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THE CONNECTION BETWEEN CHILDHOOD TIME SPENT OUTDOORS AND ADULT
SUSTAINABILITY BEHAVIORS

By

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Table of Contents

Abstract	3
Introduction	4
Background	4
Materials and Methods	8
Results	10
Discussion	16
Conclusion	19
References	20
Appendix A: Interview Questions	22
Appendix B: Recruitment Materials	26
Appendix C: IRB Informed Consent	28
Appendix D: Interview Coding Spreadsheet	31

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University of Nebraska, 2015

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The goal of this research is to examine the connection between childhood time spent in the outdoors and adult sustainability behaviors through investigating college student involvement in resource conservation at the University of Nebraska-Lincoln. There is a growing library of research on how to successfully promote eco-friendly behaviors with little evidence of its successful application on a wide scale. The research questions are as follows: What is the connection between childhood time spent in nature and adult sustainability behaviors? To what extent do students at the University of Nebraska-Lincoln practice sustainability behaviors? Researchers focused on environmental sustainability and defined the behaviors as actively recycling or conserving water or energy. Fifty interviews were conducted during the Spring 2015 semester lasting 15-30 minutes each. Triangulated qualitative analysis revealed 8 themes: childhood experiences, inconsistent conservation mindsets, low effort, general awareness, efficacy, skepticism, responsibility and education/major. Most students spent significant time outdoors in childhood and agreed that resources were in decline but had low awareness of specific issues and inconsistent sustainability behaviors. Additionally, there was a strong correlation between feelings of efficacy and sustainability behaviors. While research points to childhood experiences in nature as a source of sustainability behaviors, this study was inconclusive. This study reiterated that human behavior is complex and, to an extent, unpredictable. Future environmental programming should address efficacy in target audiences.

Introduction

It is no secret that the environment is rapidly changing. Nearly two-thirds of natural resource systems are in decline worldwide – resources that the global population depends on for its livelihood. The unprecedented changes made by humans in recent years have brought progress but also potentially irrevocable damage to the world’s ecosystems (Millennium 2001). In order to change the tide of history, sustainability efforts need greater commitment around the world. It is no longer an option to practice conservation, but a necessity. However, despite a plethora of research and environmental programs, sustainability behaviors remain inconsistent at best in the United States population. It is crucial to figure out where the information flow stops – what is the cause for the attitude-behavior gap? McKenzie Mohr asserts that current environmental research is not actionable – “Our publications contribute far more to career advancement than they do to environmental betterment” (McKenzie Mohr 2000). There is evidence to support the theory that childhood time spent in the outdoors is both healthy and key in creating adult attitudes to support conservation (Chawla, Charles 2009, Liddicoat 2014, Louv 2005). Therefore, the question remains: What is the connection between childhood time spent in nature and adult sustainability behaviors? The purpose of this study is to explore that question on the University of Nebraska-Lincoln (UNL) campus by investigating college student involvement in resource conservation and the relationship to childhood nature activity. It is also essential to determine to what extent students at UNL practice sustainability behaviors.

Background

One of the most important places to begin in any environmental research is to acknowledge and understand the problem. The world’s ecosystems are rapidly changing for the

worse from human activity. This is the central principle of this study that ties its purpose, methods, subject matter, and eventual conclusions together. Understanding the precarious current state of affairs globally both creates the necessity for this research and gives it purpose. All aspects of the research are centered on the evidence of climate change with the intention of reversing it.

The Millennium Ecosystem Assessment was a collection of research from over 1,360 experts from across the globe to assess the current state of ecological affairs. It was an analysis of studies done by other researchers rather than its own study. It details that the global population depends on earth's resources for its way of life. The earth provides services for security, health, and progress in communities. However, namely in most recent decades, these services have been squandered. Technology advancements and resource use have improved the lives of billions of people, but reduced earth's natural ability to replenish those resources. Additionally, the earth is less capable of providing services in return – such as a clean atmosphere, water, and stable climate. Ecosystems will continue to be damaged, perhaps irreversibly, unless the global population changes how they view earth's resources and services (Millennium 2001).

Despite the evidence of anthropogenic climate change, sustainability has yet to become commonplace. Many Americans are ideologically opposed, if not just practically, to the idea of conservation. This may be due in part to its demographic – a white majority. Policymakers are mostly white males, as well. McCright and Dunlap discovered what they named the “conservative white male effect” after studying public opinion surveys from Gallup: CWMs are more likely to have a low level of environmental concern than any other demographic. They are more open and accepting to a range of risks than other demographics because they benefit from those risks. “Perhaps white males see less risk in the world because they create, manage, control,

and benefit from so much of it...[others] benefit less from many of its technologies and institutions” (McCright & Dunlap 2013). Since the United States is currently a white-dominant society (especially economically), the CWM effect likely heavily influences the lack of conservation in this country and by extension, the UNL campus (which is CWM dominant). While this is not an inherently bad characteristic, it is a barrier to overcome in stimulating the sustainability movement on campus. People form their ideas and perceptions of risk based on their cultural background and tend to hold to the perceptions of the group of which they are a part. This is also evident in Bennet’s 2004 paper regarding cultural competence – people are inherently separatist by nature. They form attachments and beliefs based on the people surrounding them, and reject notions based by the foreign “other” (Bennet 2004). The same is suggested in this paper about the CWM effect. Additionally, conservatives are more likely to justify maintenance of the status quo than their liberal counterparts. It follows, then, that conservatives could be less likely to support change, which is inherent in adopting sustainability behaviors (McKenzie Mohr 2013).

Behavior change is incredibly complex. There is a wide range of factors that go into the decision-making that leads to behavior change. Studies have shown that there is often a gap between head knowledge and action (Claudy, Peterson, O’Briscoll 2013). Individuals must also have the intention of acting on a pro-environmental behavior. Personal moral norms can be a predictor of behavior change but not consistently. Most notably, awareness, long trumpeted as the fix-all for inciting behavior change in many environmental programs, is one of the least impactful variables on creating sustainability behaviors (Bamberg and Moser 2007). Milton Bennet suggests that pressure to change one’s worldview occurs when one’s own mental framework is inadequate to deal with change and adaptation to new norms. While his paper

discussed intercultural competency regarding human diversity, the principle is applicable in this research as well. In order to change behaviors, there has to be a mental shift within a person – an internal driver as opposed to an outward one (Bennet 2004). Pro-environmental change does not happen without an internal shift of perspective. Unfortunately, this psychological knowledge of behavior change has yet to be applied to the development of environmental programming (McKenzie Mohr 2013).

There is a noticeable attitude-behavior gap between people's ideas about conservation and their behaviors. Research shows that when people have specified reasoning behind their behaviors, they are able to rationalize a chosen decision. For better or worse, people's actions make sense to them. It is important to recognize this instead of writing off those with seemingly illogical behaviors. People might have a positive attitude towards a conservation practice, be in ideological agreement with the importance of sustainability, but they have reasons for not adopting it into their personal life (Claudy, Peterson, O'Briscoll 2013).

Understanding the whys behind conservation behaviors can help shrink the attitude-behavior gap and show us how to promote conservation more effectively. There is a strong connection between environmental values, knowledge, and concern. Studies suggest that the more people know about the holistic benefits of conservation the more likely it is that they will conserve. However, this knowledge is often a cognitive judgment. Unfortunately, cognitive judgments do not always imply action (Salvaggio et. al 2014). "They do not inherently imply personal worry or emotional attachment to an issue...nor do they necessarily reflect what people think ought to be done about problems" (Larson, Ibes, White 2011). Cognitive judgments are not inherently lacking in emotional connection, but they cannot be assumed, as they often are. Perhaps this disconnect is what drives environmental groups to continue to push advocacy,

education, and awareness as an effective means to behavior change, even though research shows the bond between knowledge and action is weak, if present at all. The truth is that it can be hugely challenging to discern what will motivate individuals to change their behaviors to be more sustainable. The value-belief-norm theory suggests that efficacy is the key to creating personal norms for pro-environmental behavior. Individuals must believe that their actions can make a difference to create a personal norm for pro-environmental behavior. Additionally, they must believe that they have an obligation or responsibility to contribute to alleviating environmental issues (Dietz et. al 1999).

Some postulate that a childhood filled with outdoor experiences will create adults with a strong connection to nature. Richard Louv's famous book, *Last Child in the Woods*, describes the importance of nature experiences, especially for children. There are untold benefits to children having time in the outdoors – from mental health to emotional well being. Students who are part of environment-based education even do better in critical thinking in a school setting; spending time outdoors as a child can create norms in adults where nature is important and part of every day life (Ernst & Monroe 2007, Louv 2005). Taking it one step further, emotions and creativity go hand in hand. When there is an emotional connection, it tags the information as relevant and important in the brain. Creativity happens when people care deeply about something. This is most obvious in children, who are just beginning to make sense of the world around them. The connections between new things learned and their emotions have to be more obvious and up-front in order to make a lasting impression (Schwartz). Creating these emotional ties to the outdoors could be essential in creating sustainability behaviors. A lifestyle with significant time spent outdoors increases mindfulness and one's ability to notice the world around them. Perhaps one of the reasons for low levels of participation in conservation practices is that children are not

outside as often as they were 50 years ago and have not had the chance to form connections with the natural world like previous generations (Louv 2005). Increased mindfulness from time spent outdoors could increase conservation behaviors, as people who are mindful are more likely to engage in those behaviors (Coffey & Joseph 2013).

The purpose of this research is to investigate college student involvement in resource conservation and the relationship to childhood nature activity, with the following research questions: What is the connection between childhood time spent in nature and adult sustainability behaviors? To what extent to students at the University of Nebraska-Lincoln practice sustainability behaviors?

Materials and Methods

Data were collected via interviews and qualitative analysis. This allowed for a greater depth of analysis as opposed to gathering straightforward statistics. Behavior and motivation is a complex and nebulous subject. It was not practical to design a study with quantitative data since this research is exploratory in nature. Much of the literature used this approach for data collection or program evaluation (McKenzie Mohr 2013). Some of the sources point to a more detailed quantitative statistical analysis in their methods. However, this was not practical given the amount of time, resources, and experience for this project. Future steps to expand this research might include a more specific level of analysis as documented in literature such as Bamberg and Moser's paper on behavioral change.

Research was done in conjunction with a UCARE project under the supervision of Dr. Lisa Pennisi: "Using Community-Based Social Marketing to Encourage Energy Saving and Other Sustainability Behaviors" during the design and early analysis phases. The team of

undergraduate researchers, graduate student, and Dr. Pennisi deliberated on the methodology after extensive research for the UCARE project. The team structured most data collection towards the Social Marketing project since many of the primary objectives and themes were the same. It was necessary to create a structure where subjects could talk openly about themselves, their ideas and the barriers for their behavior in order to have content for qualitative analysis. All methodology was reviewed, revised, and approved by the Institutional Review Board at UNL in February 2015.

An interview protocol was created which spanned multiple subjects: general perceptions of conservation, childhood, recycling, water, energy, and summation questions. It was essential to create questions that were pointed enough to incite thoughtful answers, but not be leading questions. Improper question formatting and wording would be a strong source of bias or error, which will be discussed later in this paper. Each section began with a general question and gradually became more specific. All three researchers used the same interview format, but were permitted to deviate slightly as to probe further or reword a question when it was unclear to the subject. The interview questions can be found in appendix A.

The sample for this research was students, staff, and faculty of UNL. There was not an even ratio of these subcategories as individuals volunteered their time to participate in the study. Since each interview lasted between 15 and 30 minutes, the sample size was limited to 50 subjects. The UCARE research team worked with UNL Facilities to determine target buildings from which to present the research opportunity. These buildings are thought to be representative of multiple disciplines and demographics across the university: Anderson, Avery, Hardin, Hamilton, Henzlik, Othmer, Scott, Nebraska Hall, Westbrook Music Building (classrooms and offices) and Barkley and Harper-Schramm-Smith (residence halls). A comprehensive list of

contacts from each location was obtained with permission from the Canfield Administration Building. Since this is an exploratory study, a large sample size for each building was not necessary.

Recruiting was a complicated process depending on the building. Residents of HSS were originally to be contacted via email. However, the planned process was not realistic so researchers set up a booth at the entrance of the dining hall to recruit students to interview. For office and academic buildings, faculty and staff were contacted via email. The script for emails can be found in appendix B. They were asked for permission for researchers to speak directly to their classes about voluntary involvement in the study. Researchers did all marketing for the study. Participants were given one (1) free ice cream coupon for the East Campus Dairy Store for their participation in the study.

All interview data are both anonymous and confidential. Participants were given the IRB informed consent to read and gave verbal or written consent before the interview (appendix C). They were not required to complete the interview in order to receive their compensation. The only identifier for each interview was the building from which the subject belonged. Interviews were recorded using a digital audio recorder and stored as audio files on a computer. Audio files will be deleted upon final completion of the UCARE research study. Researchers manually transcribed each interview into a text document, including both the questions and replies. Each interview was coded and annotated by two researchers, who collaborated with another researcher to create the list of common themes throughout the interviews. This allowed for triangulation of the analysis for each interview as opposed to having only the primary researcher code for crosschecking and more reliable conclusions. Annotated interviews are available upon request.

Additionally, key phrases were identified for the set of interviews. A spreadsheet with a column for the interview code (for example, Anderson 2) and a row for key phrases allowed researchers to see the presence or absence of these key phrases in all interviews as opposed to the numerous pages of transcriptions. These key phrases are

indicators of neutral or positive elements in each

interview. It also allowed the interviews to be sorted

according to various indicators – most notably, time spent in the outdoors as a child. To the left is a sample of the table. The full spreadsheet can be found in appendix D.

Interview #	we are using too much/resources will run out	specific environmental issue	perspective has changed since childhood	behavior has changed	played outside often
AND 1	1	1	1		1
AND 2	1		1		1
AND 3	1				1
AND 4	1		1		1

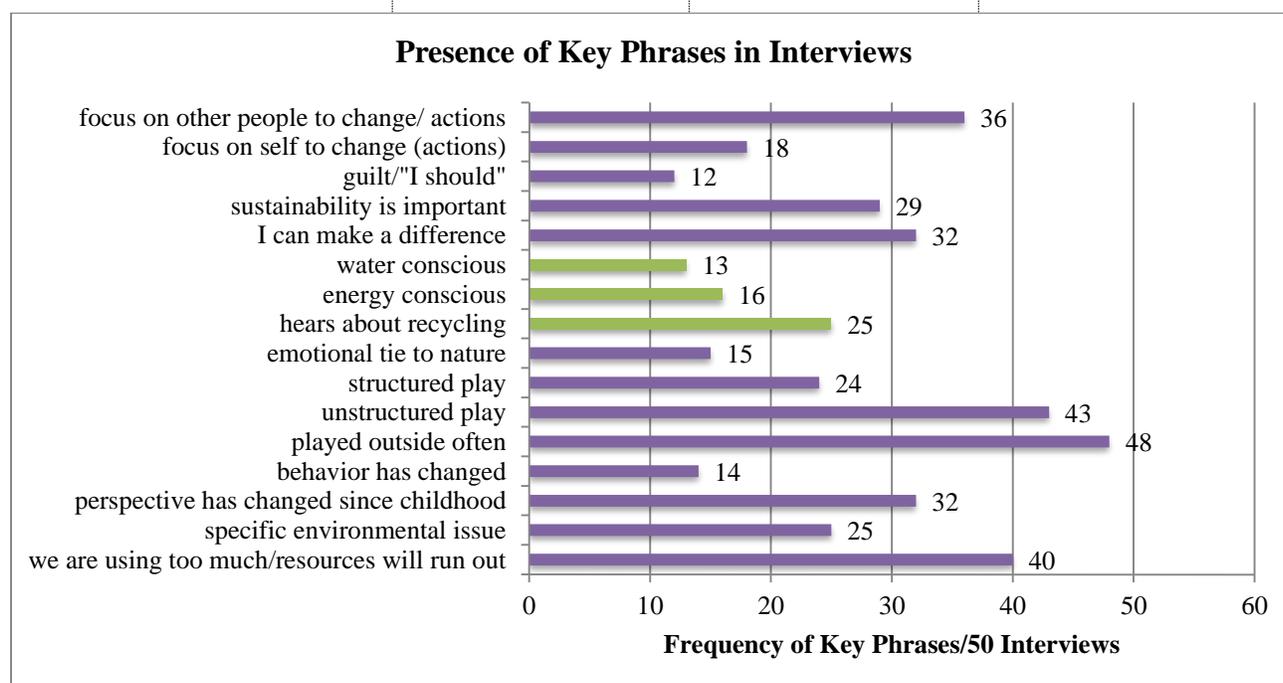
Results

The purpose of this research was to investigate college student involvement in resource conservation and the relationship to childhood nature activity through the guiding research questions mentioned in the introduction: What is the connection between childhood time spent in nature and adult sustainability behaviors? To what extent do students at the University of Nebraska-Lincoln practice sustainability behaviors? The vast majority of the interviews were undergraduate students but there were some graduate students and University staff interviewed as well. To begin analysis, interviews were categorized by key phrases. This gave an overall view of the results from the 50 interviews. Next, rough themes were written using this key phrase document alongside each individual interview. Researchers determined final themes through continuous comparison in this process and triangulation. The final themes illustrate attitudes and behaviors of students on UNL campus regarding conservation.

Key phrases acted as markers within the interviews for behaviours and statements that either illustrate positive conservation mindsets or show details about the individual that are

relevant in analysis – such as a childhood in the outdoors. Their presence or absence in each interview was noted on a spreadsheet by a 1 or 0. The total number of these key phrases was calculated for each subject. While not a quantitative statistic, this gives a general idea of how interested in/committed each individual might be to a sustainable lifestyle. The key phrases are listed below.

We are using too much/resources will run out	Names specific environmental issue	Perspective has changed since childhood	Behavior has changed since childhood
Played outside often in childhood	Unstructured play	Structured play	Emotional tie to nature
Hears about recycling	Energy conscious	Water conscious	“I can make a difference”
Sustainability is important	Guilt/ “I should”	Focus on self to change	Focus on others to change



The full coded Excel document is available in Appendix D. The summary table of totals for each key phrase illustrates the high frequency of students reporting outdoor play in childhood and low frequency of sustainability behaviors (labeled green on the graph).

Qualitative analysis of the transcribed interviews revealed the following eight themes regarding behaviors, experiences, and mindsets: childhood experiences, conservation mindsets, effort, awareness, efficacy, skepticism, responsibility, and education/major. From each of these themes researchers can gather the most important parts of the interviews. It is important to remember that themes are not always things directly stated but can also extend to implications and consistent tones throughout an interview.

Childhood Experiences

The vast majority of subjects stated that they spent a lot of time outdoors during childhood. Answers such as “every day”, “very often”, and “almost all the time” were common. 48 out of 50 subjects answered affirmatively when asked if they played outside as a child. It can be assumed that this is representative of the student population at UNL. When prompted to give further details about their outdoor play, they spoke about either unstructured or structured play. Unstructured play was defined as imaginative play, exploring, wandering, or make-believe. Examples of participants’ unstructured play: *“I was always outside...just wandering around, picking berries or whatever.”* *“Every day, right after school...the rule was when the street lights came on we had to go home.”* *“Oh my gosh. I lived outside.... I would be outside form the moment I finished homeschool to I’d push the limit ‘please 5 more minutes mom’”*

If subjects mentioned an emotional connection to the outdoors, they usually spoke about their unstructured outdoor play first. One student spoke about her childhood experiences on the Mississippi river before mentioning her emotional connection: *“The river’s like my home. I once wrote a poem about it...it totally had an impact on my emotions and state of mind.”* Structured play was defined to include sports, team activities, and organized events. For example,

respondents stated, *“Mainly sports, my sister and I would play in the backyard,”* and *“Sports, I used to play with friends.”*

Many students mentioned a mix of structured and unstructured playtime in childhood, most often in reference to time passing, like *“Elementary [school] it was make believe and exploring the neighborhood. But middle school and high school it was sports and getting involved in extracurricular activities. It was kind of both,”* or *“About half and half...I played sports but I also wandered around aimlessly too.”*

There were more students who claimed only unstructured play as opposed to only structured.

Conservation Mindsets

Nearly all subjects implied or stated directly that conservation was important. Many followed up this statement with an afterthought “we should be doing something”. The few who stated there was not a problem regarding natural resources had limited answers for the rest of their interview. The three main subthemes for conservations mindsets are don’t waste, use what you need, do whatever is necessary to conserve.

The mindset of “don’t waste” is the most basic conservation mindset. *“Making sure you’re not wasteful...not wasting water or natural gas or natural resources.”* It does not imply much action on the part of the individual. Oftentimes individuals that equated resource conservation to “don’t waste” had low sustainability behaviors. The presence of this theme suggests repetition of eco-friendly marketing or learned phrases – more of a testament to the success of advertising than a paradigm shift.

“Use what you need” was another theme common in student interviews. Similar to “don’t waste” it is a common buzz phrase in eco-friendly marketing. Students who talked about conservation in this way were often more informed than students in the previous category, but

still low in sustainability behaviors. This suggests an egocentric paradigm towards conservation. If a person is only using what they need, that equates to “sustainability” regardless of whether it actually is. The problem with this mindset in creating sustainability behaviors is that there are huge variances in what people perceive as “needs”.

“Do whatever is necessary to conserve” was the least common theme in the interviews. This is defined as making conservation a top priority. It generally implies conservation and sustainability as a lifestyle rather than an isolated behavior. Conservation is *“Just being mindful and using less than what you think you need”* and *“Really important...It’s easy, things are on hand, to just use them, but it’s important to remember that generations after us aren’t going to be able to use those things because we used too much.”*

Effort

Effort was categorized by the amount of “sustainability behaviors” that subjects stated were part of their daily life and the amount of effort they would put forth to perform those behaviors. Many subjects admitted they were inconsistent with their sustainability efforts, such as statements like *“I could bring my own mug and they could fill it with coffee – but I never do, I always forget”* and *“I should be better about [recycling aluminum] but I’m really bad about it and I just forget and throw it away because it’s so dirty.”*

Awareness

Most subjects agreed that resources are in decline or would be in the future – specifically, 40 out of 50 interviews mentioned this. In order to qualify for this key phrase, interviews must include direct statements such as *“resources are in decline”*, *“we are using too much”*, or similar. Subjects’ opinion statements such as *“we need to conserve”* or *“it’s smart to not waste”* also qualify. Answers similar to *“It’s extremely important, especially as we are depleting more*

than the earth can resupply” and “We need to protect our land and resources for the next generation” were very common.

All interviews that did not include this theme were significantly lower scoring overall in the key phrases graph. A small number of students were indifferent *“I don’t really think [environmental issues] are an issue. I guess it doesn’t matter.”* However, the lack of this theme was not a predictor of a low score as there were comparably low scoring interviews that began with the subject stating that resource depletion was a problem. There is correlation between not believing there is a problem ecologically and having low efficacy and lack of sustainability behaviors. There were some students that flatly disagreed that conservation as important.

The awareness of specific environmental issues is low. There were three general categories in regards to this subject: *“I don’t know”*, general and vague knowledge, or knowledge of specific environmental current events.

Many students simply stated: *“I don’t know”* when asked if they could name a current environmental issue or what they thought the most important environmental problem is. *“I guess I’m not well enough informed, besides what I hear in school...I don’t really know anything,”* said one subject.

Most students had at least vague knowledge about environmental issues. The most commonly mentioned problems were climate change, greenhouse gases, pollution, and overpopulation. *“I guess pollution...maybe...the greenhouse effect and greenhouse gasses and stuff like that”*

A few students were able to mention specific and relevant environmental issues when asked. Generally this also correlated with higher amounts of sustainability behaviours, such as this graduate student’s answer: *“Water. California is in a huge drought”* who later said *“Like the*

water heating up...I would collect water [from the shower] in a bucket and use it to flush the toilet.”

Efficacy

At the end of the interviews, subjects were asked if they thought they could make a difference. Most responded that they could, but only if everyone was doing what they did, like this student: *“If I really think about it, yes. But I’m not like burdened by it every day...if everybody cared, imagine the impact, you know?”* A few decidedly stated that they definitely could not make a difference. Not all answers were the same in their implications, however. Some students said they felt they could make a difference, but were flippant in their answers throughout the rest of the interview - *“It is probably just a drop in the sea but every drop counts”*. Other students believed they could make a difference, even in the little things. These students were generally more informed and active in conservation. Still other students decidedly stated they could not make a difference, but then emphasized the importance of everyone getting involved. These students often had a high number of key phrases present in their interview.

“Absolutely not [I can’t make a difference]. It’s not one person at all. It’s overall attitude in my perspective” Throughout this interview the student had consistent actions toward sustainability – *“I will usually reuse yogurt containers and stuff as Tupperware and then they get really disgusting...I used to leave the lights off in my office but then people were complaining that our office was being ‘unused’”*.

Skepticism

Many subjects implied that they feel society is not doing enough to address conservation issues. Additionally, many were concerned that UNL’s recycling or sustainability programs were not effective or making a difference. Some were confused about the logistics of the recycling

process, which lead them to not make an effort: *“The process of recycling...isn't it using more resources to remold new things?”* People dismissed conservation as a political agenda or more about making money than actually conserving resources. This in turn led them to have low sustainability behaviors. People also had low opinions of others, such as – *“I think...people just have trouble understanding what they can do and also why it matters”*, or *“At home they're old and set in their ways”* - even if their own behaviors were low.

Responsibility

There were a variety of themes regarding responsibility to take action. Students were not in agreement on who should carry responsibility for conservation efforts. Most who did not take personal responsibility, either directly or by speaking in broad “we” statements that were clearly not intended as such, had low sustainability behaviours. For example, some stated, *“I don't really think twice about it”*, *“I'm not too invested...but I do care that we look into the issues before they become too serious”*, or *“I feel like they don't really affect me personally right now but that may change in the future”*. Students who placed responsibility on themselves were most likely to also have higher awareness, action, and commitment to conservation and sustainability: *“Job security...companies will come to me with problems of implementing that [sustainability or resource conservation mentality]”* and *“What purchases we make dictate how companies act”*.

Education/Major

It was noted whether students were part of the School of Natural Resources at UNL because of the theory that those students would have a higher knowledge and commitment level than other UNL students. SNR students did not have a consistently higher score than non-SNR students. Some SNR students were among those that disagreed with the need for conservation and had the lowest sustainability behaviours.

Discussion

It is increasingly important for society as a whole to adopt sustainability behaviors. Human technological advancement has improved billions of lives at the cost of many nonrenewable natural resources (Millennium 2001). These facts are no secret. However, adoption of these behaviors is not yet the norm – despite highly publicized and available data that proves the necessity of these changes. There have been many studies on the complex nature of behavior change in this arena (Bamberg & Moser 2007). Most notably, these studies disproved awareness as an effective means of change. Research in this arena is not new – yet environmental programming continues to focus on awareness despite clear evidence it is ineffective. What is the purpose of research if not to be the backing of a catalyst for change?

Much research also points to childhood time spent outdoors connecting with nature as an effective way of creating conservation paradigms in adults (Chawla, Charles 2009, Liddicoat 2014, Louv 2005). This pointed to the research questions: What is the connection between childhood time spent in the outdoors and adult sustainability behaviors? To what extent do students at the University of Nebraska-Lincoln practice sustainability behaviors? Chawla's research is controversial for her selection methods: choosing individuals who had already chosen conservation careers to interview about environmental memory. However, her research is still somewhat iconic and widely used. This study hoped to further elaborate on past research regarding the childhood nature theory and investigate whether it was applicable in multiple arenas with a broader demographic of subjects.

Data from this study do not support the childhood nature theory as most subjects spent extended time outside during their childhood, but had low environmental knowledge and/or sustainability behaviours. The vast majority of students (48/50) said that they spent extended

time outdoors in childhood, with many students having positive things to say about nature and their memories. However, contrasting with literature, this seemed to have little to no direct effect on their sustainability behaviours. This could be either a contradiction to previous research, an anomaly of this population, or a combination of both. Perhaps previous studies that spoke of evidence of childhood connection to nature creating adult sustainability behaviours failed to mention how small the percentage of the population that includes. For example, Chawla's infamous research sampling method produced arguably skewed results. There were a few students from this study who seemed to have an emotional connection to the outdoors that they mentioned later as the reasoning behind their sustainability behaviours but they are tenuous connections at best.

While sustainability has wide-reaching definitions to social, economic, and environmental spheres, this research focused on the environmental sphere only for ease of research. Therefore, sustainability behaviours were defined as recycling and water or energy conservation habits. Defining behaviours in this way made results more straightforward, but could have missed a whole realm of data regarding economic and social sustainability. Many subjects spoke of the "political agenda" of sustainability and climate change. This is likely due to the demographic on the UNL campus and surrounding area. Nebraska is a politically and socially conservative, white-majority state, and this makes its population less likely to support conservation, recycling, and other "green" behaviours (McCright & Dunlap 2012). Perhaps asking about sustainability behaviours without using language "markers" that remind people of political debates and marketing would have produced different results.

The location of this study is an important factor to consider. Nebraska is an agricultural state with much of the population residing in rural areas. In states like these people are more

likely to be politically conservative. Subjects who grew up in small towns often mentioned learning to work on the farm (or similar) from a young age. Generally speaking people in rural areas hold values from traditional America like hard work, pride, and stability. Since people learn their core values at a young age, students who grew up in a small town could have core values that seemingly contradict with the values of sustainability like change, progress, and to some extent uncertainty. Like Bennet's article on intercultural sensitivity stated, when people perceive their core values to be different from somebody else, it is natural to polarize and distance oneself from the "other". It takes intentional action to adapt behaviours that seem to be contradictory to one's core values (Bennet 2004). Perhaps the attitude behaviour gap obviously present in the data is due these seemingly irreconcilable values. Subjects spoke of the importance of not wasting resources, their enjoyment of the outdoors, and generally agreed that resources are in decline but had low sustainability behaviours. It is possible that this is a subconscious effect of childhood values.

Another possibility for the inconclusive results is that the interview structure could have affected subjects' volunteering of information. Perhaps the questions did not draw explanations out of the students as well as they could have. Future research could include more demographic information and more specific questions about childhood experiences in general. Additionally, questions posed as statements (such as "Tell me about your experiences in the outdoors") that are more open-ended to begin interviews could prime subjects to share more information. With more detailed interviews, the still-possible connection between childhood time spent in the outdoors and adult sustainability behaviours could be illuminated.

While the majority of students believed in climate change and the importance of resource conservation, most did not perform many sustainability behaviours in their everyday life. They

were quick to doubt the effectiveness of conservation on the UNL campus or society in general but were in favour of “doing something.” Research shows that this vague attitude is rarely predictive of behaviour change. Many students do not feel their actions affected the larger picture. This could be a reason for a lack of sustainability behaviours on campus. Why would someone go the extra mile to conserve water if they thought it wouldn’t change anything? However, if people thought they could make a difference even in the little things, they were more likely to practice sustainability behaviours. Keeping in line with Dietz’s 1999 paper about value-belief-norm theory, efficacy seemed to be the most influential theme on students’ sustainability behaviours.

The structure of this research could be a source of bias. The interview protocol could be improved to get more descriptive information from students without using leading questions. Given more time and resources, quantitative analysis would provide concrete statistics for further reference. Future steps to expand this research might include a more specific level of analysis as documented in literature such as Bamberg and Moser’s paper on behavioral change. Perhaps the current body of research surrounding environmental behaviors is too surface level to produce any lasting results beyond research populations. An exploration of the connection between core values, self-awareness and sustainability behaviors could prove useful in understanding the motivations for and barriers against behavior change.

This can be a starting point for future research so environmental programs can be more effective. While it would be much easier to create pro-environmental or sustainability programming if the solution was to educate and get people emotionally invested, this study and previous research show that this is not an effective means of changing behaviours. Continuing to

base programming off of either out-dated or invalid conclusions from research will only exacerbate environmental crises – and the world has run out of time.

Conclusion

The purpose of this study was to investigate college student involvement in resource conservation and the relationship to childhood nature activity. Researchers investigated the connection between childhood time spent in nature and adult sustainability behaviours on campus by conducting 50 student interviews. Qualitative analysis revealed key phrases and eight themes: childhood experiences, conservation mindsets, effort, awareness, efficacy, skepticism, responsibility and education/major. While research points to childhood experiences in nature as a source of sustainability behaviours, this study did not. There was a strong correlation between feelings of efficacy and sustainability behaviours. This study reiterated the conclusions of previous research that human behaviour and motivation is complex and, to an extent, unpredictable. Future environmental programming should address efficacy in target audiences.

“Don’t let us forget that the causes of human actions are usually immeasurably more complex and varied than our subsequent explanations of them”

- Fyodor Dostoyevsky

References

- Bamberg, Sebastian & Moser, Guido (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psychosocial determinants of pro-environmental behavior. *Journal of Environmental Psychology* 27(2007) 14-25
- Bennet, Milton J (2004). *Becoming Interculturally Competent*
- Charles, Cheryl. *The Ecology of Hope: Natural Guides to Building a Children and Nature Movement*. Springer Science+Business Media LLC, 2009.
- Chawla, Louise. *The Ecology of Environmental Memory*. Children's Wildlife Journal. Accessed 02 October 2014
- Claudy, Marius C., Peterson, Mark, and O'Briscoll, Aidan (2013). Understanding the Attitude-Behavior Gap for Renewable Energy Systems Using Behavioral Reasoning Theory. *Journal of Macromarketing* 33(4)
- Coffey, Daniel J. & Joseph, Patricia Hallam. (2013). A Polarized Environment: The Effect of Partisanship and Ideological Values on Individual Recycling and Conservation Behavior. *American Behavioral Scientist*, 57 (1) 116-139
- Dietz, Thomas et al (1999). A value-belief-norm theory of support for social movements: the case of environmentalism, *Human Ecology Review*. 6(2).
- Ernst, Julie and Monroe, Martha (2007). The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking, *Environmental Education Research*, 10:4, 507-522
- Larson, K.L., Ibes, D.C., and White, D.D (2011). Gendered Perspectives about Water Risks and Policy Strategies: A Tripartite Conceptual Approach. *Environment and Behavior* 43(3): 415-438.

- Liddicoat, Kendra R. & Krasny, Marianne E. *Memories as Useful Outcomes of Residential Outdoor Environmental Education*. Cornell University: Ithaca, 28 May 2014
- Living Beyond Our Means: Natural Assets and Human Well-Being (2001). Statement from the Board, Millennium Ecosystem Assessment
- McCright, Aaron M & Dunlap, Riley E (2012). Bringing ideology in: the conservative white male effect on worry about environmental problems in the USA. *Journal of Risk Research* 16(2) 211-226
- McKenzie-Mohr, Doug (2000). Promoting Sustainable Behavior: An Introduction to Community-Based Social Marketing. *Journal of Social Issues*, 56(3) 543-554
- Meinig, D.W. *The Beholding Eye: Ten Versions of the Same Landscape*. Landscape Architecture Magazine: January 1976
- Salvaggio, Marko, Futrell, Robert, Batson, Christie D., and Brents, Barbara G (2014). Water scarcity in the desert metropolis: how environmental values, knowledge and concern affect Las Vegas residents' support for water conservation policy. *Journal of Environmental Planning and Management*, 57 (4) 588-611
- Schwartz, Katrina. *How Emotional Connections Can Trigger Creativity and Learning*.

Appendix A

Interview Questions

- What immediately comes to mind when you think of resource conservation?
- Why that?
- How do you feel about resource conservation?
- Why?
- How do you expect our resources to change in the future?
- What can we do to help conserve resources?
- How do you feel about current environmental issues?
- What do you think is currently the biggest conservation issue we are facing?
- Why?
- How is resource conservation different for you at school vs. at home or somewhere else?
- Try to prompt background or history about how they felt growing up.
- Are things more important to you now than when you were younger?
- How are your habits different now vs. then?

Outdoors

- How often did you play outside as a kid?
 - If often
 - Do you have any strong memories of this?
 - Was your play structured (sports, school) or unstructured (exploring, playing make-believe)
 - If not often
 - What do you remember most about your childhood?
- Why did you choose a career or study in Natural Resources?
 - Did you always know (since 6-12th grade) or discover a passion during undergrad?
 - Significant events?
 - Hobbies?
- How often do you spend time outside?
 - While on campus
 - While off campus
- Would you describe yourself more as empathetic, logical, efficient, or sensitive person?
 - Empathetic: having the ability to share somebody else's feelings
 - Logical: using clear reasoning to make decisions
 - Efficient: least amount of waste, most economy ('waste not')
 - Sensitive: someone who reacts quickly and strongly

Water

- Do you live on or off campus? *If so, proceed to indoor water use questions.
 - On campus: where?
 - Dorms, sorority/fraternity,
 - Off campus: where?
 - House, apartment, other
 - Do you pay for your water bill?
 - On average, how much is your bill?

- What do you think the average cost of water per household in Lincoln is? Do you think this would be more than what the average cost of water per student at UNL would be? *We are asking this question to see if people think we use more water at UNL because it is free vs. at home if we had to pay for it.
- How would you describe your daily indoor water use?
 - Personal Hygiene
 - Baths/showers taken? Average length?
 - Brushing teeth?
 - Toilet flushes?
 - Hands/face washing?
 - Shaving
 - Cleaning
 - Washing dishes? Dishwasher loads?
 - Washing clothes?
 - Other?
 - Drinking or preparing food
 - Water drunk? Bottled water?
 - Cooking?
- What do you think UNL spends every year on water?
 - Do you think your student fees help pay for water? *They actually do not.
 - Do you think they should?
 - Would your daily water use be different if you had to pay for it?

Recycling/Waste

- What are recyclables? *Can you give me a definition in your own words?
 - What can you recycle in your daily life?
- What does UNL recycle?
 - Paper?
 - Plastic?
 - Cardboard?
 - Glass?
 - Compost?
- Do you hear about recycling on UNL's campus? *Is this something you would like to hear or see more about? Posters?
 - How often per week?
 - Where do you hear about/see it?
- What percentage of recyclables on UNL's campus do you think are actually recycled?
- Why this number? Do you think we can increase it? How?
- What is one thing you never think to recycle?
 - Why?
- Where is your nearest recycling bin for:
 - Paper?
 - Plastic?
 - Cardboard?
 - Glass?

- Compost?
- How far would you walk to a
 - Trashcan?
 - Recycling bin?
 - Which would you say is usually more conveniently placed? Why?
- Do you have a reusable water bottle (Camel-bak, Nalgene, etc.)?
 - Where did you get it?
 - How long ago did you get it?
 - How often do you use it per week?
 - How many times a day do you refill it?
- Do you have a reusable coffee/tea mug?
 - Where did you get it?
 - How long ago did you get it?
 - How often do you use it per week?
 - How many times a day do you refill it?
- What is the average cost of a home recycling service in Lincoln? Do you think the cost per student of recycling would be more or less expensive? *Once again, we are asking this question to see how people feel about recycling and whether or not the cost is a factor to them since it is free for them on campus.

Energy

- What does energy conservation mean to you? *Can you give me a definition in your own words
- What do you have that uses energy?
 - How do you use that in your daily life on campus?
- How often do you turn off your computer or monitor?
 - Every day, every week, when it needs to restart, never
 - Do you think about turning off the computer?
 - Why?
- How do you feel about automatic lighting?
 - Lights on regardless of whether someone is using the room/space
 - Does it bother you? Indifferent?
- How often do you turn off the lights when exiting a room?
 - Bathroom?
 - Why?
- On a scale of 1-10, what is the importance of energy conservation in your daily life?
 - 10 is most important compared to everything else
 - 1 is not important at all
 - Compared to recycling, water use
 - Other political issues
- Do you feel that your actions regarding energy conservation affect the ‘big picture’?
 - Can you make a difference?
 - Why or why not?
 - Do your actions change the outcome of the energy crisis?

- Final question: Of these three (energy conservation, water conservation, or recycling) which do you feel is most important
- As an individual?
- At UNL?
- In the world?

Appendix B

Sample Recruitment Letter or Email

Dear RDs,

My name is *[insert name here]* and I am a student from the School of Natural Resources at the University of Nebraska-Lincoln. Currently, my research team and I are conducting a joint research project with UNL facilities and the UNL School of Natural Resources about sustainability on campus. I am writing to ask you if you would be willing to help me and my research team recruit students to participate in a research study about water usage, energy usage, and waste on UNL's city and east campuses.

My team and I would like to conduct formal face-to-face interviews that will take 15 minutes or less. I will be audio recording the answers, and then my fellow researchers and I will analyze and use this information to help create a social marketing campaign to make UNL a more environmentally sustainable campus.

I would like the opportunity to attend a staff meeting and speak with your RAs about recruiting students in the HSS residence halls to participate in our research survey. The survey is completely voluntary, as people can choose to participate or not, and attending a staff meeting would allow us to gain further outreach as well as a greater number of survey responses that will lead to better research results. If you have any questions about the study, or simply questions in general, please email or contact me at *[e-mail]* *[cell number]*.

Thank you very much.

Sincerely,

[Name]

Dear RAs,

My name is [*insert name here*] and I am a student from the School of Natural Resources at the University of Nebraska-Lincoln. Currently, my research team and I are conducting a joint research project with UNL facilities and the UNL School of Natural Resources about sustainability on campus. I am writing to ask you if you would be willing to help me and my research team recruit students to participate in a research study about water usage, energy usage, and waste on UNL's city and east campuses.

My team and I would like to conduct formal face-to-face interviews that will take 15 minutes or less. I will be audio recording the answers, and then my fellow researchers and I will analyze and use this information to help create a social marketing campaign to make UNL a more environmentally sustainable campus.

Remember, this is completely voluntary as you can choose to participate or not, and I would greatly appreciate if you would pass this information on to the students that reside in your hall as well. If you'd like to participate or have any questions about the study, please email or contact me at [*e-mail*] [*cell number*].

Thank you very much.

Sincerely,

[*Name*]

Dear Professor/Dr. _____,

My name is ____ and I am a student from the School of Natural Resources at the University of Nebraska. Currently, my research team and I are conducting a joint research project with UNL Facilities and the UNL School of Natural Resources. I am writing to invite you to participate in My research study about water usage, energy usage, and waste on UNL's campus in various academic and office buildings, and residence halls. You and your students are eligible to be in this study because you teach a class in ____ building. I obtained your contact information from _____.

If you are willing, we would appreciate your assistance with our research. All we would require is an opportunity to visit your class to recruit students for interviews. Students will be asked a series of open-ended questions about your water usage, energy usage, and waste on the UNL city or east campus. If they live on campus, there will be additional questions to provide information about your resource use habits in the dorms. Students must be 19 years of age or older to participate.

Remember, your assistance is completely voluntary, but this is a great opportunity to help play a role in improving sustainability efforts on campus. Students can choose to be in the study or not.

If you'd like to have your students participate or have any questions about the study, please email or contact me at _____.

Thank you very much.

Sincerely,

[Name]

Appendix C

IRB Informed Consent Letter



Title of Study: Using Community-based Social Marketing to Encourage Energy Saving and Other Sustainability Behaviors

Principal Investigator:

Lisa Pennisi, Ph.D.
UNL Department of Natural Resources
519 Hardin Hall
Lincoln, NE 68508
(402) 472-5875
lpennisi2@unl.edu

Dear Participant,

Background

You are being invited to take part in a research study being conducted by University of Nebraska-Lincoln School of Natural Resources and University of Nebraska-Lincoln Facilities. You were selected for this study because of your living unit and/or office space on the UNL campus.

Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear, or if you need more information.

The purpose of this study is to collect information regarding water usage, energy usage, and waste on UNL's campus.

Study Procedure

Your expected time commitment for this study is 15 minutes or less. Time may fluctuate slightly based on discussion. You will be asked a series of open-ended questions about your water usage, energy usage, and waste on the UNL city or east campus. If you live on campus, there will be additional questions to provide information about your resource use habits in the dorms. You must be 19 years of age or older to participate.

Risks

The risks of this study are minimal. Providing information about your daily habits may cause mild discomfort. You may decline to answer a question without threatening your participation in the study. If you so choose, you may terminate your involvement before, during, or after the interview. Your involvement in the study will help researchers gather data regarding water

usage, energy usage, and waste on UNL's campus. However, you will receive one (1) coupon to the Dairy Store on UNL's East Campus. If you wish, you may submit your name into a drawing for a gift card.

Confidentiality

If you choose to participate, your answers will be completely confidential, and will be released only as part of group summaries. No individual names will be used. If information specific to your interview is used, an alias will be used to protect your privacy. Again, your participation is voluntary, and you may discontinue your participation at any time without consequence.

If you have any questions regarding the study, please contact one of the undergraduate researchers listed below. If you have any questions that have not been answered by the researcher or to report any concerns about the study, you may contact the UNL Institutional Review Board at 402-472-6965.

Thank you in advance for your assistance with this study.

Lisa Pennisi, Ph.D.
Faculty Advisor
lpennisi2@unl.edu
(402) 472-5875

Rebecca Grosskurth
Undergraduate Researcher
rgrosskurth@gmail.com
(402) 659-7760

Jenna Schweiss
Undergraduate Researcher
schweiss.jenna@huskers.unl.edu
(605) 891-9937

Whitney Drahota
Undergraduate Researcher
wdrahota@gmail.com
(402) 310-3921

Consent:

By signing this consent form, I confirm that I have read and understood the information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

I understand that I will receive a coupon to the University Dairy Store as an incentive for my participation in this survey and that I may choose to withdraw from the study without returning this incentive.

I understand that I will have the opportunity to submit my name to be entered in to a drawing for a gift card and that possibility of winning is [1:100]. The drawing will occur May 01, 2015, and that all participants will be notified of winners by May 01, 2015. I may choose to withdraw from the study without withdrawing from the prize drawing.

Signature _____ Date _____

February 06, 2015

Appendix D

Interview Coding Spreadsheet

Interview #	Focus on water	Focus on other others for change/ actions	Focus on self for change (actions)	Guilt/"I should"	Sustainability is important	I can make a difference	Water conscious	Energy conscious	Hears about recycling	Emotional tie to nature	Structured play	Unstructured play	Played outside often	Behavior has changed	Respective has changed since childhood	environmental issue	we are using too much/resources will run out	Total
AND 1						1				1			1		1		1	7
AND 2									1	1		1	1		1		1	6
AND 3										1		1	1				1	6
AND 4												1	1		1		1	7
AND 5										1		1	1		1		1	12
AND 8												1	1		1		1	8
AND 10												1	1		1		1	8
AVRY 11									1			1	1		1		1	12
AVRY 12									1				1					4

Interview #	Focus on other changes	Focus on self (for change)	Guilt/"I should"	Sustainability is important	I can make a difference	Water conscious	Energy conscious	Hears about recycling	Emotional tie to nature	Structured play	Unstructured play	Played outside often	Behavior has changed since childhood	environmental issue	much/resources will run out	Total
AVRY 13	1		1	1	1	1				1	1	1	1		1	11
BARK 8	1	1	1								1	1		1	1	7
BARK 9	1	1	1	1			1		1	1	1	1	1	1	1	13
BARK 10	1							1		1	1	1	1		1	6
HARH 1				1				1		1	1	1	N/a	N/a		5
HARH 2	1	1		1		1	1	1	1	1	1	1	N/a	N/a	1	11
HARH 3			1					1	1				N/a	N/a		4
HARH 4		1		1						1	1	1	1			5
HARH 2 - w	1			1	1		1	1			1	1			1	8
HARH 7					1					1	1	1				4

Interview #	much/resources will run out	environmental issue	childhood	Behavior has changed since childhood	Played outside often	Unstructured play	Structured play	Emotional tie to nature	Hears about recycling	Energy conscious	Water conscious	I can make a difference	Sustainability is important	Guilt/"I should"	Focus on self for change)	Focus on other others for changes	Total focus on
HARH 1 B	1	1			1	1	1			1	1		1		1		9
HARH 2 B	1	1	1		1	1			1	1		1	1			1	10
HARH 3 B	1	1			1	1	1	1	1	1	1	1	1		1		12
HARH 4 B	1		1		1		1					1	1		1		7
HAML 5	1	1	1	1	1	1		1				1	1		1	1	11
HAML 6	1		1		1	1						1				1	6
HAML 7	1	1	1		1	1	1		1	1			1		1	1	11
HENZ 1	1	1			1	1		1		1	1	1	1	1	1	1	12
HENZ 5					1	1	1					1				1	5
HENZ 6			1		1	1			1			1					5

Interview #	Total people for others for change	Change for self for change	Guilt/"I should"	Sustainability is important	I can make a difference	Water conscious	Energy conscious	Hearts about recycling the to nature	Structured play	Unstructured play	Played outside often	Behavior has changed since childhood	Environmental issues will run out
HENZ 9	9	1		1	1			1		1	1	1	1
HSS 1	11	1		1	1	1		1		1	1	1	1
HSS 2	14	1	1	1	1	1		1		1	1	1	1
HSS 4	10	1	1	1	1			1	1		1	1	1
HSS 11	7	1			1			1		1	1		1
HSS 12	8	1			1			1		1	1	1	1
HSS 13	9	1		1	1			1	1	1	1	1	1
HSS 14	9			1	1			1	1	1	1	1	1
OLDH 1	15	1	1	1	1	1	1	1		1	1	1	1
O/S/N 3	4	1			1					1	1		

Total focus on other others for change/			36
Focus on self for change/	1		18
Guilt/"I should"			12
Sustainability is important	1		29
I can make a difference			32
Water conscious	1		13
Energy conscious	1		16
Hears about recycling			25
Emotional tie to nature			15
Structured play			24
Unstructured play	1		43
Played outside often	1		48
Behavior has changed since childhood	1		32
Speaks environmental issue	1		25
much/resources will run out	1		40
Interview #	WBMB 5	Total	