Once Experienced, Never Ignored

Active Learning as a Tool for Behavior Change:

A Case Study of World Wide Opportunities on Organic Farms

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ABSTRACT

The health of the environment is not a pressing issue for many, or if it is, this concern is not always reflected in their behavior. How can greater pro-environmental behavior be encouraged in individuals? This study seeks to understand if an active learning experience can be used as a tool to enhance pro-environmental behavior. The volunteer-exchange program called World Wide Opportunities on Organic Farms (WWOOF) was used as a case study to explore this question. The self-reported pro-environmental behavior change of 1,381 volunteers was assessed, and an educational active learning framework called the 5E Learning Cycle Model was used to understand how the quality of an active learning experience can impact behavior change. Survey and interview results showed that a variety of components of a volunteer's experience, especially in combination, can predict increases in their pro-environmental behavior. These components include being open and curious about learning, finding enjoyment in the hands-on activities, having discussions with others, living a different lifestyle for an extended period of time, reflecting about the experience, feeling connected to others or to nature, and experiencing positive emotions such as feeling useful, peaceful or having a sense of belonging. Of the active learning components, having frequent discussions with others who live environmentally conscious lifestyles was found to be the most strongly correlated with increased pro-environmental behavior change. Overall active learning was found to be an effective tool for enhancing pro-environmental behavior.

Keywords: pro-environmental behavior change, active learning, experiential learning, 5E Learning Cycle Model, World Wide Opportunities of Organic Farms, WWOOF

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> *"The single greatest lesson the garden teaches is that our relationship to the planet need not be zero-sum, and that as long as the sun still shines and people still can plan and plant, think and do, we can, if we bother to try, find ways to provide for ourselves without diminishing the world. "*
>
> — Michael Pollan, *The Omnivore's Dilemma: A Natural History of Four Meals*

1. INTRODUCTION

1.1. Problem Statement

The cumulative actions of individuals often create environmental damage, but the sum of our actions also has the potential to create positive change in the world. This study seeks to better understand how individual behaviors can be influenced to encourage greater environmental consciousness and action. Perhaps living in a different way and engaging in active, hands-on experiences that reflect a more sustainable lifestyle can help change our attitudes and habits. Exploring the way we learn in real world situations, as this study intends to do, could bring interesting insights into strengthening pro-environmental behavior.

These behavior changes are needed because problems of global climate change, resource depletion, land degradation, pollution and species extinction are among the many environmental problems that pervade our modern world today. Within the farming and food sectors, modern agriculture practices can be quite destructive and result in water pollution, human health issues, the loss and contamination of fertile soil, and the loss of biodiversity. We have become very disconnected from nature, our source of food, and how the health of the environment determines the survival of the human species.

These vast array of problems need to be addressed at a global, national, state and local level through both the public and private sectors. But in order to truly make change happen, all levels of society need to become engaged. Individual lifestyle choices such as food and material consumption, domestic energy use, and private travel can have a significant impact on carbon emissions and the health of the environment. Consequently, if we can better understand how to create concerned citizens who are willing to act through their own behavior, their purchase power, or through their vote, the sustainability movement will be more successful. It is important, therefore, to discover and utilize tools that can be used to help create more concerned, action-oriented citizens.

Many individuals identify themselves as being environmentally conscious. One would hope that those aware of and concerned about environmental issues would be more likely to make personal lifestyle changes and live in more sustainable ways. Unfortunately, this is not always the case. Sometimes values, beliefs and intentions do not match actual behavior. One common explanation for this lack of action is that acting in a pro-environmental way is often in conflict

with immediate, individual benefits (Nordlund & Garvill, 2002). For example, walking or taking public transportation is often viewed as being uncomfortable and less convenient than driving. Many consider purchasing organic food to be too expensive and recycling or composting to be too time-consuming and messy. Other causes for lack of action may be that individuals lack awareness about environmental issues, have economic constraints, or are simply indifferent to the negative consequences of their behavior.

1.2. Project Context

With this myriad of environmental issues, the importance of individual action, and the constraints that keep people from acting in an environmentally friendly way, how can individuals learn to become better environmental stewards? Active learning, where individuals learn by doing, has the potential of shaping values and beliefs and connecting them more directly to behavior change. Studies in the realm of education have shown that active learning has helped students develop new skills and attitudes, improve their understanding and achievement, and enhance their ability to apply knowledge (Sivan, Leung, Woon & Kember, 2000; Soomro, Qaisrani, Rawat, & Mughal, 2010; Bybee, Taylor, Gardner, Van Scotter, Powell, Westbrook & Landes, 2006; Eyler, Giles, Stenson & Gray, 2001). A teacher typically guides active learning in a classroom in order to help students explore through hands-on activities, reflect on their experiences, and apply their reflections to new ideas.

Experiential learning is an extension of active learning where people learn new knowledge, skills and values outside of the traditional classroom. According to educational theorist David Kolb (1984), "learning is the process whereby knowledge is created through the transformation of experience" (p. 38). Real life situations can create genuine learning experiences, which engage the mind intellectually, socially, emotionally or physically. This can occur when reflection, problem solving, and decision-making are stimulated to help the learner conceptualize his or her experience (Kolb, 1984).

The World Wide Opportunities on Organic Farms (WWOOF) organization may provide a space for such experiential or active learning where environmental values can be developed or enhanced and bridged into action. WWOOF is an international organization that facilitates volunteer work on organic farms and "helps people share more sustainable ways of living" (WWOOF Website, 2012). Volunteers often live with families and engage in hands-on activities

such as garden work or animal care. As an organization that intends to provide opportunities for organic farm work and a cultural exchange, WWOOF was chosen as a vehicle for a case study to explore how active learning can be used to influence an individual's pro-environmental behavior. As a case study, it is my hope to show which components of an active learning experience are most valuable for impacting a learner.

1.3. Research Aim and Research Questions

The aim of this thesis is to explore and understand how pro-environmental behavior change can take place in a real world setting. The study seeks to understand if and how people, being actively engaged with nature in the real world through the WWOOFing organization, will shift their environmental behaviors and become better environmental stewards.

The main research questions guiding this research are as follows:

1) Is active, experiential learning important for pro-environmental behavior change?
2) If yes, what are the components of an active learning experience that enhance behavior change?

The following sub-questions were used to investigate these questions within the WWOOFing case study:

- Does the hands-on experience of WWOOFing enhance pro-environmental behavior?
- Does a higher quality active learning experience while WWOOFing result in higher self-reported behavior change or other personal gains?
- Were there any other factors which additionally influenced the volunteer's reported behavior change in a major way?

1.4. Thesis Structure

This thesis is divided into six parts. The first part provides an introduction to the need for individual action and pro-environmental behavior and discusses the possibility for experiential learning, using WWOOF as an example, to create more concerned, action-oriented citizens. This section also presents the general aim and research questions for this research. Part 2 describes the 5E Learning Cycle Model, the active learning theoretical framework used in this thesis, as well as different theories on how pro-environmental behavior is developed and the importance of positive emotions for enhancing learning. Part 3 provides a brief overview of the WWOOF

organization, and Part 4 details the methodology explaining the research strategy, data collection method, design, statistical testing, and research limitations. The results of the survey and interviews are presented and analyzed in Part 5. In Part 6 the research finding are discussed and linked to the research questions and real world application, then conclusions are drawn and further research ideas are suggested.

2. THEORETICAL FRAMEWORK

2.1. Active Learning Model

Active learning involves giving students the chance to be active participants in the learning process rather than passive receivers of information. Active learning is based upon the concept that learners need to construct their own understanding of new ideas and knowledge by exploring, examining, testing, and refining their previous attitudes and beliefs. According to the experiential learning researcher Morris Keeton, when people experience theories and facts instead of simply hearing about them, positive changes in feelings, skills, knowledge, interest and thinking can occur (as cited in McElhane, 1998).

The amount of learning that takes place during an experience largely depends on the quality of that experience. Consequently, a model called the "5E Learning Cycle Model" was developed in the 1960s to create a framework for creating high-quality active learning experiences (Bybee et al., 2006; McElhaney, 1998). It is a common model used within science education but can be applied to any subject area (Soomro et al., 2010). Other active learning models exist such as Kolb's Learning Cycle (Kolb, 1984) and Atkin and Karplus's Learning Cycle Model (as cited by Bybee et al., 2006), but because I am trying to understand how the quality of an organic farming experience can impact environmental behavior and learning, I have decided to choose a model that has been well-proven and respected within the science fields.

The 5E model is based on human learning and development theories, particularly the constructivist and experiential learning philosophies of John Dewey, Jean Piaget, and David Kolb, where it is believed that learners construct meaning out of personal challenges and their own unique experiences (Dewey, 1938; Kolb, 1984; McElhaney, 1998). The five components of the model are to *engage, explore, explain, elaborate* and *evaluate*. This 5E Learning Cycle Model was used as a framework for analyzing the WWOOF experience. Each of the five components of the model is summarized in Table 1.

Table 1: Description of each of the 5Es from the 5E Learning Cycle Model

Engage	The learner has prior knowledge or curiosity about the topic. Ideally the learner has questions, feels involved, and has a desire to learn. The teacher can help generate enthusiasm about the subject and stimulate student thinking by asking questions.
Explore	The learner is involved in work or an activity that provides them with hands-on experience. The teacher can make sure the student is actively involved and that decision-making and problem solving are part of the student's experience.
Explain	The learner reflects and reaches conclusions and generalizations based on discussions, observations and activities performed during their experience. The teacher can help the student reflect by engaging the learner in debates and explaining different concepts and ideas.
Elaborate	The learner is encouraged to build upon previous reflections and knowledge and apply their ideas to new, similar real-world situations. The teacher can provide new opportunities for the learner to transfer and apply their knowledge.
Evaluate	The learner reflects about their own experience and knowledge gained. The teacher provides feedback so the learner can correct misconceptions.

(Bybee et al., 2006; Eisenkraft, 2003)

Many of these components can occur simultaneously where reflecting, questioning, exploring, sharing, and communicating are encouraged throughout the entire process.

Extensive research has been conducted on the effectiveness of the 5E learning cycle model. The Biological Science Curriculum Study, a non-profit educational research center, researched the effectiveness of active learning in a review of over 50 studies and found that the 5E model showed potential for increased knowledge, interest and scientific reasoning skills (Bybee et al., 2006). A recent study of physics high school students compared achievement levels between the 5E learning cycle model and traditional ways of teaching physics. Results showed that students taught with the 5E model had a chance to construct their own knowledge and achieved significantly better results in post-tests (Soomro et al., 2010). Another study looked at the effectiveness of using the 5E model in environmental education and found that high school students who engaged in active learning improved their achievement and critical thinking skills significantly more than students learning under traditional methods (Budprom, Suksringam, & Singsriwo 2010).

Given this extensive research, the model's reported effectiveness and its link to science, the 5E learning cycle model was the chosen framework for assessing how experiential learning can influence pro-environmental behavior change.

2.2. Pro-Environmental Behavior Change

Pro-environmental behavior can be described as behavior where an individual consciously tries to minimize his or her negative impact on the environment (Kollmuss & Agyeman, 2002). Examples include reducing energy consumption, recycling, or purchasing organic food. Many models have been developed to explain why people engage in such behaviors, but none sufficiently explains pro-environmental behavior one-hundred percent of the time (Bamberg & Möser, 2007; Kollmuss & Agyeman, 2002). Some common models used to explain behavior include Schwartz's norm activation model (NAM) and Ajzen's theory of planned behavior (TPB) (Bamberg & Möser, 2007).

The norm activation model (NAM) assumes that personal morals play a large role in shaping environmental behavior. A person feels obligated to take action if they are aware of the environmental problems they are causing, aware of how they can help, feel able to help, and feel a moral sense of responsibility (as cited in Bamberg & Möser, 2007; Kollmuss & Agyeman 2002). This theory is relatively successful at explaining low-cost or easy to perform environmental behavior such as turning off the lights (Steg, Drellerink, & Abrahamse, 2005; Bamberg & Möser, 2007). The theory of planned behavior (TPB) is based more on self-interest and is better at describing behavior characterized by higher costs and constraints such as reducing car use (Bamberg & Schmidt, 2003). It postulates that decision-making is guided by how easy or difficult the person believes the behavior can be performed, whether a person views the outcome of the behavior with a positive or negative attitude, and whether the person feels social pressure from significant people in their lives or from society (Ajzen, 1991).

Generally it is assumed that a mix of self-interest and concern for others dictate pro-environmental behavior. This was confirmed in a meta-study by Bamberg and Möser in 2007 and another by Hines, Hungerford and Tomera in 1986 (as cited in Bamberg & Möser, 2007) that looked at 128 pro-environmental behavior studies and 57 more recent papers. The results of the meta-studies found that behavior can be partially predicted by a number of factors including: having knowledge and concern of the issue; possessing knowledge of action strategies; feeling

that a certain behavior can bring about change; holding a pro-environmental attitude; committing verbally to a behavior; having a sense of responsibility or feelings of guilt; having economic constraints; feeling social pressure; developing a habit; and having opportunities to choose different actions (Bamberg & Möser, 2007; Kollmuss & Agyeman, 2002).

In another study, Louise Chawla (2006) interviewed environmental activists to understand what influenced their career interests and found that no one factor or experience shaped their attitudes and environmental awareness. Instead it was a combination of factors. The most frequently mentioned were spending time in nature as a child and having a family member role model who directed their attention to nature. Other important factors included having other significant role models, participating in a pro-environmental organization, witnessing environmental destruction, and environmental education.

An active learning experience, thus, may help influence pro-environmental behavior when the activity is able to foster some of the experiences described by Chawla as well as some of the feelings and attitudes described in the norm activation model (NAM), theory of planned behavior (TPB), and the meta-study research.

2.3. Positive Emotions and Learning

In addition to the factors that make pro-environmental behavior more likely, being open to learning new ideas and concepts is also important. The broaden-and-build theory within the field of psychology proposes that positive emotions such as joy, interest, contentment, and love create urges to play, explore, take in new experiences and information, and expand the self (Fredrickson, 2004). They can help broaden an individual's mindset, attention, and cognition which can enable creative and flexible thinking (Fredrickson, 2004; Abe, 2011; Isen, Daubman, & Nowicki, 1987). Under a positive emotional state, an individual may be more likely to relate what they learn in one context to another area of their life. In contrast, negative emotions such as anger, fear, anxiety, or sadness can create narrow-mindedness where people are unable to see different courses of action especially when problems occur (Fredrickson, 2004; Bolte, Goschke & Kuhl, 2003).

According to educational research, the likelihood of learning is also increased when an individual feels a sense of community (Kohn, 2006; Bryant, 1999; Brown, 2001). Empirical

research has shown that students who feel they are part of a community in the classroom report feeling a greater sense of belonging, purpose and connection to others (Brown, 2001). Research has additionally shown that these feelings can help increase engagement and participation and create a more caring environment where students respond more openly to learning from one another (Bryant, 1999).

These ideas of feeling a sense of community and having positive emotions, in addition to the pro-environmental behavior theories mentioned above, were used in this thesis to further understand how learning was enhanced through WWOOFing and active learning, as viewed through the 5E framework.

3. CASE STUDY: WWOOFING

World Wide Opportunities On Organic Farms (WWOOF) is a network of international organizations in over 90 countries and provides opportunities for people to participate in the organic food movement. It began in the United Kingdom (UK) in 1971 when a London secretary named Sue Coppard organized a weekend volunteer work trip with a few others to an organic farm in order to get out of the city and into the countryside. Word quickly spread about the idea and soon more organic farmers in the UK and in other countries around the world were interested in finding volunteers. Word also spread among average citizens who were interested in volunteering to work on an organic farm in exchange for free room and board. Volunteers typically live with their hosts and their farm experiences can vary from work on small scale, family farms to communes to large-scale commercial organic farms (WWOOF Website: A brief history of WWOOF, 2012).

The current WWOOF network includes 51 countries with national organizations and an independent WWOOF organization which brings together 40 countries without national organizations. In 2011 there were 11,899 registered WWOOF farm hosts and 80,149 volunteer memberships with some of the larger organizations being Australia, the United States, New Zealand, Canada and France (Amanda at WWOOF.org, personal communication, 25 April 2012). Each organization is run autonomously although they share similar aims. According to the WWOOF website, some of the general aims of the overall organization are “to enable people to learn first hand organic growing techniques, to show alternative ways of life, to improve

communication within the organic movement, and to help develop confidence in becoming self-sufficient." (WWOOF Website: What are the aims of WWOOF?, 2012).

As an international organization, WWOOF has the potential to touch the lives of many people throughout the world. Given the above mentioned aims and through providing opportunities for hands-on farm work and a chance to live with hosts who practice organic farming, WWOOF provides an interesting case study to explore if and how behavioral change can take place through an active learning experience.

4. METHODOLOGY

4.1. Research Method

Case studies are an intensive, detailed analysis of a single case and can be used as context to exemplify and answer the stated research questions (Bryant, 2008, pp. 52, 56). This research, therefore, uses a single case study design employing both qualitative and quantitative research strategies. Data was collected through a general survey and semi-structured interviews. Collecting data in this way through multiple sources can help improve both the validity and reliability of the case study (Yin, 2003, p. 97).

The WWOOF organization was used as a case study to explore how active learning can influence pro-environmental behavior change. WWOOF was selected because of its focus on hands-on work which typically lasts for several weeks, because of its aims for creating more exposure to the organic food movement and alternative ways of living, and because of its large pool of accessible participants. A critical realist approach was used with the understanding that although WWOOFing can have different impacts on different people, general patterns of its impact on individual behavior can be discovered. Critical realism posits that there is a reality that exists outside of our thinking therefore correlations and causal relationships can be explained and understood through analysis (Danermark, 2002; Bryman, 2008; Sawyer, 2000). This research, however, does not intend to prove that active learning is the only path for creating pro-environmental behavior change. Instead it seeks to show one potential path among many, and it seeks to find patterns and show how the experience can possibly be enhanced and used to shift individual mindsets and behavior.

4.2. Participant Recruitment and Sampling

Participants were found through different social media outlets and through the help of several national WWOOF organizations. The online survey link was posted on several country WWOOF Facebook and Twitter pages and on the WWOOF LinkedIn page. Several national organizations asked their members to fill out the survey in their newsletter, webpage, or through an email to their current members. Organizations who were willing to help in this way included WWOOF Austria, Bulgaria, Canada, Chile, Czech Republic, Germany, Greece, India, Ireland, Italy, Korea, New Zealand, Portugal, Romania, Serbia, Spain, Sweden, the United States, the United Kingdom, and WWOOF Independents. Within the survey, participants were asked if they would be willing to participate in an online or in-person interview. An example of the email for filling out the survey can be found in Appendix A.

4.3. Survey Design

The survey was designed to assess the 5E active learning components, assess pro-environmental behavior change, and understand some of the learning outcomes and resulting positive emotions. Each of these components was given a number score in order to analyze the survey results. The survey questions can be found in Appendix B where each question has been labeled with what it is intended to measure. Sections 4.3.1 through 4.3.3 detail how the quality of active learning, behavior change, and learning outcomes/positive emotions were assessed and scored. The active learning scoring criteria is additionally summarized in Table 2:

4.3.1. Scoring Criteria: Active Learning

Engagement: Initial interest was gauged through evaluating the volunteers' environmental background and their motivation for WWOOFing. One point for engagement was given when survey respondents reported that they were motivated to WWOOF in order to learn more about organic farming. Another point was given if the respondent had a job or degree in an environmental field before their volunteer experience. Engagement level was considered high when the score was 2, medium when the score was 1, and low when the score was 0.

Exploration: Exploration was considered high when volunteers were engaged in hands-on activities that evoked positive emotions. One point was given if the volunteer was engaged in a hands-on farming activity (gathered from the work description) and another point was given if

the work was considered enjoyable to perform. A score of 2 was considered high exploration, 1 medium, and 0 low.

Explanation: Explanation looked at the reported environmental lifestyle of the hosts and whether discussions about environmental ideas were frequent. When sustainable lifestyle or environmental discussion frequency were rated 'to a great extent' a score of 3 was given. A rating of 'some' was given a score of 2, 'little' a score of 1, and 'none' a score of 0. This created a range of scores between 0 and 6. Explanation level was considered to be high when scores ranged between 5 and 6, medium when scores were between 3 and 4, and low between 0 and 2.

Elaboration: Showing others what they had learned and having varied or longer farm stay experiences was considered a form of elaboration where volunteers had a chance to transfer their knowledge to others or to new situations. A point was given for elaboration when WWOOFers reported that they taught others a task, guided a tour, had some or a great deal of previous organic farming knowledge, worked on 3 or more farms, or WWOOFed for more than 4 weeks. Scores ranged between 0 and 5. Exploration level was considered high when scores were between 4 and 5, medium when scores were between 2 and 3 and low when between 0 and 1.

Evaluation: Level of feedback from the hosts was used to rate overall evaluation level. Reflection was not evaluated in the survey and was instead assessed through the interviews. When volunteers reported 'a great deal of feedback' a high score of 2 was given. Those who reported 'some' were given a medium score of 1, and those who reported 'little' or 'no feedback' were given a low score of 0.

Active Learning 5E Score: Each of the Es mentioned above was given equal ranking where a score of 'high' was equal to 2 points, 'medium' 1 point, and 'low' 0 points. The scores were added together to create a total active learning score ranging between 0 and 10.

Table 2: Scoring Criteria for each of the 5Es and 5E Score

5E	Scoring Criteria	Rating
Engage	• job/education in the environment (1 point) • goal to learn about organic farming (1 point)	2 (high), 1 (med.), 0 (low)
Explore	• engaged in a hands-on activity (1 point) • work was reported to be fun (1 point)	2 (high), 1 (med.), 0 (low)
Explain	• environmental lifestyle of hosts (3 for 'to a great extent', 2 for 'some', 1 for 'little', 0 for 'none)	6 or 5 (high), 4 or 3 (med.),

	• discussions (same rating as lifestyle)	2, 1 or 0 (low)
Elaborate	• taught others a task (1 point) • guided a tour (1 point) • some or a great deal of previous organic farming knowledge (1 point) • worked on 3 or more farms (1 point) • worked for more than 4 weeks (1 point)	5 or 4 (high), 3 or 2 (med.), 1 or 0 (low)
Evaluate	• level of feedback from hosts (2 'a great deal', 1 'some', 0 'little or none'	2 (high), 1 (med.), 0 (low)
5E Score	• Engage + Explore + Explain + Elaborate + Evaluate	Range between 0 and 10

4.3.2. Scoring Criteria: Pro-Environmental Behavior Change

Behavior change was assessed in 18 questions where respondents had to self-report if they believed their behavior increased after their WWOOFing experience. In 2008 the United Kingdom's Department for Environment, Food and Rural Affairs developed a framework to highlight basic pro-environmental behaviors which categorizes behavior into domestic water and energy use, waste behavior, personal transportation choices, and shopping choices (DEFRA, 2008). The authors Whitmarsh and O'Neill (2010) used this framework to assess environmental behavior change and found that the items were a reliable measure of assessing pro-environmental behavior. Several of the ideas from Whitmarsh and O'Neill were adapted for the survey in addition to a few diet and gardening questions more directly related to WWOOFing.

Table 3 lists the assessed behaviors categorized into three groups: diet, gardening and resource/lifestyle behaviors. Each behavior was given a point of 1 if the respondent agreed their behavior increased as a result of their WWOOFing experience. Behavior scores

Table 3: Pro-Environmental Behavior Assessed in the Survey

Diet Behaviors
buy more organic foods
buy more locally grown foods
changed my diet

Gardening Behaviors
started my own garden
began composting
use organic gardening practices

Resource/Lifestyle Behaviors
think about how my actions affect the environment
take trips to spend time in nature
buy environmentally friendly products
bring my own shopping bag
recycle my waste
reuse or repair items
walk, cycle, take public transportation
take shorter showers
turn off the tap while brushing my teeth
turn off the lights
engage in debates about the environment
take part in environmental protests

could range from 0 to 18 and were categorized into low (0 to 3), medium low (4 to 8), medium high (9 to 12), and high (13 to 18).

4.3.3. Scoring Criteria: Learning Outcomes and Positive Emotions

The survey assessed whether volunteers learned more about organic farming, increased their interest in sustainable living, reassessed their previous lifestyle, felt more connected to nature, and learned more about cooking with organic food. It also assessed positive emotions including feeling connected to others, feeling a sense of belonging, feeling useful, feeling peaceful, and feeling a sense of personal growth. These emotions were chosen based on the theoretical research found about positive emotions, community and learning from Brown (2001) as well as reported personal gains from past WWOOF research in New Zealand (McIntosh & Bonnemann, 2006).

4.4. Interview Process

Yin (2003) considers interviews to be one of the most essential sources of case study information as they can provide new insights about an experience not gathered from survey data and other sources (pp. 89-90). Interviews were consequently conducted in order to collect a variety of stories and to better understand the survey results.

In the survey, respondents were asked if they were willing to talk more in-depth about their experience. Of those who were willing, interviewees were selected with an aim of finding both positive and negative experiences from people from a variety of nationalities and backgrounds who had WWOOFed under a variety of conditions.

Interviews were semi-structured to gauge the 5Es and to understand any personal gains and reported value or pro-environmental behavior changes. Participants were asked to elaborate about their daily tasks, who taught them, whether they worked with others, where they lived, if and how they taught others, feedback given, the hosts' lifestyles, discussions with hosts, their relationship with the hosts and other WWOOFers, their own previous environmental knowledge, what they felt were their greatest learnings from the experience, how they felt they changed, and if they applied anything they learned to their current life back home.

4.5. Statistical Testing

In order to have a 95% confidence level plus or minus 5%, 384 respondents were needed to fill out the survey (calculated using a power analysis; Cohen, 1988). This assumes the total population of WWOOFers to be over 100,000. The statistical software Statistical Package for the Social Sciences (SPSS) was used to analyze the data through Chi-squared, Kruskal-Wallis and Analysis of Variance (ANOVA) tests. Bryman (2008), Calmorin (2006), and Maxwell and Delaney (2004) were used as resources for selecting and computing these tests. For the analysis, only fully completed surveys were evaluated.

Chi-squared and Kruskal-Wallis tests were used to analyze most of the data in this study. Chi-squared tests are ideal for nominal/categorical data while Kruskal-Wallis tests are ideal for ordinal/ranked data, and both are commonly used non-parametric tests that do not require the data to be normally distributed. In this study the data were both categorical and ranked and were not normally distributed. The Kruskal-Wallis test compares sample means while the Chi-squared test compares the differences between the observed values and expected values. Both tests were used, regardless of data type, to confirm or reject the null-hypothesis that the means or distribution of data are equal for all samples.

ANOVA tests, which also compare sample means, are often used in environmental psychology research but assume the data is normally distributed. ANOVA tests are generally considered very robust and do not necessarily need this condition to be met for accuracy. However, to be safe, ANOVA tests were used in some cases only to confirm the Chi-squared and Kruskal-Wallis results. Tukey Post-Hoc tests were additionally used in these cases to determine which means were not equal.

In general, when p-values from all the different tests were 0.05 or less, the results were considered to be statistically significant. Significance indicates that the means between the variables are unlikely to be different by chance. When p-values were between 0.10 and 0.05, the results were considered to be slightly significant.

The Spearman rank correlation or rho statistic was used to compare the strength of the correlation between ordinal variables. This value indicates if there is a relationship between the variables and does not necessarily indicate causation. The Spearman value lies between +1 and -

1, and when the value is closer to 1, a stronger correlation exists. There is no direct interpretation of this statistic so in this study Spearman values were compared between the different samples to gauge relative strength.

4.6. Research Limitations

A sampling and response bias likely exists in this study because not all WWOOFers received the survey request and those who decided to respond may have had different experiences than those who did not respond. Furthermore, a survey and interview bias may have occurred where participants may have wanted to appear more environmentally conscious than they actually are. Because their behavior could not be assessed both before and after their experience, behavior change could have been incorrectly reported. However, because of the large sample size and through talking to a diverse set of volunteers, the study still provides useful insights into behavior change as a result active learning.

Limitations in the research also exist as a result of the criteria set for calculating the 5Es. Other relevant variables may exist that were not included in the E scores. However, the analysis still produces valid results by allowing for a comparison to be made between the variables that were chosen and the reported behavior change. Finally, it should again be noted that this research is unable to conclude that active learning is the only path towards pro-environmental behavior change.

5. RESULTS

5.1. Participant Demographics

A total of 1381 completed surveys were analyzed for this report. Demographic data of survey respondents can be found in Table 4. Most volunteers who filled out the survey came from either Europe or North America so the results of this study may not apply as directly to those from other regions of the world.

Most respondents WWOOFed in either North America or Europe within the last two years. Often WWOOFers

Table 4: WWOOFer Demographics

Gender	
Female	64%
Male	33%
Age	
16-24	53%
25-44	41%
45 or older	6%
Origins	
Europe	55%
North America	33%
Asia	5%
Oceana	4%
Latin America	1%
Africa	<1%
Education Level	
Bachelors	39%
Graduate School	23%
High School	20%
Other	18%

volunteered in multiple countries with 66% of respondents reporting to have WWOOFed on more than one farm. A majority also volunteered for more than one month.

The three most common WWOOFing activities were garden and forest work, animal care, and construction work. While most respondents had several goals for WWOOFing, when asked about their greatest motivation, the most common goal was to have a chance to live with locals followed by to learn more about organic farming and to travel around the country. These WWOOFing statistics can be seen in Table 5. In general, respondents had an enjoyable WWOOFing experience with 90% reporting a positive to very positive overall experience, 5% reporting a neutral experience, and 3% a negative experience

Table 5: WWOOFer Statistics

Region WWOOFed (most recently)	
North America	53%
Europe	31%
Asia	8%
Oceana	4%
Africa	2%
Latin America	1%
Middle East	<1%
Year WWOOFed	
2012	8%
2011	49%
2010	26%
2009 or earlier	17%
Number of Farms WWOOFed	
1	33%
2	21%
3	13%
4	10%
5 or more	22%
Length of Time WWOOFing	
4 weeks or less	42%
More than 4 weeks	58%
WWOOF Work	
Garden and forest work	91%
Animal care	64%
Building or construction work	50%
Product creation or assembly	26%
Market or store work	24%
Motivation for WWOOFing	
Chance to live with locals	73%
Learn more about organic farming	69%
Travel around the country	63%
Reconnect with nature	53%
Take a break from everyday life	52%
Save money	49%
Improve language skills	34%

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Two-thirds of respondents were willing to be interviewed and 47 were selected to be interviewed over Skype or in person. Interviewed volunteers came from 17 different countries and had altogether worked on every continent where WWOOFing was available. Their WWOOFing experience ranged from one week to over 10 years, and seven of the interviewees had negative or neutral experiences.

5.2. Behavior Change Results

WWOOFing provides a setting where volunteers are actively involved in an experience. Although the richness and depth of a volunteer's experience can vary, any act of WWOOFing can be considered an example of an active, hands-on experience. The following section seeks to answer the first research question and understand if the active learning experience of WWOOFing can enhance pro-environmental behavior. SPSS outputs of the statistical tests can be found in Appendix C. Of the survey respondents, 70% reported adding at least one new diet or gardening behavior and 82% reported adding at least one sustainable resource or lifestyle practice to their daily lives after WWOOFing. However, many respondents noted that they had already practiced many of the behaviors listed in the survey before they WWOOFed. Figure 1 shows the reported behavior changes by category with the diet and gardening behaviors in green and the resource and lifestyle behaviors in blue.

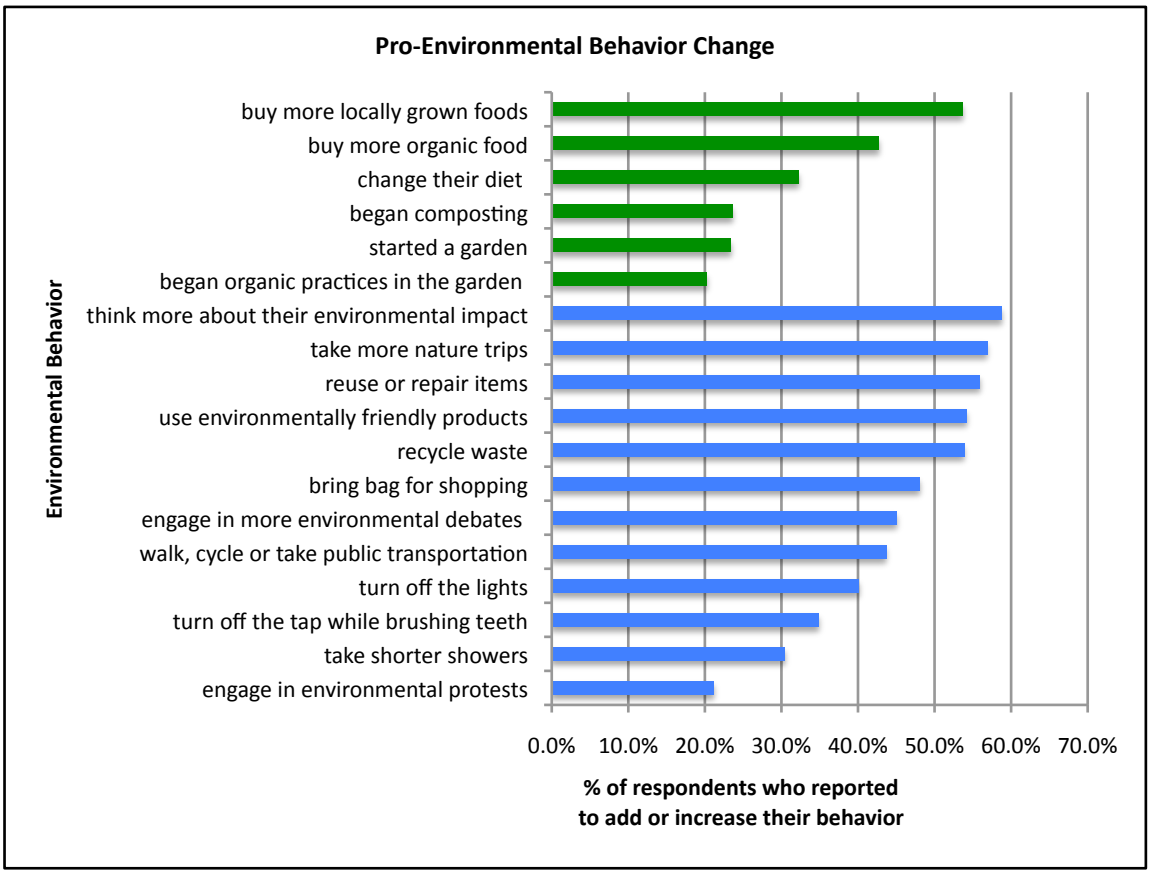

Figure 1: Pro-environmental behavior change reported by category
The percentage of survey respondents who reported to add or increase their pro-environmental behavior in each of the 18 shown categories. Green bars indicate diet and gardening behaviors. Blue bars indicate lifestyle and resource behaviors.

5.2.1. Diet Behavior

Regarding reported diet behavior change, most respondents reported to buy more locally grown food followed by more organic food as a result of their volunteer experience (see Figure 1). These results are supported by the interviews where a vast majority of participants spoke about how their relationship with food changed as a result of WWOOFing. Of all of the impacts WWOOFing had on people, food was the most commonly discussed impact during the interviews. Many mentioned how suddenly eating fresh, local, organic food on a daily basis was an eye opening experience that changed their eating habits. Common adjectives used to describe the food were *fresh, delicious, simple, healthy, and beautiful*.

Interviewees mentioned a variety of reasons for switching to more organic or locally grown food in addition to simply the taste. Many WWOOFers were driven by greater awareness of the health benefits of organic food or by ethics around the treatment of the environment and animals. Appreciation for the organic movement, supporting local farmers, and all of the work that goes into their harvest was also a common sentiment among the interviewees. One WWOOFer recalled having to vacuum off individual white bugs from plants and could clearly see all of the love and care that went into raising organic produce. Several said that now every time they enter a store they cannot help but think about the farming practices that went into growing the food that is on display. One woman said that whenever she goes to a store or market, she is now very inquisitive about where her food is grown and usually asks the manager many questions before making a purchase. This is something she never did before.

It seems a heightened awareness about the source and quality of food possibly from eating differently and being actively involved with growing food is a common impact that WWOOFing has on many volunteers. This follows the norm activation model (NAM) behavior theory where knowledge or awareness of an issue can help influence behavior change. The theory of planned behavior (TPB) also suggests that when a positive attitude about the outcome of a behavior is developed, behavior change is more likely. The interviews overwhelmingly highlighted the mental and physical delight felt from eating local, organic food.

5.2.2. Gardening Behavior

Among the survey respondents, between 20% and 24% reported adding new gardening or composting behaviors to their daily lives (see Figure 1). These percentages are lower than the

reported diet behavior changes, but this is likely because it is more time-consuming and technically difficult to implement gardening and composting, especially for city dwellers with limited space. The theory of planned behavior (TPB) indicates that when a behavior is considered difficult it is less likely to be adopted.

A handful of the interviewees reported being inspired by their WWOOFing experience despite the challenges and constraints of their normal lifestyle. After physically experiencing and seeing what was possible on the farm, they seemed to develop an awareness of what they could personally do and felt more empowered to make changes in their daily lives.

One couple mentioned that they are currently petitioning their apartment complex to start a community garden with a composting area for their building. A few WWOOFers who do not have their own space for growing a garden mentioned that they instead started a garden for a friend or parent after their volunteer experience. One woman who started a permaculture garden in her mother's yard also bought chickens for her mother and now saves her waste to feed the chickens. Some interviewees mentioned a future intention to start their own garden or farm. One man who has been WWOOFing for over ten years is collecting knowledge from all his farming experiences and hopes to start his own permaculture learning-center farm in his home country. Another interviewee talked about how her hosts were just normal people who one day decided to start their own garden and start a business out of it. Her hosts did not know anything about gardening beforehand but they learned, gave it a try, and made it work. She started her own small garden when she returned home with the attitude that if they could do it so could she.

Starting a garden and composting are tasks that require a descent amount of effort, but some respondents were still motivated to add such behaviors to their daily lives. The act of learning how to compost or grow a garden and living the benefits seem to have inspired some to change their habits back home.

5.2.3. Lifestyle and Resource Behavior

Lifestyle, Waste, and Consumption Habits

As a result of WWOOFing, 59% of respondents claimed that they began thinking more about how their actions impact the environment and 57% claimed that they take more trips to spend time in nature. Compared to the other behaviors, these had the highest percentages of reported

behavior change. For actions involving recycling, reusing, bringing a shopping bag, and purchasing environmentally-friendly products, the percentage of volunteers who reported increasing their behavior was also relatively high and ranged from 48% to 56% (see Figure 1).

During the interviews and in the survey comments, several mentioned how their WWOOFing experience is often something they think about when using resources and making decisions:

> "The environment is now on my mind more. I have a more realistic idea of what is possible and how to live in an environmentally friendly way. Now I don't let myself slide as much anymore."

> "Basically it colors most of what I do or don't do now. It's always a consideration in every step in my life."

One couple discussed how after their WWOOFing experience of several months they had difficultly adjusting back to the regular patterns of every day society. After living a lifestyle where very little waste was produced and every material was valued, they were shocked when they went to their local supermarket and for the first time noticed how much packaging was used for every product. Their WWOOFing experience caused them to reflect more on the habits of society and how they had previously lived, and they now try to consciously use less and reuse materials.

Water and Energy Use

The percentage of respondents who reported to change their energy or water use ranged from 30% to 44% (see Figure 1). Several interviewees mentioned living in conditions where there was no electricity or normal plumping so that water had to be collected on a daily basis. They were living in a way where they had to be more conscious of their resource use. One WWOOFer reported that before WWOOFing she would frequently, but not consistently, turn off the shower while shampooing. During her WWOOFing experience she and her hosts had to collect their water from a local stream so during the day she had to be very careful about the amount of water she used so that everyone had enough water to last the week. Upon returning to her normal life after WWOOFing, she now always turns the shower off while shampooing: it turned into a habit. Another WWOOFer mentioned a similar experience regarding brushing her teeth. While on the farm she had to use a cup of water to brush her teeth rather than run the tap. Now that she has returned home she now always keeps the tap off while brushing her teeth. As one

interviewee stated “sustainable living is now rooted in practice. It seems more real and tangible.”

Debates and Protests

Regarding debates and protests, 45% of survey respondents reported they were more likely to engage in debates about the environment and 21% reported they were more likely to take part in protests about the environment (see Figure 1).

Engaging in protests was not mentioned in the interviews, but several interviewees discussed how they now engage in many more discussions about environmental ideas and issues. One WWOOFer learned a great deal about community supported agriculture (CSA) as well as the nitrogen and phosphate cycles and its relation to farming. It was a full environmental education experience, and she now has many more opinions about the state of the agriculture industry, regularly promotes CSA to friends and family, and often discusses why she believes organic farming is important with others. Another WWOOFer succinctly explained:

> “As far as debating goes I have more personal experiences to draw from which goes further than 'I read this here,' or 'saw this on the news there.' I can say 'I saw with my own eyes,' or 'I personally worked on this.'”

These lifestyle and resource examples show how WWOOFing seems to evoke feelings and thoughts described by both the norm activation model (NAM) and theory of planned behavior (TPB). An active learning experience such as WWOOF can help individuals realize that they are capable of performing new tasks. It can also introduce new ideas of what an individual can do in their own lives and additionally help develop a sense of responsibility to live in a more environmentally friendly way. Furthermore, after experiencing a different way of living, the WWOOFers may realize that they enjoy living in this way, and as a result, will be more likely to carry their positive attitude and new behavior to a different setting.

Overall, learning through actively working and experiencing a new lifestyle seems to result in motivating many people to make behavior changes in their own lives. The case study of the WWOOF organization has shown that experience can be used as a learning tool for encouraging and enhancing pro-environmental behaviors.

5.2.4. Varying Levels of Change

Although stories of transformation were common, overall the interviewees and survey respondents reported varying levels of change and impact. The total number of reported behavior changes is shown in Figure 2. Some respondents made comments in the survey and during the interviews that WWOOFing did not impact them. It was simply an enjoyable or in some cases a not-so-enjoyable experience. Others reported that they found it difficult to change their behaviors when back at home. One WWOOFer blogged, "We've let some old habits from our 'previous life' slip back in." People may have values that are in line with environmental principles, but as this quote suggests it can be daunting when returning to one's everyday life to actually change. Finally other WWOOFers reported already being highly engaged in sustainable lifestyle practices before their experience. As shown in Figure 2, 11.5% or 159 respondents did not report adding any new behaviors to their daily lives after WWOOFing. However, this also indicates that most, nearly 89% of respondents, did report adding or increasing at least one pro-environmental behavior upon returning to their normal lives.

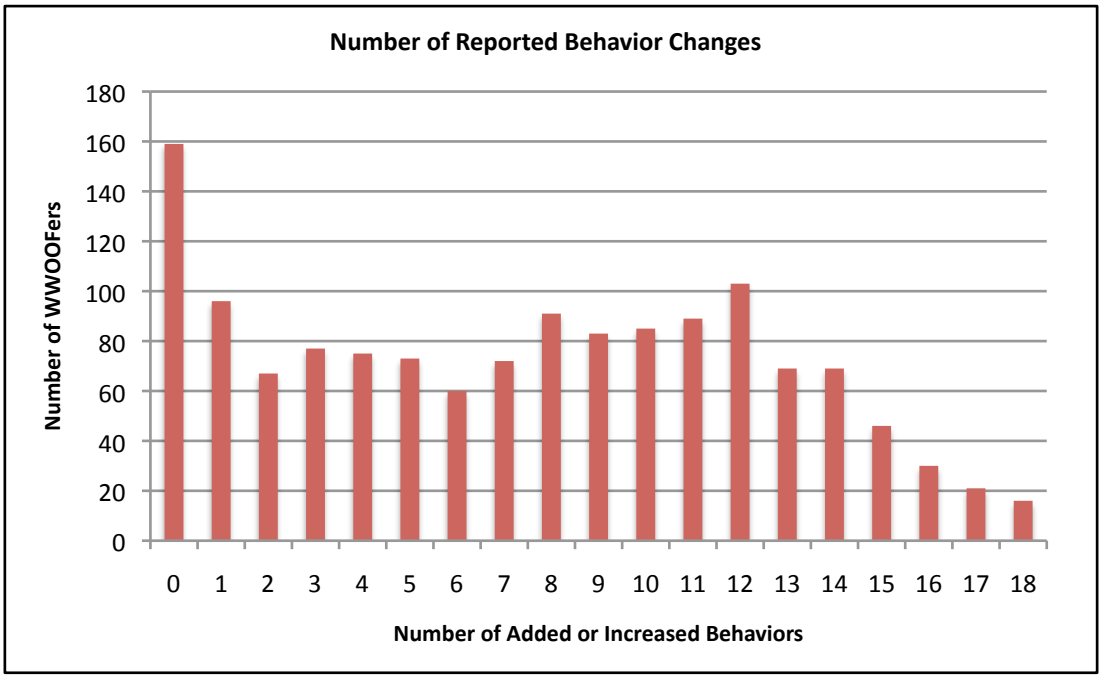

Figure 2: The number of behaviors reported to be added or increased as a result of WWOOFing

A common comment made by survey respondents was that they had gone into the experience being very environmentally aware or conscious and that their volunteer experience helped strengthen or reinforce some of their pro-environmental behaviors. Respondents also often

attributed their behavior change and environmental views to many experiences in their lives, including but not limited to WWOOFing:

> "A lot of the things I do environmentally are due to a multitude of reasons, which is why I didn't list WWOOFing as the 'cause' or motivator. But I was more likely to WWOOF because of my concern for the environment, and what I learned there reinforced some of my habits, like buying organic food, composting my waste, etc."

> "WWOOFing may not have immediately impacted my decision making/choices, but led to a heightened interest in getting myself educated in environmental issues and encouraged me to get more involved in my community. After which I made significant lifestyle changes. So I guess WWOOFing has had a big impact, but it was a gradual change after learning things from multiple sources."

5.2.5. Other Variables

Understanding how all of the data, including demographic data, interact and affect behavior change and other variables was not in the scope of this project. However, basic interactions with behavior change were explored. Language barriers, region WWOOFed (North America versus Europe), year WWOOFed, gender, age, and educational level showed no significant relationship with diet, gardening, and lifestyle behavior change (confirmed by Chi-squared and ANOVA Tukey tests). North Americans reported significantly more diet and gardening behavior changes than Europeans (Chi-squared, p=000) but this is likely because Europeans already engaged in many of the listed activities before WWOOFing. No significant differences were found for this category in lifestyle and resource behavior.

5.3. Active Learning Results

The survey results and interviews indicated that a majority of participants experienced some form of behavior change as a result or partially a result of their WWOOFing experience. To answer the second research question, the focus of this section is to explore which aspects of the WWOOFers' experiences triggered these behavior changes. By looking into the 5E Learning Cycle Model, an analysis was made to understand which parts of an active learning, real-world experience have the most potential for influencing people to change.

The bar chart in Figure 3 shows the percentage of participants with high and low individual E scores among those who reported changing at least nine of their behaviors. It suggests that high levels of behavior change often correlate with high levels of exploration and explanation. It also

illustrates that when explanation or exploration is low, fewer people reported above average behavior change compared to the other Es. However, upon further analyzing both the survey data and interviews, it was found that, of the five components, the explanation phase where participants engaged in discussions with others and made observations about their surroundings, was the most important and highly correlated with behavior change.

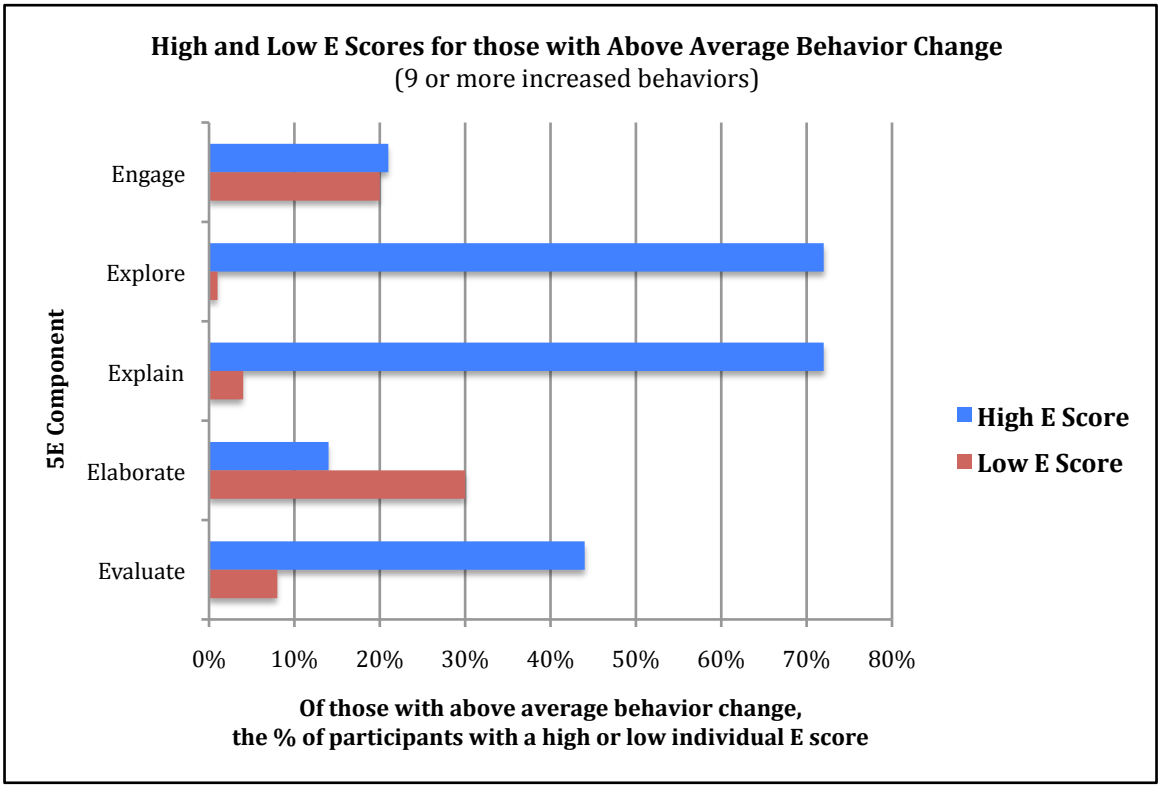

Figure 3: The percentage of participants with high and low E scores among those with above average behavior change
Above average behavior change is equal to increasing or adding 9 or more behaviors. High scores are equivalent to a score of 2 and low scores a score of 0 for each E.

Sections 5.3.1. through 5.3.5. analyze in more detail the survey and interview results for each E:

5.3.1. Engagement

The distribution of respondents with low, medium, and high engagement scores can be found in Table 6 where a majority reported medium engagement levels. Overall, there were significantly more reported behavior changes for those who were engaged with a goal of learning about organic farming and/or had a background in an environmental field (Chi-squared, p=0.000;

Kruskal-Wallis, p=0.000; Spearman = 0.046). Behavior increased significantly more for those who were engaged at a medium level (Tukey, p<0.035) as can be seen in Figure 4.

Statistical tests show a positive relationship between engagement level and diet/gardening behavior (Spearman = 0.114). On average between one and two new additional diet and gardening behaviors were added to participants' daily lives after WWOOFing when there was a medium level of engagement compared to no engagement. A much weaker positive relationship was found between engagement and resource/lifestyle behavior (Spearman = 0.005) where the number of resource and lifestyle practices increased by less than one when the participant was somewhat engaged. The correlation differences between diet/gardening and resource/lifestyle may be a result of the criteria used to score engagement. A goal of learning about organic farming is likely more connected to diet and gardening activities.

Table 6: Engagement Scoring Criteria and Distribution

Variables considered were having a previous job or degree in the environment and having a goal to learn about organic farming

Engagement Level	Number of Respondents	% of Total
Low	343	25%
Medium	742	54%
High	296	21%

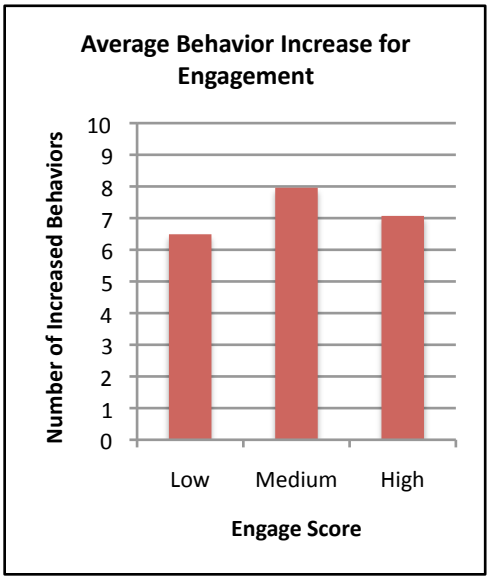

Figure 4: Average number of increased or added behaviors by engagement score

The interviews seemed to suggest that those who were open to the idea of living in an environmentally friendly manner or had some exposure to these ideas when they were younger were more impacted by their WWOOFing experience as long as it was a positive experience. When experiences were uninspiring or the volunteers felt like forced labor, no to very little learning and behavior change was reported in the interviews, regardless of the level of engagement. Furthermore, many interview participants who were engaged and open to learning or had previous exposure to environmental ideas but were not necessarily initially highly engaged or enthusiastic about organic farming or changing their behavior still reported changing their behavior after their WWOOFing experience.

Volunteers who were interested in learning about a particular form of farm work or who were in a life transition seemed especially impressionable during their WWOOFing experience. One man had an intention to start his own farming business after WWOOFing and felt he learned a great deal about organic farming as well as new ways of living lightly off the land. He said, "During my experience I wanted to learn so I made it a priority".

Additionally, a few interviewees changed their career trajectory after their WWOOFing experience. One volunteer, tired of her office job, decided to take a break from work through WWOOFing and is now enrolled in a year-long internship in biodynamic farming. Another volunteer who described his office work as 'soul destroying', took leave from his job to WWOOF for ten weeks and upon returning home started working on a farm to help people with learning disabilities. Both seemed to be at a potential transition phase at the time of their experience and expressed high levels of curiosity about finding new ways to enjoy and appreciate life. After WWOOFing they reported feeling strongly and positively impacted by their experience, both in terms of their current career path and in other areas of their lives such as their eating habits, their consumption levels, and their general environmental attitudes. In the survey, 17 comments were made where individuals attributed their volunteer experience to making a career shift to an environmental field.

In general, engagement level was found to be important: the more curious, open and motivated the WWOOFer, the more likely they would report that their experience had a lasting impact on them. Being in a life-transition stage or having a keen interest in learning about organic farming often led to more impactful experiences. However, the interviews suggested that the quality of the volunteer experience was more important than the initial engagement level in creating pro-environmental behavior change. Overall it is important to be open to learning, but high levels of engagement are not always necessary. Related to the theory of planned behavior (TPB), engagement, under the right conditions, may increase the likelihood of developing a positive attitude about a new behavior.

5.3.2. Exploration

When volunteers were actively engaged in their work and they considered their work to be fun, significantly more survey respondents experienced behavior change (Chi-squared, $p=0.000$;

Kruskal-Wallis, p=0.002). The distribution of scores and number of respondents can be seen in Table 7. Only 7 out of 1381 respondents reported no active work experience and on average these respondents experienced none to low levels of behavior change. On average when the work was considered both fun and active, one new behavior practice was added to the volunteer's daily life. This addition in behavior can be seen in the difference between the medium and high scores in Figure 5. Statistically, the correlation between exploration and behavior change was found to be positive (Spearman overall = 0.131, diet/gardening = 0.113, resource/lifestyle = 0.116).

Table 7: Exploration Scoring Criteria and Distribution

Variables considered were whether the volunteer was engaged in a hands-on activity and if they reported their work to be fun

Exploration Level	Number of Respondents	% of Total
Low	7	1%
Medium	451	33%
High	923	67%

When considering the amount of exploration and interaction participants had with nature through gardening work and the amount of time they spent outdoors, those who were involved in gardening and spent more than two hours per day outside were also more likely to experience pro-environmental behavior change (Chi-squared, p=0.018; Kruskal-Wallis, p=0.002).

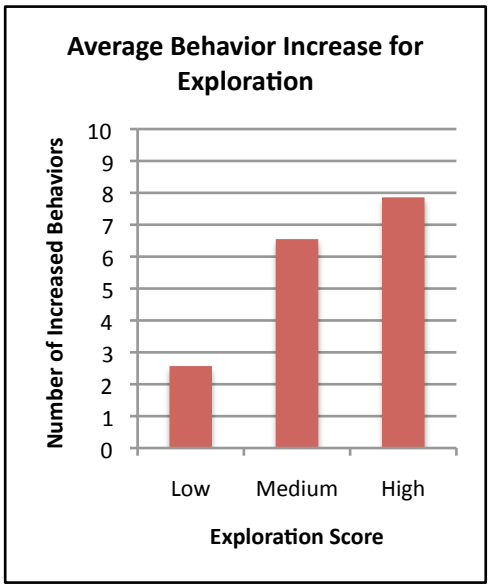

Figure 5: Average number of increased or added behaviors by exploration score

Upon asking interviewees about the type of work they were involved in while WWOOFing, there was a wide range of work activities and many spoke about their tasks with pride and fondness. The work was often considered easy but also satisfying and rewarding. Many were involved in some type of gardening work, but others were additionally engaged in such activities as restoring buildings, building compost toilets, caring for farm animals, cooking, making cheese, harvesting olives, picking wild mushrooms, clearing invasive species, landscaping, and working at farmers markets. Several WWOOFers commented on how they enjoyed using their hands, gaining practical skills, and living a life often very different from their typical life back home.

Through the interviews it was discovered that hands-on experience did not always transfer into behavior change. As was the case with engagement, in cases where the participant did not enjoy their work, felt like forced labor, or had little interaction with others, the experience was reported to be less impactful regardless of the hands-on active work. However, as long as the work was active and enjoyable, exploration seemed to be a necessary active learning component for pro-environmental behavior change to manifest.

The interviews showed that exploration had the ability to initiate problem solving thinking skills or help boost confidence. One WWOOFer was presented with the challenge of cooking for his entire host family even though he had never done anything like this before. He problem solved and learned how to use basic ingredients directly from the garden and now loves to cook. Another reported that after she returned home from several weeks of gardening work, she felt much more enthusiastic and confident about her ability to grow food and so began her own garden in her backyard. However, when the hands-on work was reported to be boring or without purpose (e.g. cutting grass with hand scissors), behavior change was not reported.

The interviews additionally revealed that exploring through temporarily trying out different lifestyles impacted both behavior and attitude. Living in a self-sufficient manner, sometimes without electricity or modern plumbing and growing what you eat, was an inspiring experience for many. By living in a different way for a period of time, several reported that they realized that they actually enjoyed the alternative lifestyle and that living without luxury was not as difficult as one might think. According to one survey comment:

> "WWOOFing had an incredible impact on my life. Perhaps not by way of changing my daily routines or immediate lifestyle, but it touched my subconscious in ways that continue to work at my decisions and goals even a year after the experience. It has been an exceptional way for me to take time for myself, to travel, to connect with locals and to make a difference. The life you are welcomed into when WWOOFing could take years to develop yourself, but with some luck, you get to experience it immediately and truly test the waters. What a glimpse at a lifestyle that could one day be your own. And what a way to figure that out for yourself!"

Exploration appears to have the potential to evoke feelings of empowerment and positive attitudes about living in a different way. Overall, it seems that the act of exploring by trying out

new forms of practical work or a new lifestyle can have a positive effect on one's behavior as long as the work or lifestyle is not viewed as boring or in some other negative light.

5.3.3. Explanation

Pro-environmental behavior change was reported to be significantly higher when the host's lifestyle was evaluated to be more 'sustainable' or 'environmentally friendly' and when discussions about the host's environmental philosophy were more frequent (Chi-squared, p=0.000; Kruskal-Wallis, p = 0.000). On average those who experienced a very high level of explanation, either through discussion or example, added an additional one to two new diet/gardening practices and roughly two lifestyle behavior practices. A majority of respondents reported high explanation levels (Table 8), Overall change in behavior by explanation level can be seen in Figure 6.

Table 8: Explanation Scoring Criteria and Distribution

Variables considered were whether the host's lifestyle was considered environmentally friendly and if environmental discussions with the host were frequent

Explanation Level	Number of Respondents	% of Total
Low	80	6%
Medium	457	33%
High	844	61%

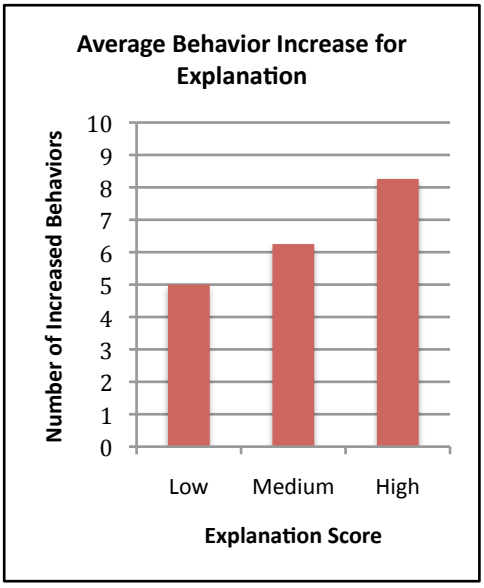

Figure 6: Average number of increased or added behaviors by explanation score

Compared to the other 5E correlation statistics, the overall correlation statistic of 0.217 suggests a relatively strong relationship between explanation and behavior. Diet/garden behavior (Spearman = 0.227) and resource/lifestyle behavior (Spearman = 0.172) both had relatively strong correlations as well. Overall, behavior change appears positively correlated and potentially strongly influenced by the lifestyles and opinions of the hosts, especially compared to the other 5Es.

It should be noted that when discussion levels were high, friendship levels with the hosts were also reported to be higher (Chi-squared and Kruskal-Wallis, p=0.000, Spearman = 0.260). And

similarly when interaction levels between the hosts and volunteers were high, meaningful friendships were also more likely (Chi-squared and Kruskal-Wallis, p=0.000, Spearman=0.306).

When talking to WWOOFers, the relationships they formed with their hosts and the conversations they engaged in had profound impacts on them. When hosts lived in an environmentally conscious or friendly manner and both the WWOOFer and hosts made time for each other so that respect and trust could develop, the WWOOFer reported high amounts of learning, attitude, and behavior change. For example, one WWOOFer wrote:

> "The family I WWOOFed with was very concerned with how your diet and what you eat affects how you feel and your body in general. As a result, I, and the other WWOOFers who were at the farm at the same time as me, all became very away of how certain foods affected us and I think we all changed our diets for the better."

Conversations about the environment, which often took place during meals, revolved around many topics including the benefits of organic farming, how to live self-sufficiently, local food systems, sustainable energy, environmental ethics, lifestyle choices, nutrition, healthy living, and personal stories behind why the hosts became an organic farmer. WWOOFers generally appreciated when the farmers were not preaching their ideas but were instead sharing their knowledge and answering questions willingly. When these conditions were present, behavior or attitude changes were often described.

A few volunteers reported how they were struck by how much their hosts would make them think about and question their previous lifestyles. One WWOOFer recalled smearing on his non-organic sunscreen when his host walked up to him and simply asked, "Do you know what is in that?" Previously he had never considered what chemicals might be in the products he was using and how they affected him. One volunteer spoke about her hosts who regularly donated their organic food to local charities to help and educate others. She was impressed by this and now volunteers to teach children how to garden in her community. A few interviewees reported that their hosts recommended interesting books and DVDs about organic farming or other environmental topics which informed them and further shaped their attitudes about the ideas they were discussing with their hosts.

Even when hosts were not particularly environmentally conscious, sometimes the opportunity to engage in debate with their hosts could result in strengthening their environmental values. Unfortunately, some WWOOFers talked about not having the opportunity to spend any time with their hosts. They would work and eat on their own and the only interaction they had was when the host explained their tasks for the day. In all of these instances, when there was no opportunity for discussion and little interaction with other people, behavior change was not reported. In these cases only when there were other WWOOFers around with whom they could discuss ideas, did some WWOOFers report learning something from their experience.

Overall, compared to the other 5E's, explanation had the strongest correlation to behavior change. Both the survey and interviews revealed that discussions with the hosts and understanding their environmental mindset can be very influential in inspiring behavior change. It seemed that when the WWOOFer respected their hosts and had time to engage in discussions and debates with them, they had an experience which made a lasting impression on them. As Louis Chawla (2001) suggested in her research, having role models with strong environmental values can be a contributing factor in encouraging pro-environmental behavior. Furthermore, from the theory of planned behavior (TPB), some social pressure from the hosts or other WWOOFers with strong environmental values may also play a role in shifting behavior.

5.3.4. Elaboration

Elaboration through teaching others, giving tours, volunteering on multiple farms, working for more than a month, and having previous knowledge about organic farming was found to be statistically significant overall in relation to behavior change (Chi-squared, $p < 0.005$; Kruskal-Wallis, $p=0.000$, Spearman = 0.103). However, no significant differences were found between medium and high levels of elaboration (Tukey, $p=0.488$). A majority of respondents fell into low and medium levels of elaboration as can be seen in Table 9.

Table 9: Elaboration Scoring Criteria and Distribution

Variables considered were whether the volunteer taught others a task, guided a tour, had previous organic farming knowledge, worked on 3 or more farms, and worked for more than 4 weeks

Elaboration Level	Number of Respondents	% of Total
Low	487	35%
Medium	711	51%
High	183	13%

The Spearman statistic measuring correlation suggests a positive, although, relatively low correlation for both diet/gardening behavior (Spearman = 0.091) and lifestyle behavior (Spearman = 0.091) changes. On average one additional behavioral practice was added when the elaboration score was at its highest. This trend can be seen in Figure 7. When considering the individual components of the elaboration score, teaching others and working for more than one month correlated the most strongly with pro-environmental behavior change.

From the interviews it was found that teaching others while on the farm was generally reported to be a positive experience but was not necessarily something that was directly related to influencing behavior. Sometimes when a WWOOFer had stayed at one farm for an extended period of time, they became the head WWOOFer in charge of showing new WWOOFers some of their basic tasks. In a couple of extreme cases, two interviewees reported being left in charge of running their farms while their hosts had to leave for a week or two. These types of situations seemed to create a sense of trust and responsibility which added to creating a more impressionable and positive experience for the WWOOFers.

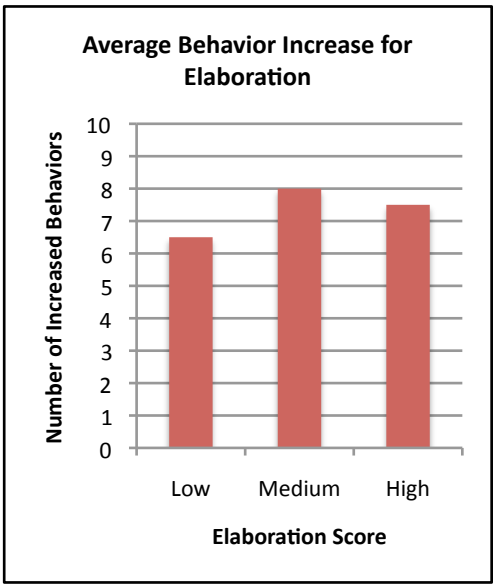

Figure 7: Average number of increased or added behaviors by elaboration score

One interviewee grew up on an organic farm and did not feel he learned much while volunteering. However, this is likely because during his experience he spent little time interacting with his host family. It seems that when WWOOFers worked on multiple farms, they increased their chances of having a positive experience, learning about new practices, and living with environmentally conscious hosts who were interested in interacting and sharing their knowledge. Elaboration creates more opportunities for the other 5Es to strengthen. Furthermore, working for multiple weeks and living a different lifestyle for a longer period of time was generally found to be beneficial and potentially more habit forming.

Overall, the correlation between elaboration and behavior change was relatively low. Although the interviews could not illustrate that elaboration was the cause of any behavior change, it did show that elaboration seemed to complement pro-environmental behavior change when some of the other 5Es were present.

5.3.5 Evaluation

A majority of WWOOFers received a medium level of feedback from their hosts (Table 10). Overall, this feedback was found to significantly correlate with an increase in environmental behavior practices (Chi-squared and Kruskal-Wallis, p=0.000). On average those that were given a great deal of feedback increased their diet/gardening behavior by one new practice and their resource/lifestyle behaviors by two new practices compared to those with no or little feedback. The average number of reported increases in behavior for each evaluation level can be seen in Figure 8. The Spearman correlation statistic of 0.190 indicates that the relationship between evaluation and behavior change is relatively moderate (Spearman: diet/gardening = 0.143, lifestyle = 0.176).

Table 10: Evaluation Scoring Criteria and Distribution
Variable considered the level of feedback from hosts

Evaluation Level	Number of Respondents	% of Total
Low	149	11%
Medium	725	52%
High	503	36%

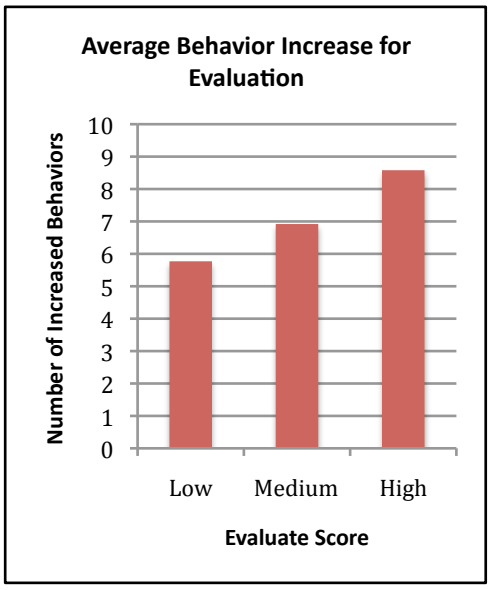

Figure 8: Average number of increased or added behaviors by evaluation score

One volunteer shared a story about how he had shown one of his hosts how to grow tomatoes in a different way by developing a deeper root system. It was something the WWOOFer had learned through reading. Later, the farmer contacted him and told him the tomatoes of that year's harvest were the best he had ever had. Not only was hearing this type of feedback very rewarding, but this volunteer is now working in the farming industry so such feedback was very valuable to him.

Receiving feedback seems helpful for learning and refining practical gardening, animal care, and construction techniques. However, evaluation also involves personal reflection, something only the interviews were able to capture. One WWOOFer admitted she had spent little time reflecting on her experience and additionally did not report any changes in her behavior or learning anything new from her experience. On the other hand, a few WWOOFer who considered WWOOFing to be a life changing experience reported keeping journals and writing blogs during their volunteer work. Several mentioned how their farm work was very meditative and how it gave them a lot of time to reflect about many different topics, including how they would like to live differently when back home or their thoughts about the organic food movement and different environmental issues. One WWOOFer talked about forming the idea of turning her parent's backyard into a garden while she was working on a farm project. She planned it out in detail in her mind and when she returned home she built a garden. Another WWOOFer wrote:

> "The experience made me think a lot more about how everything is connected, how we're very much a part of the environment (it is not external to us) and causing profound changes by the way we consume. Although organic farming is less damaging than conventional farming, agriculture itself causes big changes to other creatures' habitats."

Overall, feedback seems valuable for refining practical farming skills, and reflection seems valuable for forming opinions and resolving to take action or change behavior in the future. The literature suggests that reflection is especially important for the learner to transfer their newly acquired skills and behaviors to different situations. According to experiential education researchers Kraft and Kielsmeier, without reflection "what is learned in the woods will stay in the woods" (as cited in McElhaney, 1998, p.40).

5.3.6. The 5Es: Active Learning Score and Interactions

Table 11 summarizes the relationships found between each of the 5Es and pro-environmental behavior change. All factors significantly and positively correlated with behavior change, but compared to the others, explanation had the strongest correlation with pro-environmental behavior as well as the greatest growth in reported behavior change. It should be noted that for each of the E components, the Spearman value is low, indicating that although a relationship exists, there are other variables not considered in the 5Es that are likely also impacting behavior.

Table 11: 5E Correlation and Average Behavior Increase

5E Comparison	Relationship/ Statistical Correlation with Behavior Change (Spearman rho value, reporting strength relative to one another)	Average Increase in Behavior (evaluating the growth in behavior change by comparing a high score of 2 minus a low score of 0)
Explain	0.217 Strongest	2.92
Evaluate	0.190 Moderate	2.81
Explore	0.131 Moderate	1.31*
Elaborate	0.103 Moderate/Weak	1
Engage	0.046 Weak Overall but Moderate for Diet/Garden Behavior (0.114)	0.58

*Because only 7 respondents had a score of 0, this number compares those with a high score of 2 minus a medium score of 1.

No individual factor or combination of factors can predict environmental behavior change, but when certain variables are present together, a stronger relationship can exist and environmental behavior change therefore may be more likely. When evaluating the effect of all of the active learning components acting together, a positive, relatively stronger relationship was found between the 5E active learning model and behavior change ($p=0.000$ for Chi-squared, Kruskal-Wallis, and ANOVA; Spearman = 0.238). When the 5E Score was 7 or higher, no significant difference was found between the score and the amount of behavior change (Tukey, $p>0.524$). As can be seen in Figure 9, those with a low active learning score adopted on average one new environmental behavior practice and those with a high score adopted between eight and nine new behavioral practices (out of 18 possible practices). On average this reflects a growth of seven new behavioral practices when the quality of active learning is high.

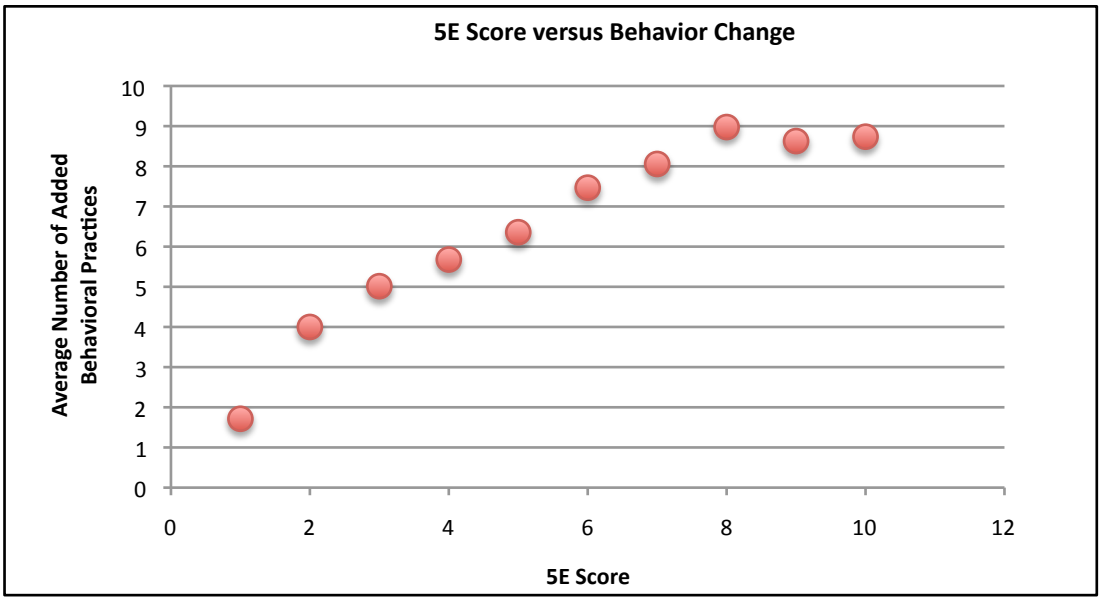

Figure 9: Total 5E Score compared to average behavior change score

Higher overall 5E Scores were also significantly and relatively strongly correlated with increased knowledge about organic farming (Spearman = 0.414), greater curiosity about sustainable living (Spearman = 0.347), increased reassessment of one's lifestyle (Spearman = 0.241), and increased connection and appreciation for nature (Spearman = 0.191). In each case the Chi-squared and Kruskal-Wallis tests had a significant p-value of 0.000. As reported, the correlation between the 5E Score and pro-environmental behavior change had a slightly lower Spearman correlation value of 0.238. These results imply that the 5Es have a stronger relationship with creating knowledge, interest, a desire to change, and appreciation for nature than with increasing environmental behavior. This result is logical as the mentioned learning outcomes are likely a necessary step to take before pro-environmental action can take place.

Contingency tables were analyzed to look at the interactions between the 5E variables. As the survey results and interviews suggest, *explanation* is the most important active learning variable for predicting behavior change. When *explanation* levels were considered low, the addition of any of the other 5E variables did not result in statistically significant increases in pro-environmental behavior (Chi-squared, $p>0.05$). However, when *explanation* levels were high, the other variables, especially *evaluation* and *elaboration*, were found to help enhance the power of *explanation* and correlated with an additional increase in overall behavior change (Chi-squared, $p<0.05$ when *evaluation* and *elaboration* scores were high). On the other hand, when discussion levels were high, high levels of *exploration* were not as important for predicting behavior change (Chi-squared, $p>0.05$).

A more complex relationship exists between *engagement* and the other 5E variables. When *engagement* was at a low level, higher levels of *explanation* and *evaluation*, both involving human interaction, were found to be particularly important for predicting enhanced levels of behavior change (Chi-squared, $p<0.003$). When e*ngagement* was at a medium level, behavior was more likely to be enhanced if the WWOOFer also experienced higher levels of any of the 5Es (Chi-squared, $p<0.025$). However, when engagement was already at a high level, the 5E factors were still important but made relatively less of a difference in enhancing behavior change (Chi-squared, $p>0.05$). Although high engagement alone does not create behavior change, in these cases where interest level is high, WWOOFers may be more self-motivated to learn and make personal changes on their own.

In summary, these findings suggest that when the quality of an active learning experience is enhanced, pro-environmental behavior change is more likely to take place. Overall, individuals appear to be most influenced by the pro-environmental lifestyles and opinions of those they are interacting with especially when friendships are formed, respect is developed, and interaction is frequent. Without human interaction and high-quality *explanation*, the other variables are less likely to influence and predict high levels of pro-environmental behavior change. High levels of *engagement* are useful when the other active learning conditions are not as strong because the learner may be more self-motivated to learn on his or her own. However, when *engagement* is at medium levels, the presence of the other 5E variables are particularly important for enhancing behavior change. The interviews illustrated that *exploration, elaboration,* and *evaluation* can complement an active learning experience by giving participants a chance to live a new lifestyle, opportunities to strengthen the other 5Es, and a time for reflection to improve the transfer of knowledge to new situations. While these conclusions show promising behavior change potential for experiential learning, it should again be stated that only relationships between the variables have been found and that there is no magic set of factors which when brought together always predict behavior change.

5.4. Other Important Factors

Relatively strong, significant relationships exist between the amount WWOOFers feel they learn or gain from their experience and the amount of pro-environmental behavior change they report after their experience. Individually, each of the learning gains and reported positive emotions had a strong relationship with pro-environmental behavior change (Spearman > 0.255). Behavior change was reported to be the greatest and most strongly correlated when individuals felt they developed a greater connection to nature and when they had made a reassessment of their own lifestyle. In both cases, an additional four new behavior changes were reportedly added to respondents' daily lives.

The correlation between developing a stronger connection to nature and pro-environmental behavior change is particularly interesting because multiple studies have shown that environmental behaviors can be partially predicted by a person's emotionally affinity and connection toward nature (Mayer & Frantz, 2004; Kals, Schumacher & Montada, 1999). When people feel more involved with nature, people often feel less separated from it and so are more likely to care about it and feel committed to protecting it (Schultz, 2002). So in addition to the

5Es, spending time out in nature and feeling more connected to it may help influence behavior change to an even greater extent. When a high quality active learning experience is combined with spending time out in nature, as is the case with many WWOOFing experiences, the learning outcomes and impact on behavior may be greatly enhanced.

It is difficult to say if WWOOFers were more open to learning as a result of the positive emotions associated with their experience, but having an overall positive experience significantly correlated with higher reported environmental behavior change (Spearman=0.243), greater curiosity about sustainable living change (Spearman=0.301), increased knowledge about organic farming (Spearman=0.304), and lifestyle reassessment (Spearman=0.241). Chi-squared and Kruskal-Wallis tests had a significant p-value of 0.000 in each of these cases.

When considering the positive emotions of feeling connected to other people, feeling useful, feeling peaceful, feeling a sense of belonging and a sense of growth and combining them with the 5E Score, a relatively strong and significant relationship was found with pro-environmental behavior change (Chi-squared and Kruskal-Wallis, p=0.000; Spearman=0.384; ANOVA, F=18.262, p=0.000). When considering only the 5E Score, seven new behavior changes were added on average, but when combined with positive emotions, nine new behavior changes were reportedly added. Additionally, when adding the outcome of feeling more connected to nature, the correlation was even stronger (Spearman=0.422) and ten new behavior changes were added on average. Therefore when the quality of active learning is strong and positive emotions are developed during the experience, more behavior change is predicted, especially when taking place in nature.

The interviews and survey comments confirmed that those who enthusiastically talked about their experience and the happiness they felt while working often reported that their experience had a major impact on their lives. This was especially true when WWOOFers felt connected to others and felt part of a community. The following quotes express these sentiments:

> "Everyone is family here. Somehow we all got here. Dusted off our traveling shoes and ended up here at a table where we eat home cooked meals complete with fresh greens from the garden. We do collaborative drawings, tell stories, get up and dance. We are not afraid to give big hugs, ones that envelop you. Here, you feel at home."

> "It has been absolutely life changing - one of the best times of my life. I came to learn about organic farming, but the level of personal connections I have made with my hosts has far far surpassed my expectations."

> "The best part of my WWOOFing experience was connecting with people and feeling part of a community, if only for short amounts of time. I have made life-long friends. It has also inspired me to want to live a more sustainable life in the future."

Overall experiencing a sense of belonging and connection, feeling useful and a sense of growth in combination with high 5E Scores predicts higher levels of pro-environmental behavior. Positive emotions have the potential to increase a person's openness to learning and are important to develop during an active learning experience. Feeling connected to nature is also strongly correlated to pro-environmental behavior change. Spending time in nature and actively working with it may help create more action-oriented, environmentally concerned citizens.

6. DISCUSSION and CONCLUSION

6.1. Discussion and General Application: Research Question 1

Is active, experiential learning important for pro-environmental behavior change?

Active learning through direct, hands-on experience has the ability to influence environmental behavior. It can encourage creativity, excitement, and critical thinking and can help develop new skills and a variety of pro-environmental behaviors related to food, gardening, resource use, and lifestyle. WWOOF acted as a useful case study to show how these types of behaviors, emotions, and thoughts can be activated or enhanced through experience or active learning. The results from this research, however, are most applicable toward individuals coming from North America and Europe because nearly 90% of survey respondents came from these regions.

The interviews revealed that WWOOFing can help activate or strengthen some of the attitudes, beliefs, and emotions discussed in the norm activation model (NAM), the theory of planned behavior (TPB), and other behavioral theory research. In some instances WWOOFing helped individuals develop awareness about new ideas and issues and about how they can live in a more environmentally friendly way. Many developed positive feelings about different types of pro-environmental behavior, especially around eating fresh, organic, local food and living a more simple life with reduced consumption. For others the experience further provoked a sense of concern and a sense of responsibility to live in a lighter, more sustainable way. WWOOFing

showed some how easy changing their behavior could be and helped others grow their confidence to a point where they felt empowered to make changes to their lives in any way they wished.

Behavior theory says that these types of attitudes shape our pro-environmental intentions which in turn influence our actions. Results from this thesis indicate that this was the case given that 89% of volunteers reported at least one behavior change as a result of their experience. On average volunteers reported to add or increase seven to eight new environmental behavior practices as a result of their WWOOFing experience. These results suggest that real world experiences create a variety of different learning opportunities: it is the variety of these experiences that make it possible for experiential learning to shape and intensify many of the different variables that have been used to predict pro-environmental behavior. Direct, hands-on experience, therefore, is recommended as a potential and effective tool for enhancing environment behavior.

But as research from Chawla (2001) suggests, many experiences are needed over time to build upon each other to create real, lasting change. An extended hands-on learning experience in nature appears to be a significant experience but one among many that can help shape peoples' views, knowledge, and behaviors.

6.2. Discussion and General Application: Research Question 2

What are the components of an active learning experience that enhance behavior change?

In addition to demonstrating how real world experience can contribute to pro-environmental behavior change, this thesis has also found that living with people who have strong environmental values, having discussions with them, and seeing how it is physically possible to put their values into practice can significantly impact the behavior of people who are open to change. Upon analyzing WWOOFing through the 5E learning cycle framework, it was also found that behavior change was positively associated with curiosity about the environment, being involved in enjoyable and engaging work, living a sustainable lifestyle, having opportunities to repeat work and transfer it to other places, and reflecting on the experience.

Engagement, exploration, elaboration, and *evaluation* were found to be most effective in predicting environmental behavior change when the *explanation* component was strong. People seem especially influenced by talking to and sharing ideas with others they respect. When governments, schools, or other organizations endeavor to improve environmental behavior in individuals, they should strongly consider the 5Es and work toward improving each component if possible. They should create opportunities for people to *experience* rather than just listen or read.

Governments could encourage experiential learning and increase pro-environmental behavior, for example, through providing free transportation tickets, as local governments in Sweden and Germany have done to encourage greater public transportation use. A study of the implications of this by Bamberg (2006) found that this policy successfully increased public transportation use in Stuttgart, Germany. Schools could incorporate the 5Es in their environmental education curriculum or encourage WWOOFing or other types of environmental experiences during holiday periods. A sustainable business, such as one selling organic food, could allow people to sample their food, offer cooking lessons, and opportunities to tour the farms and meet the farmers. In all of these cases special focus should be placed on creating relationships between individuals, allowing opportunities for discussion, and letting people try out a behavior before they adopt it.

It should be noted that curiosity from an individual does not always matter. People who initially do not care about environmental issues can still be involved. It is possible to help shape their environmental behavior if they are engaged in an experience that is strong in one or more of the other 5Es. Environmental action could also be enhanced if the action is associated with positive feelings. Forming positive emotions such as feeling a sense of peace, connection, and belonging were found to correlate with increased pro-environmental behavior. Unfortunately, environmental ideas are often advertised to capitalize on a sense of fear or guilt. If a desired environmental behavior could instead be associated more closely with positive emotions, as is the case for many WWOOFers, more people may be open to adopting new pro-environmental behaviors. Creating situations where individuals feel they are part of a community or have a role model interested in environmental issues could be a good way to begin fostering positive emotions related to the environment.

For many, the WWOOFing experience also helped them connect and appreciate the natural world to a greater extent. According to several environmental psychology studies, spending more time in nature can lead to increased environmental concern and behavior (Mayer & Frantz, 2004; Kals et al., 1999; Schultz, 2010). Therefore, active learning experiences in nature may be especially useful for encouraging pro-environmental behavior. Many environmental education programs have already discovered this and allow for students to spend extended periods of time outdoors to play and explore and to promote problem solving and creative thinking. By spending time in nature, these children may be more likely to grow up to be active, concerned environmental citizens.

6.3. Specific Application to WWOOF

Based on this thesis research, many specific active learning suggestions can be provided to participants regarding how they can enable the transfer of knowledge and more sustainable ways of living. Appendix D highlights different actions WWOOFing volunteers, hosts, and the various WWOOF organizations can take to strengthen each of the 5Es and as a result create more positive, potentially behavior-altering experiences.

6.4. Larger Implications and Conclusion

The pro-environmental behaviors measured in this study do not solve the globe's environmental problems, but they can be indicative of an individual's environmental awareness, concern, and values which may lead to significant change when acted out by a large aggregate of society. The UK Energy Research Centre (2009) has done extensive modeling on the impact of sustainable lifestyle changes across the residential sector and found that national energy use could potentially be reduced by 35% and carbon emissions by 30%. Behavior changes would need to include reducing lighting, heating, appliance use, hot water consumption as well as increasing walking and cycling (UKERC, 2009). Many small behavior changes in mass have the possibility of creating large impacts to address global issues.

Additionally, research on a theory called the 'spill-over effect' is beginning to emerge which indicates that when someone adopts one pro-environmental behavior, they are inclined to adopt other similar, possibly more ambitious pro-environmental behaviors (Thøgersen & Ölander 2006). Findings from Whitmarsh and O'Neill (2010) indicate that self-identity is predictive of environmental behavior. When someone develops a pro-environment identity, their behavior

may spread into other areas of their lives (Whitmarsh & O'Neill, 2010). Furthermore, it follows that people could potentially change habits in their homes and subsequently put pressure on family and friends to do the same or on organizations, their employers, and politicians to make environmentally responsible decisions and pass laws related to protecting the environment. In this way, individual behavior change, however minor, has the potential to lead to greater change which could help tackle some of the larger environmental issues society faces.

Any individual who learns to care about the environment and becomes willing to take action to protect it, even in small ways, is an important gain for the health of the environment and the Earth's future inhabitants. The case study of WWOOF has shown that active, experiential learning can act as a potential tool for influencing greater pro-environmental behavior. The presence of the five analyzed active learning components do not guarantee environmental behavior change, but they can help make learning a more meaningful, richer experience when they are enhanced and when they act together. This meaningful experience can translate into environmentally sustainable behavior, especially when environmental discussions occur between people who respect each other and when a sustainable lifestyle can be experienced. Once something is experienced, it often cannot be ignored.

6.5. Further Research

To help correct some of the potential biases of this study, areas of future research could include performing a longitudinal study of WWOOFing experiences or comparing experiences of people who have worked at the same farm. Environmental behavior and value changes could be more accurately compared if volunteers were questioned both before and after their WWOOFing experience. Comparing people who worked on the same farm could help eliminate other variables to gauge if certain situations and experiences consistently create certain types of behavior change in most individuals. More sophisticated and detailed statistical tests could also be used on the current set of data to reveal additional patterns between the surveyed variables.

It would additionally be interesting to compare experiential learning indoors and outdoors to investigate how much spending time in nature contributes to pro-environmental behavior change in a learning setting. The application of the 5E learning model on other experiential situations, possibly related to governmental or sustainable business initiatives, could be useful to explore if the model's effect on environmental behavior can truly be transferred to other

experiences and different sets of people. Furthermore, different governments could be analyzed to better understand if individual environmental actions and general public awareness can contribute to political change. It would also be interesting to better understand how governance systems can both prevent and help individuals to change.

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Appendix A: Survey Request Letter

This letter (or a similar variation) was sent to WWOOF volunteers to request their help in filling out the questionnaire:

Dear WWOOFers,

My name is Maggie (a fellow WWOOFer) and I am trying to track down other former WWOOFers who can share a little about their experience in a short survey. I am currently working on my thesis to help improve the WWOOFing experience and to understand what people learn from their involvement. Tapping into your experience could be really useful for the program and help others like you get the most out of their experience.

If you have WWOOFed and could fill out this 5 to 8 minute survey (available in both English and Spanish), it would be incredibly helpful! You can view the survey by clicking this link:
http://edu.surveygizmo.com/s3/772358/The-WWOOFing-Experience

Your answers will be kept confidential, but I can definitely share my results with you if you are interested. And if I can contact you to have a more in-depth conversation about your WWOOFing experience, please indicate this on the last page of the survey and include your email address.

Thank you! I REALLY appreciate you taking the time to fill this out – and feel free to pass this along to other WWOOFers you know.

Warm regards,
Maggie Melin

WWOOFer in Italy, 2011
Student at Lund University in Sweden
Email: maggie.melin@gmail.com

Appendix B: The Survey

The survey below can also be viewed online at: http://edu.surveygizmo.com/s3/772358/The-WWOOFing-Experience

Dear WWOOFer, thank you for taking the time to fill out this survey! The survey is for a masters thesis at Lund University to better understand why people WWOOF and the impact it has on them. There are 23 questions about your WWOOFing experience and it should only take between 5 and 8 minutes to complete. Your responses will be kept confidential.

WWOOFing and Motivation

1) Which region of the world did you most recently WWOOF? (demographics)
( ) Europe
( ) Latin America
( ) North America
( ) Asia
( ) Africa
( ) Middle East
( ) Oceania (Australia + Pacific Islands)

2) For how many weeks did you WWOOF (in total)? (elaboration)
( ) less than 1
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10
( ) 11
( ) 12 or more

3) During which year did you most recently WWOOF? (demographics)
( ) 2012
( ) 2011
( ) 2010
( ) 2009
( ) 2008
( ) 2007 or earlier

4) Why did you originally decide to WWOOF? (engagement)
(check all that apply)
[ ] To learn more about organic farming
[ ] To have a chance to live with locals
[ ] To improve my language skills
[ ] To save money
[ ] To travel around the country

[ ] To reconnect with nature
[ ] To have a break from my everyday life
[ ] Other:

5) From the above list, what was your GREATEST motivation or goal for WWOOFing?
( ) To learn more about organic farming
( ) To have a chance to live with locals
( ) To improve my language skills
( ) To save money
( ) To travel around the country
( ) To reconnect with nature
( ) To have a break from my everyday life
( ) Other

6) Was your greatest goal achieved during your WWOOFing experience?
( ) Not at all
( ) To a very little extent
( ) To some extent
( ) To a great extent

7) How much knowledge did you have about organic farming before your WWOOFing experience? (elaboration)
( ) None
( ) Very little knowledge
( ) Some knowledge
( ) A great deal of knowledge

Your Experience On the Farm
8) What types of daily activities were you involved in on the farm? (exploration and elaboration)
(check all that apply)
[ ] Garden or forest work (planting, weeding, harvesting)
[ ] Feeding or caring for animals
[ ] Product creation or assembly
[ ] Building or construction work
[ ] Working at markets, restaurants, shops, or hotels
[ ] Giving tours of the farm **(elaboration)**
[ ] Other:

9) On average how many hours per day did you work outdoors? (exploration - nature)
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more

10) In general, your daily tasks were: (exploration)
(check all that apply)
[ ] Easy to learn
[ ] Difficult to learn
[ ] Relaxing
[ ] Physically demanding
[ ] Fun to perform
[ ] Boring to perform

11) Did you teach anyone on the farm how to perform any of your tasks? (elaboration)
( ) Yes
( ) No

12) How much did you interact with your host(s) during meals, farm work, and free time?

	No Interaction	Some Interaction	Regular Interaction
Meals	( )	( )	( )
Farm Work	( )	( )	( )
Free Time	( )	( )	( )

13) Was there a language barrier between you and the host(s) you interacted with the most?
( ) No language barrier, we could communicate and discuss most topics
( ) Some language barrier, we could have basic conversations
( ) Major language barrier, we could only use hand gestures

14) Did you form a meaningful friendship with any of your host(s)? (personal gain)
( ) Yes
( ) No

15) Did your host(s) engage in discussions with you about their environmental philosophy such as why they farm organically? (explanation)
( ) No, none
( ) Very little discussion
( ) Some discussion
( ) A great deal of discussion

16) In your opinion were your host(s) environmentally minded: did they possess concern for the environment and follow sound environmental practices? (explanation)
( ) No, not at all
( ) Very little
( ) Somewhat
( ) To a great extent

17) Did your host(s) provide you with feedback on whether you were performing your tasks correctly? (evaluation)
( ) No, none
( ) Very little feedback

( ) Some feedback
( ) A great deal of feedback

What did you learn?

18) Overall how did you feel about your WWOOFing experience? (personal gain)

( ) Very negative
( ) Negative
( ) Neutral
( ) Positive
( ) Very positive

19) To what extent did you experience the following as a result of your WWOOFing experience? (personal gain)

	No change	Very little	To some extent	To a great extent	To a VERY great extent
Increased knowledge about organic farming	( )	( )	( )	( )	( )
Greater curiosity about sustainable living	( )	( )	( )	( )	( )
Reassessment of my own lifestyle	( )	( )	( )	( )	( )
Learning how to cook and prepare organic meals	( )	( )	( )	( )	( )
Greater connection and appreciation for nature	( )	( )	( )	( )	( )
Meaningful friendships	( )	( )	( )	( )	( )
Personal growth	( )	( )	( )	( )	( )
Sense of peace	( )	( )	( )	( )	( )
Sense of belonging	( )	( )	( )	( )	( )
Feeling useful	( )	( )	( )	( )	( )

20) Did you begin practicing any of the following because of your WWOOFing experience?
(diet and gardening behavior change)

	Yes	No	Not applicable (N/A)
I started to buy more organic foods	( )	( )	( )
I started to buy more locally grown foods	( )	( )	( )
I started my own garden or began using a community garden plot	( )	( )	( )
I changed my diet	( )	( )	( )
I began composting my kitchen waste	( )	( )	( )
I began using organic practices in my garden	( )	( )	( )

Did you change?
State how much you agree or disagree with the following statement:
21) "As a result of my WWOOFing experience I have noticed that I am more likely to..."
(resource and lifestyle behavior change)

	Strongly disagree	Disagree	Neutral/No change	Agree	Strongly agree
think about how my actions might affect the environment	( )	( )	( )	( )	( )
take trips to spend time in nature	( )	( )	( )	( )	( )
buy environmentally friendly products	( )	( )	( )	( )	( )
bring my own bag for shopping	( )	( )	( )	( )	( )
recycle my waste when possible	( )	( )	( )	( )	( )

reuse or repair items instead of throwing them away	( )	( )	( )	( )	( )

"As a result of my WWOOFing experience I have noticed that I am more likely to..."
(resource and lifestyle behavior change)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
walk, cycle or take public transportation for shorter trips	( )	( )	( )	( )	( )
take shorter showers	( )	( )	( )	( )	( )
turn the tap off while brushing my teeth	( )	( )	( )	( )	( )
turn off lights I am not using	( )	( )	( )	( )	( )
engage in debates about environmental issues	( )	( )	( )	( )	( )
take part in protests about environmental issues	( )	( )	( )	( )	( )

22) Did you consider yourself environmentally minded before your WWOOFing experience? (this question was added part way through the survey collection period so not all respondents answered this question)
( ) No, not at all
( ) Very little
( ) Somewhat
( ) To a great extent

Additional Background Information (the last page!)
23) Would it be okay for me to contact you so we can have a more in-depth conversation about your experience? (interview participation)
( ) Yes
( ) No

If yes, what is your email address? _____

Which country are you originally from? **(demographics)**
All countries were listed in a drop down

What is your gender? **(demographics)**
( ) Male
( ) Female
( ) Other

How old were you when you most recently WWOOFed? **(demographics)**
( ) 16-24
( ) 25-34
( ) 35-44
( ) 45-54
( ) 55 or older

On how many farms have you WWOOFed? **(elaboration)**
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5 or more

What is your highest level of education achieved? **(demographics)**
( ) High school
( ) Vocational school
( ) Bachelors
( ) Graduate school
( ) Other

Did your degree or your job before WWOOFing involve the environment in any way (e.g. environmental studies, nature resource management, environmental planning)? **(engagement)**
( ) Yes
( ) No

Is there anything else you would like us to know about your WWOOFing experience?

Thank You!
Thank you for taking the survey! Your response is very important for improving this study and if you are interested in learning about the results once they are ready, please email maggie.melin@gmail.com. And please share this survey with other WWOOFers you may know!

Appendix C: Statistical Results
The following are SPSS outputs for the statistics discussed in the report.

Engagement

Engagement Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.282[a]	6	.000
Likelihood Ratio	37.898	6	.000
N of Valid Cases	1381		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 53.80.

Engagement Kruskal-Wallis Test Statistics

	BEHAVIOR CHANGE TOTAL
Chi-Square	20.186
df	2
Asymp. Sig.	.000

Engagement Symmetric Measures – overall behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.045	.026	1.685	.092[c]
Ordinal by Ordinal	Spearman Correlation	.046	.027	1.700	.089[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Engagement Symmetric Measures – gardening/diet behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.121	.025	4.508	.000[c]
Ordinal by Ordinal	Spearman Correlation	.114	.026	4.272	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Engagement Symmetric Measures – lifestyle behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.003	.027	.122	.903[c]
Ordinal by Ordinal	Spearman Correlation	.005	.027	.170	.865[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Engagement Multiple Comparisons – Tukey Test

Dependent Variable: BEHAVIOR CHANGE TOTAL - Tukey HSD

(I) 5E ENGAGED	(J) 5E ENGAGED	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0	1	-1.45*	.329	.000	-2.22	-.67
	2	-.58	.399	.309	-1.52	.35
1	0	1.45*	.329	.000	.67	2.22
	2	.86*	.346	.035	.05	1.67
2	0	.58	.399	.309	-.35	1.52
	1	-.86*	.346	.035	-1.67	-.05

Based on observed means. Error term is Mean Square(Error) = 25.329. *. Mean difference is significant at the 0

Exploration

Exploration Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.226[a]	6	.000
Likelihood Ratio	29.563	6	.000
N of Valid Cases	1381		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.27.

Exploration Kruskal-Wallis Test Statistics

	BEHAVIOR CHANGE
Chi-Square	27.028
df	2
Asymp. Sig.	.000

Exploration Symmetric Measures – overall behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.135	.027	5.047	.000[c]
Ordinal by Ordinal	Spearman Correlation	.131	.027	4.922	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Exploration Symmetric Measures – gardening/diet behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.114	.026	4.277	.000[c]
Ordinal by Ordinal	Spearman Correlation	.113	.027	4.234	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Exploration Symmetric Measures – lifestyle behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.119	.027	4.442	.000[c]
Ordinal by Ordinal	Spearman Correlation	.116	.027	4.318	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Chi-Square Tests – Explore in Nature

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.255[a]	6	.018
Likelihood Ratio	15.122	6	.019
N of Valid Cases	1381		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.81.

Explore in Nature Kruskal Wallis

Test Statistics

	BEHAVIOR CHANGE TOTAL
Chi-Square	12.293
df	2
Asymp. Sig.	.002

Explanation

Explanation Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	61.526[a]	6	.000
Likelihood Ratio	62.409	6	.000
N of Valid Cases	1381		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.54.

Explanation Kruskal-Wallis Test Statistics

	BEHAVIOR CHANGE TOTAL
Chi-Square	65.499
df	2
Asymp. Sig.	.000

Explanation Symmetric Measures – overall behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.216	.025	8.228	.000[c]
Ordinal by Ordinal	Spearman Correlation	.217	.026	8.265	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Explanation Symmetric Measures – gardening/diet behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.236	.023	8.998	.000[c]
Ordinal by Ordinal	Spearman Correlation	.227	.025	8.650	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Explanation Symmetric Measures – lifestyle behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.168	.026	6.315	.000[c]
Ordinal by Ordinal	Spearman Correlation	.172	.026	6.499	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Chi-Square Tests – friendship and interaction

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	157.875[a]	6	.000
Likelihood Ratio	151.613	6	.000
Linear-by-Linear Association	149.858	1	.000
N of Valid Cases	1373		

a. 2 cells (14.3%) have expected count less than 5. The minimum expected count is 2.44.

Symmetric Measures – friendship and interaction

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.330	.026	12.966	.000[c]
Ordinal by Ordinal	Spearman Correlation	.306	.025	11.903	.000[c]
N of Valid Cases		1373			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Chi-Square Tests – explanation and friendship

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	99.733[a]	2	.000
Likelihood Ratio	93.968	2	.000
Linear-by-Linear Association	99.305	1	.000
N of Valid Cases	1373		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.52.

Symmetric Measures – explanation and friendship

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.269	.028	10.343	.000[c]
Ordinal by Ordinal	Spearman Correlation	.260	.027	9.985	.000[c]
N of Valid Cases		1373			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Elaboration

Elaboration Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.019[a]	6	.001
Likelihood Ratio	21.977	6	.001
N of Valid Cases	1381		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 33.26.

Elaboration Symmetric Measures – overall behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.098	.026	3.649	.000[c]
Ordinal by Ordinal	Spearman Correlation	.103	.026	3.851	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Elaboration Symmetric Measures – gardening/diet behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.086	.026	3.221	.001[c]
Ordinal by Ordinal	Spearman Correlation	.091	.026	3.389	.001[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Elaboration Symmetric Measures – lifestyle behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.085	.027	3.159	.002[c]
Ordinal by Ordinal	Spearman Correlation	.091	.027	3.384	.001[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Elaboration Multiple Comparisons – Tukey Test

Dependent Variable: BEHAVIOR CHANGE TOTAL - Tukey HSD

(I) 5E NEW Elaboration	(J) 5E NEW Elaboration	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0	1	-1.47*	.296	.000	-2.16	-.78
	2	-.99	.436	.059	-2.02	.03
1	0	1.47*	.296	.000	.78	2.16
	2	.48	.417	.488	-.50	1.45
2	0	.99	.436	.059	-.03	2.02
	1	-.48	.417	.488	-1.45	.50

Based on observed means. Error term is Mean Square(Error) = 25.257.

*. Mean difference is significant at the 0

Elaboration Kruskal-Wallis Test Statistics

	BEHAVIOR CHANGE
Chi-Square	23.104
df	2
Asymp. Sig.	.000

Evaluation

Evaluation Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.716[a]	6	.000
Likelihood Ratio	44.582	6	.000
N of Valid Cases	1377		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 27.16.

Evaluation Kruskal-Wallis Test Statistics

	BEHAVIOR CHANGE
Chi-Square	49.436
df	2
Asymp. Sig.	.000

Evaluation Symmetric Measures – overall behavior

		Value	Asymp. Std. Error[a]	Appx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.187	.026	7.074	.000[c]
Ordinal by Ordinal	Spearman Correlation	.190	.026	7.158	.000[c]
N of Valid Cases		1377			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Evaluation Symmetric Measures – gardening/diet behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.143	.027	5.358	.000[c]
Ordinal by Ordinal	Spearman Correlation	.143	.027	5.356	.000[c]
N of Valid Cases		1377			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Evaluation Symmetric Measures – lifestyle behavior

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.173	.026	6.494	.000[c]
Ordinal by Ordinal	Spearman Correlation	.176	.026	6.629	.000[c]
N of Valid Cases		1377			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

5Es

5E Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	94.131[a]	27	.000
Likelihood Ratio	97.189	27	.000
N of Valid Cases	1381		

a. 7 cells (17.5%) have expected count less than 5. The minimum expected count is 1.27.

5E Kruskal Wallis Test Statistics

	BEHAVIOR CHANGE
Chi-Square	87.837
df	9
Asymp. Sig.	.000

5E Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.244	.025	9.324	.000[c]
Ordinal by Ordinal	Spearman Correlation	.238	.026	9.081	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

5Es and Learning Outcome

Organic Farming Knowledge - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	242.151[a]	9	.000
Likelihood Ratio	270.858	9	.000
Linear-by-Linear Association	236.652	1	.000
N of Valid Cases	1379		

a. 2 cells (10.0%) have expected count less than 5. The minimum expected count is 3.03.

Organic Farming Knowledge - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.414	.021	16.897	.000[c]
Ordinal by Ordinal	Spearman Correlation	.414	.022	16.880	.000[c]
N of Valid Cases		1379			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Greater curiosity about sustainable living - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	174.829[a]	9	.000
Likelihood Ratio	181.769	9	.000
Linear-by-Linear Association	165.680	1	.000
N of Valid Cases	1378		

a. 2 cells (10.0%) have expected count less than 5. The minimum expected count is 2.80.

Greater curiosity about sustainable living - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.347	.024	13.719	.000[c]
Ordinal by Ordinal	Spearman Correlation	.341	.024	13.474	.000[c]
N of Valid Cases		1378			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Lifestyle Reassessment - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	86.788[a]	9	.000
Likelihood Ratio	92.178	9	.000
Linear-by-Linear Association	83.960	1	.000
N of Valid Cases	1370		

a. 2 cells (10.0%) have expected count less than 5. The minimum expected count is 3.47.

Lifestyle Reassessment - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.248	.025	9.454	.000[c]
Ordinal by Ordinal	Spearman Correlation	.241	.026	9.173	.000[c]
N of Valid Cases		1370			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Connection to Nature - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	62.283[a]	9	.000
Likelihood Ratio	65.426	9	.000
Linear-by-Linear Association	53.538	1	.000
N of Valid Cases	1379		

a. 2 cells (10.0%) have expected count less than 5. The minimum expected count is 3.02.

Connection to Nature - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.197	.026	7.461	.000[c]
Ordinal by Ordinal	Spearman Correlation	.191	.026	7.211	.000[c]
N of Valid Cases		1379			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Kruskal-Wallis Test Statistics

	X Increased knowledge about organic farming	X Greater curiosity about sustainable living	X Reassessment of my own lifestyle	X Greater connection and appreciation for nature
Chi-Square	115.721	189.006	239.388	290.442
df	18	18	18	18
Asymp. Sig.	.000	.000	.000	.000

5E Interactions

Explain & Engage - Chi-Square Tests

5E EXPLAIN		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	8.373[b]	6	.212
	Likelihood Ratio	7.198	6	.303
	N of Valid Cases	80		
1	Pearson Chi-Square	14.439[c]	6	.025
	Likelihood Ratio	15.095	6	.020
	N of Valid Cases	457		
2	Pearson Chi-Square	21.970[d]	6	.001
	Likelihood Ratio	23.002	6	.001
	N of Valid Cases	844		
Total	Pearson Chi-Square	35.282[a]	6	.000
	Likelihood Ratio	37.898	6	.000
	N of Valid Cases	1381		

Explain & Explore - Chi-Square Tests

5E EXPLAIN		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	12.310[b]	6	.055
	Likelihood Ratio	14.532	6	.024
	N of Valid Cases	80		
1	Pearson Chi-Square	12.221[c]	6	.057
	Likelihood Ratio	11.245	6	.081
	N of Valid Cases	457		
2	Pearson Chi-Square	3.621[d]	3	.305
	Likelihood Ratio	3.545	3	.315
	N of Valid Cases	844		
Total	Pearson Chi-Square	29.226[a]	6	.000
	Likelihood Ratio	29.563	6	.000
	N of Valid Cases	1381		

Explain & Elaborate - Chi-Square Tests

5E EXPLAIN		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	3.550[b]	6	.737
	Likelihood Ratio	3.879	6	.693
	N of Valid Cases	80		
1	Pearson Chi-Square	9.316[c]	6	.157
	Likelihood Ratio	10.029	6	.123
	N of Valid Cases	457		
2	Pearson Chi-Square	15.183[d]	6	.019
	Likelihood Ratio	15.282	6	.018
	N of Valid Cases	844		
Total	Pearson Chi-Square	22.019[a]	6	.001
	Likelihood Ratio	21.977	6	.001
	N of Valid Cases	1381		

Elaborate & Explain - Chi-Square Tests

5E Elaboration		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	16.836[b]	6	.010
	Likelihood Ratio	17.843	6	.007
	N of Valid Cases	487		
1	Pearson Chi-Square	34.556[c]	6	.000
	Likelihood Ratio	34.637	6	.000
	N of Valid Cases	711		
2	Pearson Chi-Square	16.350[d]	6	.012
	Likelihood Ratio	17.142	6	.009
	N of Valid Cases	183		
Total	Pearson Chi-Square	61.526[a]	6	.000
	Likelihood Ratio	62.409	6	.000
	N of Valid Cases	1381		

Explain & Evaluate - Chi-Square Tests

5E EXPLAIN		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	8.053[b]	6	.234
	Likelihood Ratio	8.726	6	.190
	N of Valid Cases	80		
1	Pearson Chi-Square	8.798[c]	6	.185
	Likelihood Ratio	8.837	6	.183
	N of Valid Cases	455		
2	Pearson Chi-Square	23.058[d]	6	.001
	Likelihood Ratio	23.270	6	.001
	N of Valid Cases	842		
Total	Pearson Chi-Square	44.716[a]	6	.000
	Likelihood Ratio	44.582	6	.000
	N of Valid Cases	1377		

Engage & Explain - Chi-Square Tests

5E ENGAGED		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	18.356[b]	6	.005
	Likelihood Ratio	18.554	6	.005
	N of Valid Cases	343		
1	Pearson Chi-Square	42.002[c]	6	.000
	Likelihood Ratio	41.441	6	.000
	N of Valid Cases	742		
2	Pearson Chi-Square	9.443[d]	6	.150
	Likelihood Ratio	9.811	6	.133
	N of Valid Cases	296		
Total	Pearson Chi-Square	61.526[a]	6	.000
	Likelihood Ratio	62.409	6	.000
	N of Valid Cases	1381		

Explore & Explain – Chi-Square Tests

5E EXPLORE GENERAL		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	7.000[b]	1	.008
	Continuity Correction[c]	1.215	1	.270
	Likelihood Ratio	5.742	1	.017
	Fisher's Exact Test			
	N of Valid Cases	7		
1	Pearson Chi-Square	26.677[d]	6	.000
	Likelihood Ratio	27.260	6	.000
	N of Valid Cases	451		
2	Pearson Chi-Square	28.372[e]	6	.000
	Likelihood Ratio	29.167	6	.000
	N of Valid Cases	923		
Total	Pearson Chi-Square	61.526[a]	6	.000
	Likelihood Ratio	62.409	6	.000
	N of Valid Cases	1381		

Evaluate & Explain - Chi-Square Tests

5E EVALUATE		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	7.363[b]	6	.289
	Likelihood Ratio	8.198	6	.224
	N of Valid Cases	149		
1	Pearson Chi-Square	29.058[c]	6	.000
	Likelihood Ratio	30.466	6	.000
	N of Valid Cases	725		
2	Pearson Chi-Square	19.309[d]	6	.004
	Likelihood Ratio	19.841	6	.003
	N of Valid Cases	503		
Total	Pearson Chi-Square	61.385[a]	6	.000
	Likelihood Ratio	62.255	6	.000
	N of Valid Cases	1377		

Engage & Elaborate - Chi-Square Tests

5E ENGAGED		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	5.657[b]	6	.463
	Likelihood Ratio	5.661	6	.462
	N of Valid Cases	343		
1	Pearson Chi-Square	14.453[c]	6	.025
	Likelihood Ratio	14.453	6	.025
	N of Valid Cases	742		
2	Pearson Chi-Square	7.863[d]	6	.248
	Likelihood Ratio	8.033	6	.236
	N of Valid Cases	296		
Total	Pearson Chi-Square	22.019[a]	6	.001
	Likelihood Ratio	21.977	6	.001
	N of Valid Cases	1381		

Engage & Explore - Chi-Square Tests

5E ENGAGED		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	10.630[b]	6	.100
	Likelihood Ratio	10.913	6	.091
	N of Valid Cases	343		
1	Pearson Chi-Square	17.340[c]	6	.008
	Likelihood Ratio	17.550	6	.007
	N of Valid Cases	742		
2	Pearson Chi-Square	7.141[d]	3	.068
	Likelihood Ratio	7.075	3	.070
	N of Valid Cases	296		
Total	Pearson Chi-Square	29.226[a]	6	.000
	Likelihood Ratio	29.563	6	.000
	N of Valid Cases	1381		

Engage & Evaluate - Chi-Square Tests

5E ENGAGED		Value	df	Asymp. Sig. (2-sided)
0	Pearson Chi-Square	19.997[b]	6	.003
	Likelihood Ratio	20.263	6	.002
	N of Valid Cases	343		
1	Pearson Chi-Square	23.690[c]	6	.001
	Likelihood Ratio	23.417	6	.001
	N of Valid Cases	738		
2	Pearson Chi-Square	8.483[d]	6	.205
	Likelihood Ratio	8.836	6	.183
	N of Valid Cases	296		
Total	Pearson Chi-Square	44.716[a]	6	.000
	Likelihood Ratio	44.582	6	.000
	N of Valid Cases	1377		

Learning Outcomes/Positive Emotions vs Behavior Change

Organic Farming Knowledge - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	115.805[a]	18	.000
Likelihood Ratio	121.631	18	.000
Linear-by-Linear Association	104.346	1	.000
N of Valid Cases	1379		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.92.

Organic Farming Knowledge - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.275	.025	10.621	.000[c]
Ordinal by Ordinal	Spearman Correlation	.272	.025	10.499	.000[c]
N of Valid Cases		1379			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Sustainable Living Curiosity - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	189.143[a]	18	.000
Likelihood Ratio	195.685	18	.000
Linear-by-Linear Association	177.281	1	.000
N of Valid Cases	1378		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.40.

Sustainable Living Curiosity - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.359	.024	14.259	.000[c]
Ordinal by Ordinal	Spearman Correlation	.361	.024	14.344	.000[c]
N of Valid Cases		1378			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Lifestyle Reassessment - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	239.563[a]	18	.000
Likelihood Ratio	255.521	18	.000
Linear-by-Linear Association	226.368	1	.000
N of Valid Cases	1370		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.94.

Lifestyle Reassessment - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.407	.023	16.463	.000[c]
Ordinal by Ordinal	Spearman Correlation	.407	.023	16.494	.000[c]
N of Valid Cases		1370			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Meaningful Friendships - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	107.050[a]	18	.000
Likelihood Ratio	111.598	18	.000
Linear-by-Linear Association	88.801	1	.000
N of Valid Cases	1377		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.84.

Connection to Nature - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	290.653[a]	18	.000
Likelihood Ratio	311.147	18	.000
Linear-by-Linear Association	251.237	1	.000
N of Valid Cases	1379		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.89.

Connection to Nature - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.427	.023	17.522	.000[c]
Ordinal by Ordinal	Spearman Correlation	.429	.023	17.613	.000[c]
N of Valid Cases		1379			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Cooking Organic Food - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	147.189[a]	18	.000
Likelihood Ratio	152.258	18	.000
Linear-by-Linear Association	135.257	1	.000
N of Valid Cases	1375		

a. 1 cells (2.6%) have expected count less than 5. The minimum expected count is 4.78.

Cooking Organic Food - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.314	.025	12.244	.000[c]
Ordinal by Ordinal	Spearman Correlation	.313	.024	12.216	.000[c]
N of Valid Cases		1375			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Meaningful Friendships - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.254	.025	9.740	.000[c]
Ordinal by Ordinal	Spearman Correlation	.255	.025	9.762	.000[c]
N of Valid Cases		1377			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Personal Growth - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	143.688[a]	18	.000
Likelihood Ratio	149.435	18	.000
Linear-by-Linear Association	128.795	1	.000
N of Valid Cases	1376		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.12.

Personal Growth - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.306	.025	11.917	.000[c]
Ordinal by Ordinal	Spearman Correlation	.308	.025	11.983	.000[c]
N of Valid Cases		1376			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Sense of Peace - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	148.778[a]	18	.000
Likelihood Ratio	154.050	18	.000
Linear-by-Linear Association	132.124	1	.000
N of Valid Cases	1375		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.37.

Sense of Peace - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.310	.025	12.086	.000[c]
Ordinal by Ordinal	Spearman Correlation	.313	.025	12.225	.000[c]
N of Valid Cases		1375			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Sense of Belonging - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	138.580[a]	18	.000
Likelihood Ratio	143.503	18	.000
Linear-by-Linear Association	122.077	1	.000
N of Valid Cases	1373		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.85.

Sense of Belonging - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.298	.025	11.572	.000[c]
Ordinal by Ordinal	Spearman Correlation	.299	.025	11.617	.000[c]
N of Valid Cases		1373			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Feeling Useful - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	136.207[a]	18	.000
Likelihood Ratio	142.550	18	.000
Linear-by-Linear Association	113.481	1	.000
N of Valid Cases	1378		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.05.

Feeling Useful - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.287	.025	11.117	.000[c]
Ordinal by Ordinal	Spearman Correlation	.290	.025	11.223	.000[c]
N of Valid Cases		1378			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Learning Outcomes – Kruskal Wallis Test Statistics

	Increased knowledge about organic farming	Greater curiosity about sustainable living	Reassessment of my own lifestyle	Learning how to cook and prepare organic meals	Greater connection and appreciation for nature
Chi-Square	115.721	189.006	239.388	147.082	290.442
df	18	18	18	18	18
Asymp. Sig.	.000	.000	.000	.000	.000

Positive Emotions vs Behavior – Kruskal Wallis Test Statistics

	Meaningful friendships	Personal growth	Sense of peace	Sense of belonging	Feeling useful
Chi-Square	106.973	143.584	148.670	138.479	136.108
df	18	18	18	18	18
Asymp. Sig.	.000	.000	.000	.000	.000

Overall Positive Experience

Behavior Change - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	129.809[a]	36	.000
Likelihood Ratio	125.925	36	.000
Linear-by-Linear Association	88.429	1	.000
N of Valid Cases	1342		

a. 7 cells (12.3%) have expected count less than 5. The minimum expected count is 1.23.

Behavior Change - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.257	.025	9.726	.000[c]
Ordinal by Ordinal	Spearman Correlation	.243	.026	9.160	.000[c]
N of Valid Cases		1342			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Organic Farming Knowledge - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	128.455[a]	2	.000
Likelihood Ratio	142.733	2	.000
Linear-by-Linear Association	128.322	1	.000
N of Valid Cases	1340		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 44.66.

Organic Farming Knowledge - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.310	.022	11.909	.000[c]
Ordinal by Ordinal	Spearman Correlation	.304	.024	11.671	.000[c]
N of Valid Cases		1340			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Sustainable Living Curiosity - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	129.638[a]	2	.000
Likelihood Ratio	130.640	2	.000
Linear-by-Linear Association	129.182	1	.000
N of Valid Cases	1339		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.00.

Sustainable Living Curiosity - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.311	.026	11.953	.000[c]
Ordinal by Ordinal	Spearman Correlation	.301	.026	11.527	.000[c]
N of Valid Cases		1339			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Lifestyle Reassessment - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	83.302[a]	2	.000
Likelihood Ratio	87.164	2	.000
Linear-by-Linear Association	82.937	1	.000
N of Valid Cases	1331		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 50.81.

Lifestyle Reassessment - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.250	.025	9.401	.000[c]
Ordinal by Ordinal	Spearman Correlation	.241	.026	9.062	.000[c]
N of Valid Cases		1331			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

Overall Positive Experience Kruskal Wallis Test Statistics

	Increased knowledge about organic farming	Greater curiosity about sustainable living	Reassessment of my own lifestyle	BEHAVIOR CHANGE TOTAL
Chi-Square	128.359	129.541	83.240	90.686
df	2	2	2	2
Asymp. Sig.	.000	.000	.000	.000

5E Score + Positive Emotions vs Behavior Change

5E Score + Positive Emotions - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	237.552[a]	42	.000
Likelihood Ratio	235.950	42	.000
N of Valid Cases	1381		

a. 12 cells (20.0%) have expected count less than 5. The minimum expected count is .91.

5E Score + Positive Emotions - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.385	.024	15.513	.000[c]
Ordinal by Ordinal	Spearman Correlation	.384	.024	15.444	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

5E Score + Positive Emotions - Tests of Between-Subjects Effects

Dependent Variable: BEHAVIOR CHANGE TOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5586.079[a]	14	399.006	18.262	.000
Intercept	18604.261	1	18604.261	851.514	.000
@5EPositveEmotions	5586.079	14	399.006	18.262	.000
Error	29844.987	1366	21.848		
Total	110886.000	1381			
Corrected Total	35431.066	1380			

a. R Squared = .158 (Adjusted R Squared = .149)

5E + Positive Emotion Kruskal Wallis Test Statistics

	5E + Positve Emotions
Chi-Square	217.993
df	18
Asymp. Sig.	.000

5E Score + Positive Emotions + Nature Connection vs Behavior Change

5E Score + Positive Emotions + Nature - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	270.921[a]	45	.000
Likelihood Ratio	273.342	45	.000
N of Valid Cases	1381		

a. 12 cells (18.8%) have expected count less than 5. The minimum expected count is .91.

5E Score + Positive Emotions + Nature Connection - Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.423	.023	17.358	.000[c]
Ordinal by Ordinal	Spearman Correlation	.422	.023	17.261	.000[c]
N of Valid Cases		1381			

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.

5E Score + Positive Emotions + Nature - Tests of Between-Subjects Effects

Dependent Variable: BEHAVIOR CHANGE TOTAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6582.718[a]	15	438.848	20.765	.000
Intercept	18959.105	1	18959.105	897.077	.000
@5EPositveEmotionsNature	6582.718	15	438.848	20.765	.000
Error	28848.348	1365	21.134		
Total	110886.000	1381			
Corrected Total	35431.066	1380			

a. R Squared = .186 (Adjusted R Squared = .177)

Test 5E + Positive Emotion + Nature Kruskal Wallis Test Statistics

	5E + Positve Emotions + Nature
Chi-Square	261.235
df	18
Asymp. Sig.	.000

Appendix D: 5E Suggestions for WWOOFers, Hosts, and the WWOOF Organizations

These suggestions could lead to more positive WWOOFing experiences and greater pro-environmental change in volunteers after they return home:

The 5Es	Volunteers	Hosts	WWOOF Organizations
Engage	• Search for an experience of interest. Contact hosts before arrival to ensure it is a proper match. • Understand motivation and goals for WWOOFing. • Read or watch a documentary about organic farming before WWOOFing.	• Ask WWOOFers what they want to gain out of their experience. • In the farm description, hosts can share stories and areas of interest so that they reach out to volunteers with similar interests (e.g. if they have a product named after a famous mountain climber, let potential WWOOFers know about this). • If the host enjoys teaching others about certain topics, include this in the farm description.	• Encourage WWOOFers to share their experiences with others to engage a wider audience of people to consider trying WWOOFing. • Create a reference system where past volunteers can leave comments about their farm experiences.
Explore	• Be willing to try new things and withhold judgment in the beginning. • Explore WWOOFing possibilities locally as well as abroad.	• Provide WWOOFers with a variety of tasks so that work does not become monotonous. • If possible allow WWOOFer to see all parts of the organic food process (e.g. from planting to harvesting to selling at the market).	
Explain	• Articulate goals for WWOOFing and share them with the host. • Ask host questions about their background, why they have an organic farm, and other areas of interest. • Discuss thoughts and previous knowledge about organic farming with hosts and other WWOOFers and be open to learning more.	• Discuss why the farming tasks are important to perform, openly share knowledge and values, explain reasons for farming organically, share personal stories about reasons for having a farm. • Spend time with WWOOFers, especially during meals and farm work. • Share books, DVDs and other informative resources. • Have multiple WWOOFers at one time	• On the organization websites or in newsletters, tips could be provided to volunteers and hosts • Encourage hosts or WWOOFers to hold hosting workshops e.g. A woman in Australia recently hosted a 'Become a Wonderful WWOOF Host' workshop. • Promote volunteers to speak about their experiences at schools and

		to increase their opportunity to discuss with others.	universities. This could be especially beneficial for people who are at transitions in their lives and could have a significant impact on their future career paths.
Elaborate	• WWOOF at more than one farm. • Teach others. • Try WWOOFing after finishing a degree or during a life transition period. • Make a plan to try at least one activity or behavior learned on the farm at home.	• Encourage longer farm stays. • Show WWOOFers how they can transfer some farming techniques and sustainable practices back to their homes. • Ask volunteers to share their own ideas and be open to learning from them. • Give WWOOFers responsibilities to encourage critical thinking and problem solving.	• On the website promote multiple, longer farming experiences.
Evaluate	• Take time to reflect about the experience and what was learned. • Talk to others about the WWOOFing experience. • Write a journal or blog during the experience.	• Reflect with WWOOFers about what they learned during their experience. • Provide WWOOFers with feedback on what they are doing well as well as tips for improving. • Show appreciation for the WWOOFer's work.	• Encourage volunteers to reflect more about their experience and what they learned. E.g. WWOOF Greece sends a short questionnaire to their WWOOFers to ask about their experience, ideas for improvement, and encouragement they have for other WWOOFers.