program, these experiences also offered tangible examples for the students to recall. These examples might help the participants as their environmental attitudes evolve after the program and they have to make decisions regarding their environmental behaviors moving forward.

While previous research has discussed the positive effects of field-based immersion experiences (Alagona & Simon, 2010), the 2011 Australia program participants here discussed the benefits of hands-on learning compared to more traditional learning environments, concluding that the field-based model contributed to knowledge retention as

well as student interest and engagement. Additionally, the students were learning about the environment in a manner that facilitated immersion. The program structure and hands-on activities allowed the students to use all of their senses to learn and then they were asked to think critically about the issues under examination through reflective discussions and/or writing essays. Overall the field-based learning model for study abroad was effective in the context of this program, resulting in statistically significant increases in environmental attitudes and intentions at the end of the program as well as longer lasting positive changes in environmental attitudes, intentions, and behaviors.

While the quantitative results indicated an immediate positive effect of the program on environmental attitudes and intentions, the qualitative results clearly revealed longer lasting effects of the program on attitudes, intentions, and behaviors for most of the interviewed participants. There are many reasons why the program could have influenced the participants in a manner that continued months after the program ended. Study-abroad experiences expose students to a new culture and environment that in most cases participants have not experienced before. It is possible that the novelty of the experience alone (i.e., as compared to time spent in a more traditional classroom environment in their home country) might help foster more enduring program effects. The students here expressed enjoyment during the trip and most were quite sad to leave as the program came to an end. Additionally, many students articulated their excitement regarding the many different experiences they were afforded during the program such as camping in the Outback or snorkeling at the Great Barrier Reef.

Another important observation was that many of the students had kept in touch with one another months after the program via social networking sites such as Facebook and had gotten together in their free time. Most of the students also attended a group reunion at the home of the two faculty leaders held about two months after the program. It is possible that continuing the friendships and connections developed during their study-abroad experience had also contributed to the longer lasting effects of the program. Through their shared experiences, the students were able to continue to relive and build upon aspects of the program experience, perhaps resulting in further consideration of the topics and issues discussed abroad.

### **Implications for Future Research**

Results from my exploratory research raised several important questions for future research. First, as changes in participants' environmental awareness, knowledge, attitudes, intentions, and behaviors appear to have lasted over the course of 5-6 months after the program ended, what is the potential for their continued endurance? As several students mentioned a "fading" of the program effects on their environmental attitudes, intentions, and behaviors, it is possible that as more time passes more students will experience something similar. Is there a "decay curve" in attitudes, intentions, and behaviors that needs to be acknowledged or built into the Theory of Reasoned Action (TRA)? Are there factors or actions that can affect or delay the "fading" some of the participants in my research described? Future research should incorporate the TRA as well as other social psychological frameworks to address these questions and continue to examine the nature of the attitude-

behavior relationship. Confirming the findings from my research can further support the use of the TRA to understand outcomes of study abroad and more traditional environmental education programs, perhaps leading to new avenues of discovery regarding social psychological outcomes of educational programming.

While the program appeared to be effective in terms of fostering positive changes in the environmental attitudes, intentions, and behaviors of the students, do the effects of the program transfer beyond the realm of the environment to other parts of their lives? Are students also more aware and knowledgeable of social issues, for example, after the program? Do they feel or think differently about other cultures after the program? These are important questions requiring further investigation. As this exploratory study examined only a small group of 27 students and focused primarily on the environment, the use of on-campus control groups and longitudinal designs could help to extend these findings.

Future research examining potential outcomes of study-abroad participation should also investigate potential mediating variables such as program location, length, and the academic focus of the program. While program length has been examined previously regarding traditional environmental education programs (Bogner, 1998), little cross-program comparison has been incorporated in study abroad-related research. Is there a specific length of time required (i.e., a “threshold”) for a program to have particular effects? Is there a relationship between program length and particular outcomes such as environmental attitudes, intentions, and behaviors? How does the focus or the location of the program influence outcomes related to study-abroad participation? While these questions require more

extensive investigation, such research could provide useful guidance during program planning and development.

Future research should also examine the potential role that other constructs might have on study-abroad outcomes. Students' image of the study-abroad destination before traveling there might influence their expectations or how different teaching styles, environments, or experiences affect them. Other constructs, such as place attachment, specifically the affective place identity dimension, might also play a role regarding study-abroad participation and attitude or behavior outcomes. Vaske and Kobrin (2001) found that place attachment, specifically place identity, was significantly related to the development and exhibition of environmentally responsible behavior. As Carl described during his interview, his identity was transformed after studying abroad in Australia. He was "touched" by the experience and described Australia as "part of us now, and it's part of our identity." However, it is unclear precisely what contributed to this transformation. Was it the destination? The particular experiences and lessons learned during the program? Or was it simply due to being in a new environment and culture far from home? These are interesting questions that remain unanswered after this mixed-methods research. Thus, to examine what potentially mediates the relationship between study-abroad participation and the environmental education outcomes highlighted in this research, future program assessments should incorporate additional constructs as well as the TRA elements that were not included in this exploratory study.

To better understand specific program outcomes such as changes in environmental attitudes, intentions, and behaviors within a study-abroad context, it is also important to

understand how each component of a program contributes to these changes. Future research focused on specific program components such as service projects, group discussions, research projects, or reflection exercises might also provide new insights for study-abroad program development. For example, future research designed to investigate the relative impact of various program elements on specific outcomes such as participants' environmental attitudes, intentions, and behaviors could aid program design and administration.

### **Implications for Study-Abroad Program Administration**

In addition to implications for future research, study-abroad program faculty and administrators should also consider the results from this study. Overall, my research was intended to aid study-abroad program administrators in understanding program effects and, ultimately, in improving curricula. With a greater understanding of the effects of one environmentally focused study-abroad program, faculty and administrators may discover areas where improvements are possible. Examining the potential relationships between international environmental education experiences and an individual's attitudes and behaviors can help program leaders develop and maintain curricula to better meet program goals and objectives.

As Duke (2000) emphasized, it is important to develop activities and learning objectives based on their suitability to the focus of the program. It is possible that the experiential field-based model described in this study is particularly effective for natural resource or environmental programs, but may not work as well for other types of programs or

in other locations. However, an important implication of this research is that the field-based learning model should be explored as the foundation for future short-term, faculty-led, study-abroad program development, particularly those focused on environmental issues. For students in my research, hands-on field activities woven into the program itinerary seemed to foster a sense of immersion and encourage thoughtful student engagement. During the interviews, several students discussed how the hands-on activities contributed to their overall program experience and were more beneficial than traditional classroom learning environments. The students also described being able to focus and maintain interest more effectively and longer during hands-on field activities. Further, as the experiential field-based learning model for study abroad appeared to be effective in this short-term, faculty-led program, participants in other types of study-abroad programs (e.g., university housed programs, individual exchanges, programs lasting longer than a semester) may also benefit from this approach. According to several respondents in this research, service projects, research projects, and educational tours were particularly important components of their study-abroad program experience.

The program under investigation in this research also employed other teaching methods and means of student engagement, including guided reflections, group discussions, essays, quizzes, and exams. During the interviews, several students discussed the benefits of incorporating the guided reflections and group discussions. These activities allowed the students to think introspectively about what they were learning and experiencing. They also had opportunities to share their thoughts with others, creating an open, student-driven dialogue about program concepts. As students enjoyed these activities and described them as

effective teaching methods, faculty should consider incorporating such exercises during other study-abroad programs while maintaining a focus on hands-on field-based experiential education. Many informal learning opportunities also developed in the form of student conversations with the program faculty, guest lecturers, or classmates. Therefore, program faculty should be aware of and prepared to capitalize on the many educational opportunities that develop out of informal settings such as short student conversations or even sights glimpsed out of a tour bus window.

Other students described the unique and novel nature of specific experiences offered during this study-abroad program. While the Outback camping experience, the farmstay, and snorkeling at the Great Barrier Reef stood out to the majority of the program participants, several of the experiences and locations during the trip were opportunities not available to tourists outside of this academic program. These opportunities allowed for the development of totally unique experiences for the students. For example, the students in this research had an opportunity to ascend into the Daintree World Heritage Rainforest canopy in one of only 11 rainforest research canopy cranes in the world and not open to the public. The students traveled to the remote canopy crane site, listened to an introductory lecture from one of the on-site staff researchers, and completed a rainforest revegetation research project. Over the several hours the students were working, they took turns in small groups ascending through and above the rainforest canopy with the crane operator. Crane operation and specific research projects taking place were discussed as the students made their way to the top of the 150 meter crane. Spending several minutes above the rainforest canopy, the views stretched to the coast and allowed the students to visualize the connections between the rainforest,

mangrove, and reef environments discussed in the current module. Overall, the students appreciated and spoke highly of peak experiences like these that also made connections to program material. It was apparent during the interviews that the uniqueness and memorable nature of these experiences stood out to the students, contributing to the maintenance and recall of the lessons learned. Therefore, study-abroad program faculty should attempt to incorporate unique and exceptional experiences in their itineraries for any given program location.

It is also important that program faculty and administrators consider ways they can facilitate making positive program outcomes as enduring as possible for participants. Such strategies might include staying in contact with program participants, organizing events or activities related to program topics, or incorporating a final reflective assignment to be completed after the students return home. As the data revealed, most of the students reported positive changes in their environmental attitudes, intentions, and behaviors lasting 5 to 6 months. However, in addition to several students noting the “fading” of positive changes after the program, we cannot be sure how long the overall positive influence of such programs will last. This uncertainty leaves room for the improvement of program content and structure, while providing opportunities to reinforce and further enhance program effects after the students return home.

One particularly effective method to reinforce program effects could be follow-up communications between program faculty and participants. There are several ways faculty or study-abroad administrators might maintain constructive contact with the program participants after the program ends to help maintain and encourage the positive changes

elicited by the program. Several of these actions were even requested by 2011 program participants during the interviews. First, faculty could continue to communicate with students via email, social networking websites, or blogs after the program is completed. While the students in this study simply wanted to stay in touch, an occasional reminder or a photo of a specific experience, location, or activity from program faculty/leaders might help the students relive an aspect of the program, recall the effects of the program, and encourage continuing reflection and action. Sharing scientific journal articles, newspaper or magazine articles, images, videos, and other sources of information regarding the program topics or locations might keep the students focused on the lessons they learned during the program and help encourage knowledge retention and increased awareness.

Given the importance of hands-on field experiences in the context of this particular environmentally focused study-abroad program, faculty program leaders should consider encouraging or even organizing get-togethers with program participants after the program for the completion of service projects. Continued faculty involvement, encouragement, and discussion of program concepts might help maintain and motivate ongoing pro-environmental behavior and global citizenship, potentially counteracting or at least slowing the “fading” of pro-environmental attitudes described by several students in this research. While these additional undertakings require time and effort on the part of program faculty, the potential exists to maintain or even further develop the positive effects of a study-abroad program.

## **Conclusion**

Overall, this research provided insights into the development and maintenance of environmental attitudes, intentions, and behaviors resulting from participation in an environmentally focused study-abroad program. As previous research has illuminated, an examination of attitude and behavior components can lead to improved environmental education efforts (Pooley & O'Connor, 2000). Developing a deeper understanding of the relationship between environmental education efforts, attitude, and behavioral outcomes remains a significant challenge, however. My research examined a realm of environmental education that has garnered far less attention than its more traditional counterparts. In the face of global environmental issues such as climate change, population growth, and resource scarcity, traditional educational interventions may not be enough to stem human-caused environmental impacts. Therefore environmentally focused study-abroad programs are an important component of environmental education in addition to programs offered in more traditional settings.

Vaske and Kobrin (2001) discussed that simply raising individual awareness of important environmental issues is not necessarily enough to elicit the positive environmental behaviors required to initiate large-scale change. Creative approaches to environmental education can provide new avenues to engage students, help them develop an interest in complex environmental issues, and provide them with the tools they need to make thoughtful and difficult decisions. My research showed that short-term study-abroad programs can offer an experiential field-based learning environment that can be effective with regards to environmental education goals. While results from this study highlighted several aspects of a

specific environmentally focused study-abroad program that were particularly effective in positively influencing program participants, there is always room for improvement in terms of education programs in any field. It is hoped that this outcome-focused assessment of study-abroad participation brings more attention to the important role study abroad can play in the development of globally-minded environmental citizens and provides university and program administrators with useful information as to effective study abroad and environmental education practices.

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**APPENDICES**

## Appendix A

### Pre-test and Post-test Questionnaires

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**5-25-11**  
**North Queensland, Australia**  
**Student Learning Outcomes and Global Programs**  
**Survey A 2011**

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This survey should be completed at the beginning of your course. A follow-up survey (B) will be administered at the end of the course. The information collected will remain confidential and will not be linked to your involvement (including academics) in the course. Please check (with a  $\checkmark$  or X) the single response that best reflects your opinion to each question and use blue or black ink (not pencil). Upon completion return the completed survey to the provided envelope. We hope that you will answer all of the questions.

#### **1** Guiding Principles in Your Life

Please indicate how important each of the following statements is as a guiding principle in YOUR life. Please rate each statement on a scale from 1 ("Not at all important as a guiding principle for you") to 7 ("Extremely important as a guiding principle for you").

	Not at all Important				Extremely Important		
	1	2	3	4	5	6	7
Unity with nature, fitting in with nature							
Protecting the environment, preserving nature							
Respecting the Earth, harmony with other species							
Preventing pollution, conserving natural resources							
A world at peace, free of war and conflict							
Equality, equal opportunity for all							
Social justice, correcting injustice, care for the weak							
Authority, the right to lead or command							
Influential, having an impact on people and events							
Wealth, material possessions, money							
Social power, control over others, dominance							

<b>2</b>	<b>New Ecological Paradigm</b>
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Please indicate whether you agree or disagree with each of the following statements on a scale from 1 (“Strongly Disagree”) to 7 (“Strongly Agree”) with a mid-point of 4 (“Neither Agree nor Disagree”).

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
We are approaching the limit of the number of people the earth can support							
Humans have the right to modify the natural environment to suit their needs							
When humans interfere with nature it often produces disastrous consequences							
Human ingenuity will insure that we do NOT make the earth unlivable							
Humans are severely abusing the environment							
The earth has plenty of natural resources if we just learn how to develop them							
Plants and animals have as much right as humans to exist							
The balance of nature is strong enough to cope with the impacts of modern industrial nations							
Despite our special abilities humans are still subject to the laws of nature							
The so-called “ecological crisis” facing humankind has been greatly exaggerated							
The earth is like a spaceship with very limited room and resources							
Humans were meant to rule over the rest of nature							
The balance of nature is very delicate and easily upset							
Humans will eventually learn enough about how nature works to be able to control it							
If things continue on their present course, we will soon experience a major ecological catastrophe							

### 3 Your Views About Environmental Conditions

Please indicate whether you agree or disagree with each of the following statements on a scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree") with a mid-point of 4 ("Neither Agree nor Disagree").

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
Over the next decade, thousands of species of plants and animals will become extinct							
Claims that we are changing the climate are greatly exaggerated							
Environmental protection benefits everyone							
Environmental protection will help people have a better quality of life							
Environmental protection will provide a better world for me and my children							
Environmental protection is beneficial to my health							

### 4 Environmental Intentions

In the next twelve months, how likely is it on a scale from 1 ("Not at all Likely") to 7 ("Extremely Likely") that you will...

	Not at all Likely			Extremely Likely			
	1	2	3	4	5	6	7
Read any newsletters, magazines or other publications written by environmental groups?							
Sign a petition in support of protecting the environment?							
Give money to an environmental group?							
Write a letter or call your member of Congress or another government official to support strong environmental protection?							
Boycott or avoid buying the products of a company because you feel that the company is harming the environment?							
Vote for a candidate in an election at least in part because he or she was in favor of strong environmental protection?							
Consider changing the car/vehicle you normally drive to a smaller engine size?							
Become a member of any group whose main aim is to preserve or protect the environment?							

### 5 Political Orientation

Which of the following best describes your political orientation? Please check one of the following:

- Green (Far Left-wing)
  Democrat  
 Republican
  Libertarian (Far Right-wing)

## 6 Environmental Policies

For each of the following statements, please indicate whether you agree or disagree with the statement on a scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree") with a mid-point of 4 ("Neither Agree nor Disagree").

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
I would be willing to pay much higher taxes in order to protect the environment							
I would be willing to accept cuts in my standard of living to protect the environment							
I would be willing to pay much higher prices in order to protect the environment							

## 7 Personal Obligations

For each of the following statements, indicate the extent to which you feel a personal obligation on a scale from 1 ("No Obligation") to 7 ("Very Strong Obligation").

	No Obligation				Very Strong Obligation		
	1	2	3	4	5	6	7
Do you feel a personal obligation to buy environmentally friendly products for your household?							
Do you feel a personal obligation to recycle household waste?							
Do you feel a personal obligation to pay attention to advertisements about products which are safe for the environment?							
Do you feel a personal obligation to read and compare package labels for environmentally safe ingredients when you shop?							
Do you feel a personal obligation to buy products made with recycled ingredients?							
Do you feel a personal obligation to buy larger size products in order to reduce waste?							
Do you feel a personal obligation to do whatever you can to help protect the environment?							
Do you feel a personal obligation to buy products made by companies known for being environmentally responsible?							

## 8 Citizen Type

Which of the following best describes the type of citizen that you consider yourself to be? Select the **one** statement that best describes you. Please check only one box.

- Someone who recycles, gives blood, and/or volunteers in times of crisis
- Someone who actively participates in civic and community organizations
- Someone who knows about social movements and explores the root causes of social and environmental problems
- None of these best describes me

**9 Consumer Intentions**

The next series of statements measure your environmental behavior intentions. For each statement, please indicate how likely you will be to perform the behavior in question on a scale from 1 ("Not at all Likely") to 7 ("Extremely Likely").

	Not at all Likely				Extremely Likely		
	1	2	3	4	5	6	7
To save energy, I will drive my car as little as possible							
To reduce our reliance on foreign oil, I will drive my car as little as possible							
I will use a recycling center or in some way recycle some of my household trash							
I will convince members of my family or friends not to buy some products which are harmful to the environment							
I will try to only buy products that can be recycled							
I will switch products for ecological reasons							
When I purchase products, I will always make a conscious effort to buy those products that are low in pollutants							
I will not buy household products that harm the environment							
I will buy high-efficiency light bulbs to save energy							
I will purchase household appliances which use less electricity than other brands							

**10 Personal Characteristics**

The next set of questions asks about who you are.

- a Are you...  Male  Female
- b When were you born (month/day/year)? \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
- c What is your major? \_\_\_\_\_
- d What is your academic standing (Circle one)? Freshman      Sophomore      Junior      Senior      Grad
- e What previous travel and international experience do you have?

	Yes	No
Have you previously studied abroad?		
Have you previously traveled/had a vacation overseas?		
Have you previously lived overseas?		
Are you, your parents, or grandparents immigrants of another country?		
Are you fluent in a language other than English?		

- f** How important were each of the following in your decision to study abroad on this program? Please rate each on a scale from 1 ("Not at all important in my decision to study abroad") to 7 ("Extremely important in my decision to study abroad").

	Not at all Important						Extremely Important
	1	2	3	4	5	6	7
My family and/or friends							
My professor							
Course credits							
The country/destination							

- g** In your opinion, how much does the country you chose to study abroad in offer as a tourist destination compared to the United States? Rate each of the following characteristics on a scale from 1 ("offers less than the U.S.") to 7 ("offers more than the U.S.") with a mid-point of 4 ("Neither Less nor More").

	Offers <b>less</b> Than the U.S.		Neither less Nor more		Offers <b>more</b> Than the U.S.		
	1	2	3	4	5	6	7
Beautiful scenery							
Friendly people							
Personal safety							
Fun and adventure							
Clean and green environment							
Value for money							
Cultural attractions							
Healthy living							
Good place to visit							

Thank-you for completing the survey; please return the survey to the provided envelope.

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**5-25-11**  
**North Queensland, Australia**  
**Student Learning Outcomes and Global Programs**  
**Survey B 2011**

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This survey is a follow-up to the one completed earlier and should be completed at the end of your course. The information collected will remain confidential and will not be linked to your involvement (including academics) in the course. Please check (with a  $\checkmark$  or X) the single response that best reflects your opinion to each question and use blue or black ink (not pencil). Upon completion return the completed survey to the provided envelope. We hope that you will answer all of the questions.

**1** **Guiding Principles in Your Life**

Please indicate how important each of the following statements is as a guiding principle in YOUR life. Please rate each statement on a scale from 1 ("Not at all important as a guiding principle for you") to 7 ("Extremely important as a guiding principle for you").

	Not at all Important				Extremely Important		
	<b>1</b>	2	3	4	5	6	<b>7</b>
Unity with nature, fitting in with nature							
Protecting the environment, preserving nature							
Respecting the Earth, harmony with other species							
Preventing pollution, conserving natural resources							
A world at peace, free of war and conflict							
Equality, equal opportunity for all							
Social justice, correcting injustice, care for the weak							
Authority, the right to lead or command							
Influential, having an impact on people and events							
Wealth, material possessions, money							
Social power, control over others, dominance							

**2** New Ecological Paradigm

Please indicate whether you agree or disagree with each of the following statements on a scale from 1 (“Strongly Disagree”) to 7 (“Strongly Agree”) with a mid-point of 4 (“Neither Agree nor Disagree”).

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
We are approaching the limit of the number of people the earth can support							
Humans have the right to modify the natural environment to suit their needs							
When humans interfere with nature it often produces disastrous consequences							
Human ingenuity will insure that we do NOT make the earth unlivable							
Humans are severely abusing the environment							
The earth has plenty of natural resources if we just learn how to develop them							
Plants and animals have as much right as humans to exist							
The balance of nature is strong enough to cope with the impacts of modern industrial nations							
Despite our special abilities humans are still subject to the laws of nature							
The so-called “ecological crisis” facing humankind has been greatly exaggerated							
The earth is like a spaceship with very limited room and resources							
Humans were meant to rule over the rest of nature							
The balance of nature is very delicate and easily upset							
Humans will eventually learn enough about how nature works to be able to control it							
If things continue on their present course, we will soon experience a major ecological catastrophe							

### 3 Your Views About Environmental Conditions

Please indicate whether you agree or disagree with each of the following statements on a scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree") with a mid-point of 4 ("Neither Agree nor Disagree").

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
Over the next decade, thousands of species of plants and animals will become extinct							
Claims that we are changing the climate are greatly exaggerated							
Environmental protection benefits everyone							
Environmental protection will help people have a better quality of life							
Environmental protection will provide a better world for me and my children							
Environmental protection is beneficial to my health							

### 4 Environmental Intentions

In the next twelve months, how likely is it on a scale from 1 ("Not at all Likely") to 7 ("Extremely Likely") that you will...

	Not at all Likely			Extremely Likely			
	1	2	3	4	5	6	7
Read any newsletters, magazines or other publications written by environmental groups?							
Sign a petition in support of protecting the environment?							
Give money to an environmental group?							
Write a letter or call your member of Congress or another government official to support strong environmental protection?							
Boycott or avoid buying the products of a company because you feel that the company is harming the environment?							
Vote for a candidate in an election at least in part because he or she was in favor of strong environmental protection?							
Consider changing the car/vehicle you normally drive to a smaller engine size?							
Become a member of any group whose main aim is to preserve or protect the environment?							

### 5 Political Orientation

Which of the following best describes your political orientation? Please check one of the following:

- Green (Far Left-wing)
  Democrat  
 Republican
  Libertarian (Far Right-wing)

## 6 Environmental Policies

For each of the following statements, please indicate whether you agree or disagree with the statement on a scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree") with a mid-point of 4 ("Neither Agree nor Disagree").

	Strongly Disagree		Neither Agree nor Disagree			Strongly Agree	
	1	2	3	4	5	6	7
I would be willing to pay much higher taxes in order to protect the environment							
I would be willing to accept cuts in my standard of living to protect the environment							
I would be willing to pay much higher prices in order to protect the environment							

## 7 Personal Obligations

For each of the following statements, indicate the extent to which you feel a personal obligation on a scale from 1 ("No Obligation") to 7 ("Very Strong Obligation").

	No Obligation				Very Strong Obligation		
	1	2	3	4	5	6	7
Do you feel a personal obligation to buy environmentally friendly products for your household?							
Do you feel a personal obligation to recycle household waste?							
Do you feel a personal obligation to pay attention to advertisements about products which are safe for the environment?							
Do you feel a personal obligation to read and compare package labels for environmentally safe ingredients when you shop?							
Do you feel a personal obligation to buy products made with recycled ingredients?							
Do you feel a personal obligation to buy larger size products in order to reduce waste?							
Do you feel a personal obligation to do whatever you can to help protect the environment?							
Do you feel a personal obligation to buy products made by companies known for being environmentally responsible?							

## 8 Citizen Type

Which of the following best describes the type of citizen that you consider yourself to be? Select the **one** statement that best describes you. Please check only one box.

- Someone who recycles, gives blood, and/or volunteers in times of crisis
- Someone who actively participates in civic and community organizations
- Someone who knows about social movements and explores the root causes of social and environmental problems
- None of these best describes me

**9 Consumer Intentions**

The next series of statements measure your environmental behavior intentions. For each statement, please indicate how likely you will be to perform the behavior in question on a scale from 1 ("Not at all Likely") to 7 ("Extremely Likely").

	Not at all Likely			Extremely Likely			
	1	2	3	4	5	6	7
To save energy, I will drive my car as little as possible							
To reduce our reliance on foreign oil, I will drive my car as little as possible							
I will use a recycling center or in some way recycle some of my household trash							
I will convince members of my family or friends not to buy some products which are harmful to the environment							
I will try to only buy products that can be recycled							
I will switch products for ecological reasons							
When I purchase products, I will always make a conscious effort to buy those products that are low in pollutants							
I will not buy household products that harm the environment							
I will buy high-efficiency light bulbs to save energy							
I will purchase household appliances which use less electricity than other brands							

**10 Personal Characteristics**

The next set of questions asks about who you are.

**a** Are you...  Male  Female

**b** When were you born (month/day/year)? \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**c** What is your major? \_\_\_\_\_

d

In your opinion, how much does the country you chose to study abroad in offer as a tourist destination compared to the United States? Rate each of the following characteristics on a scale from 1 ("offers less than the U.S.") to 7 ("offers more than the U.S.") with a mid-point of 4 ("Neither Less nor More").

	Offers <b>less</b> Than the U.S.		Neither less Nor more		Offers <b>more</b> Than the U.S.		
	<b>1</b>	2	3	<b>4</b>	5	6	7
Beautiful scenery							
Friendly people							
Personal safety							
Fun and adventure							
Clean and green environment							
Value for money							
Cultural attractions							
Healthy living							
Good place to visit							

Thank-you for completing the survey; please return the survey to the provided envelope.

## Appendix B

### Interview Structure – Questions and Prompts

#### **Warm-up (as needed)**

What have you been up to since the program ended?

How is your semester going? OR How was your semester? (depending on time of interview)

#### **Introductory Statement**

**Thanks for taking the time to talk with me today. I would like to chat about a few different aspects of your study abroad program experience in Australia this past summer. So I can have an accurate record for my notes, I would like to record our conversation and take some notes as we talk. If you're okay with that, let's get started.**

#### **General**

Tell me a little about what you thought of Australia?

Tell me what you thought about the study abroad experience as a whole?

How do you think the program affected you? (Possible probes: Personally? Socially? In terms of academics? Professionally or in terms of your career path?)

#### **Environmental Attitudes**

**I'm interested in your attitudes toward the natural environment before the program.**

Tell me about your attitude toward the natural environment prior to the program? (Possible probe: What else did you think or feel about the environment before studying abroad?)

**I'd like to understand how the trip affected your attitude toward the natural environment, so think back to the last day of the program.**

Describe your attitude toward the natural environment at the end of the program? (Possible probes: Can you tell me more about some thoughts or feelings you had about the natural environment at the end of the program? Was there something during the program that prompted your change in attitude? Can you describe a specific activity or experience during the program that might have impacted your thoughts or feelings toward the natural environment?)

**It's been almost 6 months since we returned from Australia and you've had some time to reflect on the experience.**

How does your attitude toward the natural environment now compare to before and at the end of the program? (Possible probes: What has changed? What prompted this change? Was there something since the end of the program that impacted your attitude? Can you describe a specific activity or experience that might have impacted your thoughts or feelings toward the natural environment? )

### **Environmental Behaviors**

**Now I'd like to move on to your environmental behaviors.**

Thinking back to before the program, what sort of things did you do related to the natural environment? (Possible probe: Tell me about specific examples or instances of certain behaviors. For example, did you recycle, buy/not buy certain things, vote a certain way, volunteer, read certain things...?)

What sorts of things do you do related to the natural environment now?

How do the things you do now compare to what you did before you studied abroad in Australia? (Possible probe: Tell me about anything else you've done differently since you returned home from the program.)

In the future, what do you see yourself doing related to the natural environment? (Possible probes: Are there specific things you see yourself doing? Have you done any of these things before? Tell me more about why you might do these things in the future.)

### **Wrap-up**

**Before we wrap up our chat, I have just a few more questions.**

Now that you're back from the trip, having (almost) completed another full semester, what suggestions do you have for helping students in the program in the future better understand issues related to the natural environment?

To be sure I have a clear picture of your experience would you please summarize what studying abroad in Australia meant to you?

Are there things we didn't discuss that you think are important for me to know regarding your study abroad experience, your attitudes toward the natural environment, or your environmental behaviors? (Possible probe: Is there anything else that I should be sure to understand?)

### **Closing Statement**

**That's it. I want to thank you for your participation and being so open with me. If you have any questions please don't hesitate to ask. You have my email address and phone number if you want to get in touch. Thanks again!**

## Appendix C

### Description of Interview Participants

Name <sup>a</sup>	Gender <sup>b</sup>	Academic Standing
Mary	Female	Senior
Linda	Female	Junior
Lisa	Female	Junior
Nancy	Female	Junior
Betty	Female	Junior
Helen	Female	Sophomore
James	Male	Junior
Frank	Male	Junior
Bob	Male	Senior
Gary	Male	Sophomore
Anna	Female	Junior
Debra	Female	Senior
Ruth	Female	Senior
Brenda	Female	Junior
Eric	Male	Junior
Carl	Male	Junior
Jane	Female	Junior

<sup>a</sup>All interview participants were given pseudonyms to protect anonymity and maintain confidentiality.

<sup>b</sup>Interviews were conducted with 11 female and 6 male 2011 program participants.