

Fall 2015

Reconnecting With Our Roots: Farm-Life and Therapy

Spencer T. Hammond

Eastern Kentucky University, spencer_hammond@mymail.eku.edu

Follow this and additional works at: https://encompass.eku.edu/honors_theses

Recommended Citation

Hammond, Spencer T., "Reconnecting With Our Roots: Farm-Life and Therapy" (2015). *Honors Theses*. 288.
https://encompass.eku.edu/honors_theses/288

This Open Access Thesis is brought to you for free and open access by the Student Scholarship at Encompass. It has been accepted for inclusion in Honors Theses by an authorized administrator of Encompass. For more information, please contact Linda.Sizemore@eku.edu.

EASTERN KENTUCKY UNIVERSITY

Reconnecting With Our Roots: Farm-Life and Therapy

Honors Thesis

Submitted

in Partial Fulfillment

of the

Requirements of HON 420

Fall 2015

By

Spencer Hammond

Mentor

Professor Kathy Splinter-Watkins

Department of Occupational Science and Occupational Therapy

Reconnecting With Our Roots: Farm-Life and Therapy

Spencer Hammond

Mentor:

Professor Kathy Splinter-Watkins

Department of Occupational Science and Occupational Therapy

Abstract

The movement of society away from farming and agrarian practices has caused much of our society to become disconnected from such basic practices that sustain our lives. Many within the United States have been found to be agriculturally illiterate. This study was aimed at reviewing literature that discusses this disconnection, the effects of natural settings on human health and wellbeing, selected agriculture based therapies, and current programs that combine multiple aspects of agriculture into one program. The second part of this study was a survey that assessed the level of interests and support that residents of Shelbyville, Kentucky may have for implementation of an agriculture based therapy program in their community. Findings from this study are that current literature reveals positive effects of natural settings and agriculture based therapies on human health and wellbeing. This study also found that residents of Shelbyville may be interested in and supportive of a holistic agriculture based therapy program being implemented in their community.

Keywords and phrases: agriculture, therapy, horticulture therapy, human-animal interactions, farm therapy, natural settings, Animal Assisted Therapy, agriculture based therapies, agriculture literacy, holistic approach.

Table of Contents

Title page.....	i
Abstract.....	ii
Table of contents.....	iii-iv
Appendices.....	v-xi
Appendix A: List of Tables and Figures.....	v-ix
Appendix B: Survey.....	x-xi
Acknowledgements.....	xii
Defined terms.....	xiii
Introduction.....	1-3
Purpose statement.....	4
Literature review.....	4-22
Disconnection from agriculture.....	4-8
Natural settings.....	8-11
Horticulture.....	11-15
Animal assisted therapies.....	16-20
Green care and care farms.....	20-22
Research methods.....	22-24
Sampling size.....	25
Discussion.....	25-32
Limitations.....	32-33
Implications.....	33-35
Conclusion.....	35-36

References.....37-42

Appendices

Appendix A: List of Tables and Figures

Table 1

On a scale of 1-5 how much do you value agriculture with regards to your everyday life?						
Answer Options	1. I place no value on agriculture.	2. I place some value on agriculture.	3. Neutral	4. I place a lot of value on agriculture.	5. I value agriculture very highly.	Rating Average
	1	7	16	88	138	4.42

Figure 1

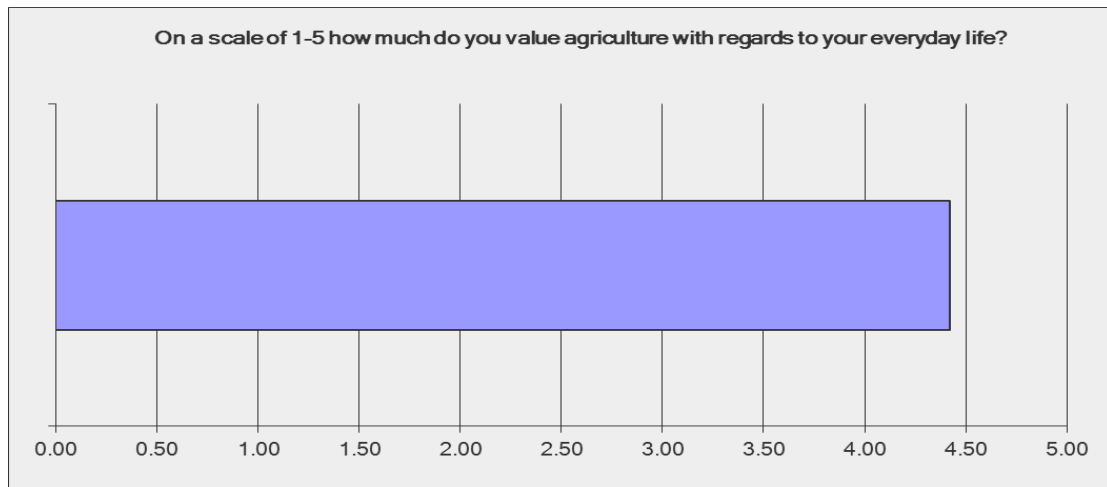


Table 2

On a scale of 1-5 how important is it to you that children learn about agriculture?						
Answer Options	1. Children should not learn about agriculture.	2. It doesn't matter whether or not children learn about agriculture.	3. Children should learn about agriculture	4. It is important for children to learn about agriculture.	5. It is very important for children to learn about agriculture	Rating Average
	0	2	19	68	160	4.55

Figure 2

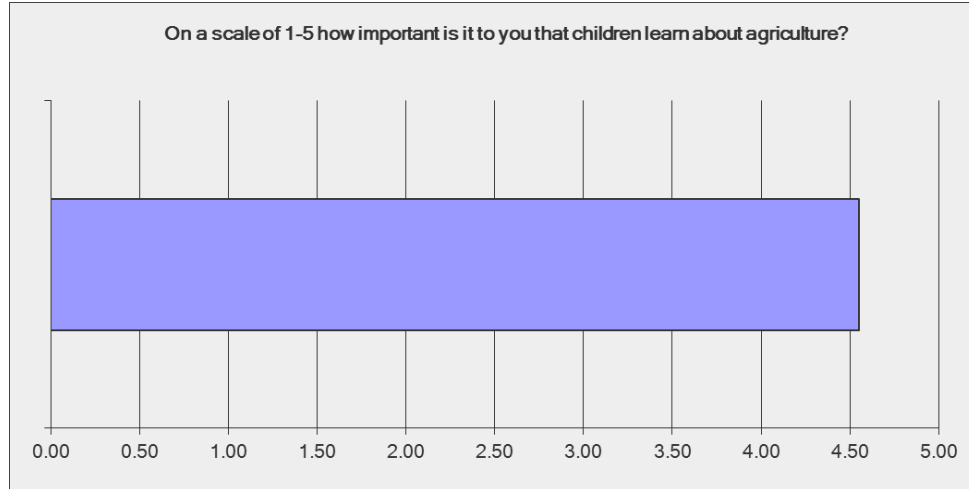


Table 3

If an agriculture related therapy program (a program with therapeutic activities that reflect farming practices) existed, how likely would you be to express interest in it?

Answer Options	Response Percent	Response Count
Not Interested	4.0%	10
Somewhat Interested	23.5%	58
Interested	40.1%	99
Very Interested	32.4%	80

Figure 3

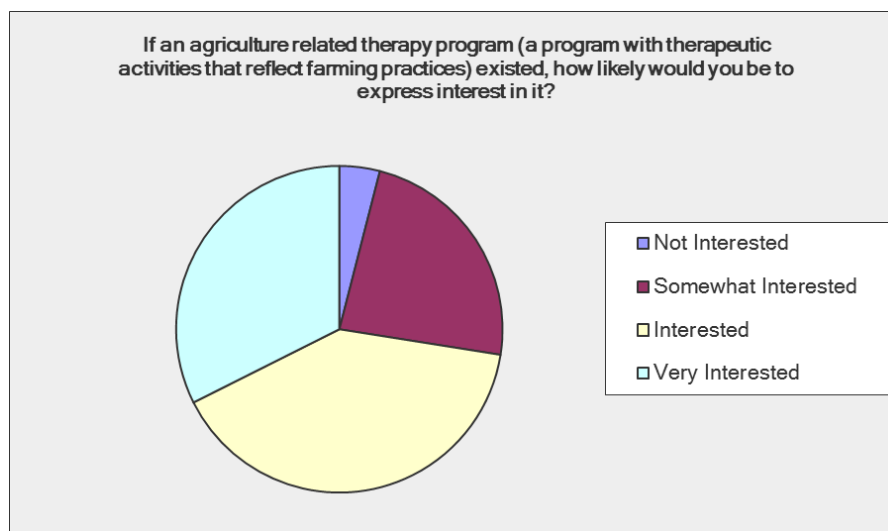


Table 4

If an agriculture related therapy program (a program with therapeutic activities that reflect farming practices) existed, how likely would you be to utilize it?		
Answer Options	Response Percent	Response Count
Not Likely	18.1%	45
Somewhat Likely	30.2%	75
Likely	29.8%	74
Very Likely	21.8%	54

Figure 4

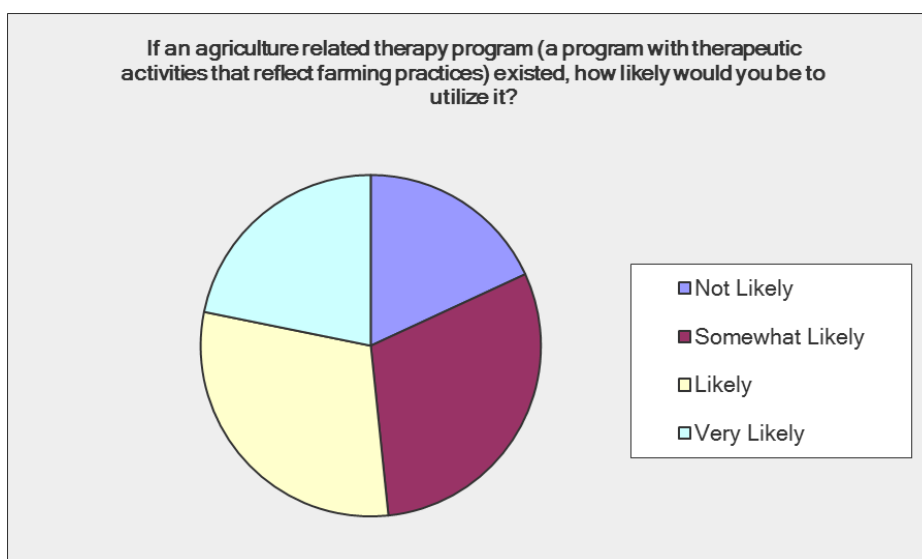


Table 5

What aspects of Agriculture do you think should be included in an agriculture based therapy program? (Check all that apply)		
Answer Options	Response Percent	Response Count
Horticulture (plants/gardening)	94.8%	235
Animal Husbandry (caring for animals)	89.1%	221
Equine Assisted Activities and Therapies (therapeutic riding, hippotherapy, etc.)	70.2%	174
Construction (small projects/crafts)	70.2%	174
Aquaculture (raising/managing fish)	51.2%	127
Other:		13

Figure 5

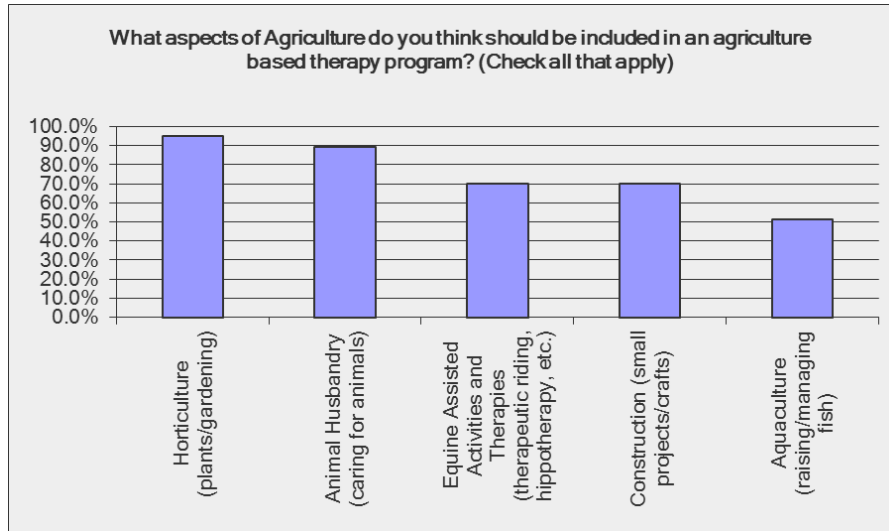


Table 6

How do you feel about the following statement: An agriculture related therapy program can benefit my community.		
Answer Options	Response Percent	Response Count
Strongly Disagree	1.2%	3
Disagree	0.0%	0
Neutral	5.2%	13
Agree	38.8%	97
Strongly Agree	54.8%	137

Figure 6

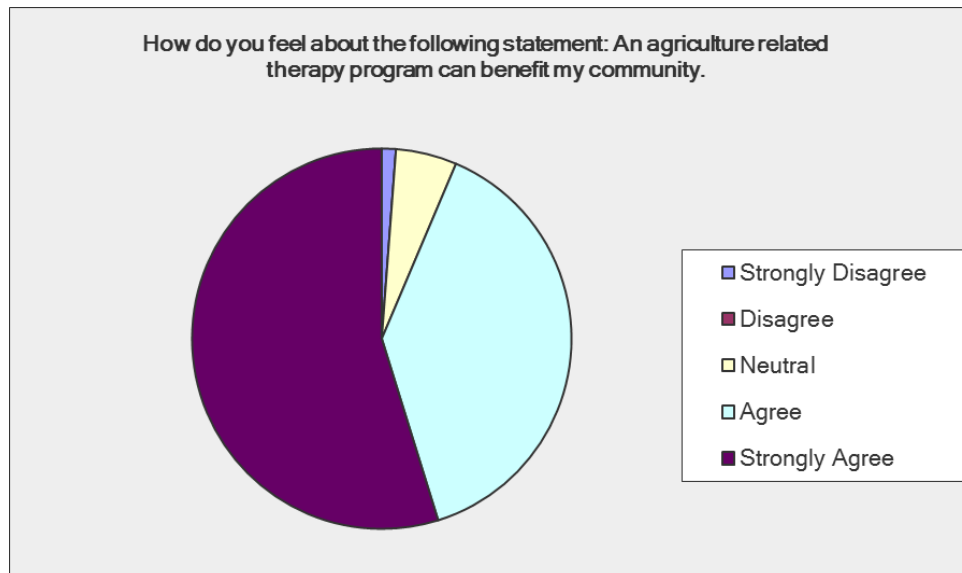


Table 7

Likelihood of respondents to utilize the program if they answered "yes" to having or caring for a child that has received therapy services.		
Response	Number of Responses	Percentage
Not Likely	12	14.46%
Somewhat Likely	23	27.71%
Likely	31	37.35%
Very Likely	17	20.48%
Total	83	100%

Figure 7

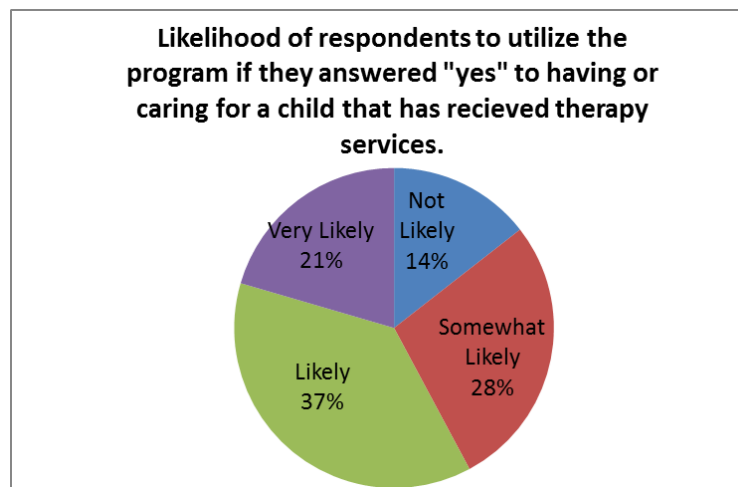


Table 8

Answers of respondents that indicated that they "strongly disagreed" with the statement: "an agriculture based therapy program can benefit my community".				
Respondent	Question 1: Value place on agriculture.	Question 2: Importance of children learning about agriculture.	Question 3: Likelihood to express interest.	Question 4: Likelihood to use program.
61	5- "value very highly"	5- "it is very important"	"Very interested"	"Very likely"
142	4- "a lot of value"	4- "it is important"	"Interested"	"Somewhat likely"
188	5- "value very highly"	4- "it is important"	"Interested"	"Somewhat likely"

Appendix B: Survey

Reconnecting With our Roots: Farm-Life and Therapy

Hello. I am a student at Eastern Kentucky University completing my Honors Thesis on a comparison of agriculture based therapy programs to therapy programs without agrarian aspects. The purpose of my thesis is to evaluate the possibility of developing a farm that offers children and adults opportunities to receive therapeutic services and learn about agriculture while participating in farm based therapy practices. Please complete this short survey to help me determine the value placed on agriculture and the level of interest in an agriculture or farm based therapy program in your community. This anonymous survey should take no more than 3-5 minutes of your time and will be analyzed as a group response.

1. On a scale of 1-5 how much do you value agriculture with regards to your everyday life?

1. I place no value on agriculture.
2. I place some value on agriculture.
3. Neutral
4. I place a lot of value on agriculture.
5. I value agriculture very highly.

2. On a scale of 1-5 how important is it to you that children learn about agriculture?

1. Children should not learn about agriculture.
2. It doesn't matter whether or not children learn about agriculture.
3. Children should learn about agriculture
4. It is important for children to learn about agriculture.
5. It is very important for children to learn about agriculture

3. If an agriculture related therapy program (a program with therapeutic activities that reflect farming practices) existed, how likely would you be to express interest in it?

- Not Interested
- Somewhat Interested
- Interested
- Very Interested

4. If an agriculture related therapy program (a program with therapeutic activities that reflect farming practices) existed, how likely would you be to utilize it?

- Not Likely
- Somewhat Likely
- Likely
- Very Likely

5. What aspects of Agriculture do you think should be included in an agriculture based therapy program? (Check all that apply)

- Horticulture (plants/gardening)
- Animal Husbandry (caring for animals)
- Equine Assisted Activities and Therapies (therapeutic riding, hippotherapy, etc.)
- Construction (small projects/crafts)
- Aquaculture (raising/managing fish)
- Other:

6. How do you feel about the following statement: An agriculture related therapy program can benefit my community?

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Please answer the following for the purpose of data grouping.

7. What is your age?

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66-75
- 76+

8. What is your gender?

- Male
- Female

9. Do you have a child or care for a child that has ever received Occupational, Physical, Speech, or any other kind of therapy?

- Yes
- No
- I don't have children

Thank you for your participation!

Acknowledgements

The author would like to thank Professor Kathy Splinter-Watkins for being a great mentor for this project. She provided priceless feedback, insight, and encouragement throughout the course of this project. Without her, this project would not have been possible.

The author would also like to thank his parents for raising him on a farm where he could explore, learn, and develop an appreciation for hard work and dedication. They always encourage him to do his best regardless of any adversity.

Defined terms

Agriculture literacy: “understanding and possessing a knowledge of our food and fiber system. An Individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture” (Frick, 1990, p. 41).

Agriculture related/based therapies: therapeutic activities and practices that are intended for the promotion of human health and wellbeing that use/include any aspect of agriculture. This can include, but is not limited to plants and gardening, animals, a farm setting/environment, and food production.

Food and fiber system: the businesses and entities involved in and responsible for producing agrarian products

Holistic approach: combining multiple sectors of agriculture into one program.

Horticulture: “the science of growing fruits, vegetables, and flowers” (Merriam-Webster); the occupation of growing plants

The community of Shelbyville, KY: persons interested in the city of Shelbyville, KY and are part of the social media site devoted to Shelbyville.

Introduction

In this fast paced world it is often easy to become so focused on where we are going that we forget about where we have been. It seems as if our highly “civilized” and technologically advanced societies have done just that, forgotten from what civilization sprouted. The “birth” of agriculture and farming has been noted as an essential event that contributed to the birth of civilization. People no longer had to constantly travel as hunter-gatherers and some were allowed to diversify their occupations based on their talents and traded for food that someone else grew in abundance. As civilization grew and advanced in diversity, less people cultivated their own food and fiber and instead relied on farmers that were able to produce more and more agrarian products. This trend has continued until much of society has gotten further and further away from the “roots” of civilization.

In today’s society, very few people cultivate, harvest, raise, and produce the food and fiber that we all rely on. According to the latest census by the United States Department of Agriculture (USDA), there were 3.2 million farmers in the United States (USDA, 2014) of the estimated 314.1 million people in the U.S. in the year 2012 (The World Bank). This means that only about 1% of the U.S.’s population was responsible for providing food and fiber for the other 99% of the population as well as people around the world. The U.S. Census that was conducted in the year 2010 found that 93.7% of the

U.S. population lives in urban areas (U.S. Census Bureau, 2011, p. 4). Although some new trends include “urban gardening”, much of this population does not participate in agrarian based practices. Also, many people that live in “rural” areas are not necessarily participants in agrarian based practices either, but they may be more prone to be exposed to them. Multiple studies that have been completed to address agriculture literacy have found that exposure to agrarian settings, tasks, or situations can lead to greater agriculture literacy (Harmon & Maretzki, 2006; Colbath & Morrish, 2010). Agriculture literacy is defined as “understanding and possessing a knowledge of our food and fiber system. An individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture” (Frick, 1990, p. 41). Basic information about agriculture is considered knowledge about anything and everything related to agriculture from food production to economic and political issues (Frick, 1990, p. 41). An agriculture illiterate population can be dangerous when considering the fact that it votes and has input on decisions regarding the topic of agriculture. Being informed about the substance that keeps the members of a population alive is an issue that should not be ignored.

Agricultural activities involve nature and are usually performed in a natural environment. Natural settings have been shown to have positive and restorative effects on human health in terms recovery from surgery (Ulrich, 1984), stress reduction and mood enhancement (Berman, Jonides, & Kaplan, 2008 & Ulrich, Simons, Losito, Fiorito, Miles, & Zelson, 1991), and cognitive function (Berman et al., 2008 & Ulrich et al., 1991). These are but a few studies that have been completed on this topic, but the scope of this paper does not lend itself to discussing a large number of them. The value of

natural environment should be recognized and incorporated into people's lives in some capacity. Positive outcomes of people being exposed to nature has caused for many health care facilities, cities, and other areas predominantly lacking in natural features to include green-spaces in their arrangements. There have been recent arguments made for more in-depth research and consideration to be given to nature's effects on human health via changes in guidelines that direct research (Day, Theurer, Dykstra, & Doyle, 2012) and through critically analyzing possible mechanisms of nature that are linked to human health within the existing literature (Kuo, 2015). Nature and its influence on our health seem to be gaining a larger presence in the vast and complicated world of research.

It would be extremely taxing and unnecessary to reverse the urbanization of our world's landscape and difficult to educate everyone about agriculture to make them agriculture literate. Yet, there is a way to make a small difference and promote agriculture literacy while encouraging healing and development in a natural environment. This paper will outline different sectors of agriculture and how they can be utilized for human therapy. Bringing two of the main areas of agriculture, horticulture (raising and producing plants and plant products) and animal husbandry (raising and caring for animals) together can create a more holistic and enriching experience for people than just focusing on them separately. This paper is proposing that through the use of the healing power of nature and agriculture related therapeutic techniques, a holistic therapeutic and educational program may lead to the reconnecting of people and their roots. This paper will also elaborate on survey data that was gathered in an attempt to assess whether or not people from the Shelbyville, Kentucky area would value such a program being implemented in their community.

Purpose Statement

The purpose of this project was to gain a better understanding of and consolidate evidence that currently exists for agriculture related therapeutic interventions, the effect of nature on humans, and the level of agriculture literacy among the general public. The purpose of the survey that was completed during the course of this project was to assess residents of the Shelbyville, KY area in regards to the value that they place on agriculture and agriculture education, amount of interest that they may have in an agriculture based therapy program, and whether or not they feel as if such a program would benefit their community. This paper is meant to bring that compilation of evidence and survey results together to create an argument for further research needed to justify implementing a holistic, agriculture based therapy program in Shelbyville, KY. This project has also been completed as fulfillment of the completion requirements of Eastern Kentucky University's Honors Program.

Literature Review

The purpose of this literature review is to bring together primary and secondary sources that address separate aspects of agriculture and therapeutic interventions that may be performed in relation to such aspects. This review contains five main sections including sources addressing societal knowledge/ awareness of agriculture and food origin, the effects of a natural setting on humans, horticulture, animal-human interactions, and green care and care farms.

Disconnect from Agriculture

As the population of humans increases more and more people congregate into cities and urban areas where agricultural activities such as farming is absent and less

noticeable than in rural areas. According to the United States Department of Agriculture (USDA), there were 3.2 million farmers in the United States (USDA, 2014) of the estimated 314.1 million people in the U.S. in the year 2012 (The World Bank). The 2010 United States Census that found that 93.7% of the U.S. population live in urban areas (U.S. Census Bureau, 2011, p. 4). These are the latest census data sets publically available at the time of this literature review. Although a claim that living in an urban environment causes people to know less about agriculture and ultimately food origins cannot be made, decreased exposure to agrarian processes and activities may certainly decrease awareness.

In order to formulate a concise definition of agriculture literacy and what it encompasses, a panel of faculty members from land grant universities, within the U.S., was created in 1989. Requirements for this study were that the university from which a faculty member was recruited had to have an agriculture education department and the faculty member could not be employed within that agriculture education department. This study consisted of three questionnaires that asked panelists to submit their definition of agriculture literacy, submit one concept for each of the eleven identified subgroups of agriculture knowledge included in the previously submitted definitions, and rank aspects of agriculture literacy as well as submit demographic information. A total of seventy-eight panelists submitted definitions and fifty-eight submitted concepts. Due to the amount of panelists that submitted responses and their credentials, this was considered a study of expert opinions (Frick, 1990). In his dissertation, Frick (1990) provided the consensus definition from his study:

Agricultural literacy is understanding and possessing a knowledge of our food and fiber system. An Individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture. Basic agricultural knowledge includes: the production of plant and animal products..., the economic impact of agriculture, its societal significance, agriculture's important relationship with natural resources and the environment..., the marketing and processing of agricultural products, public agricultural policies, the global significance of agriculture, and the distribution of agricultural products. (p. 41)

The definition of agriculture literacy was developed at this time so that studies surrounding this topic could be based on one concise and accepted definition. In order to discuss agriculture literacy within this paper, the term needed to be defined for clarification.

A study conducted at Texas State University that included 501 participants that completed tests that indicated their level of agriculture literacy. The researchers considered a score of 70% an indicator of agriculture literacy. The mean score was 50.4% with only 14% of respondents scoring above the benchmark of 70% (Colbath & Morrish, 2010).

Eighteen urban Southern California students in upper elementary school grades ranging from 4 through 6 were included in a study that collected data regarding their knowledge on agriculture and food origin. Semi-structured interviews were conducted during which the children were asked to dissect a cheeseburger from a fast food restaurant and explain food origin. Researchers found that no participants had ever cared

for an animal, raised a plant, or grown their own food. They also found that the participants could name common food items, but could not discuss the origins of common foods accurately. Food processing was another subject that researchers found these students didn't understand. Among the limited agriculture experiences that students said they had, the most common were visits to a relative's garden or a fieldtrip to a farm (Hess & Trexler, 2011).

Using a three-part questionnaire, researchers collected and analyzed 295 surveys completed by high-school students in Pennsylvania in May, 1998. The purpose of the survey was to gain an understanding of the knowledge of these students in regards to agriculture and the food system. This survey also allowed researchers to explore factors that seem to correlate with the level of knowledge that they had. Their findings concluded that the participants were the most knowledgeable about food safety, hunger, and local foods, but least knowledgeable about divisions of the food system and sustainability. It was also found that although many participants claimed to support local food systems, their actions and behaviors don't. Participants that participated in gardening, youth clubs, and food related tasks at home were found to have more knowledge of the food system and support for local food systems. A negative association was found to exist between knowledge about the food system and watching television (Harmon & Marezki, 2006).

From 1988 until 2011, forty-nine studies were completed with regards to agriculture literacy. The most targeted populations within these studies were elementary school students and teachers. Purposes for the studies were categorized as to help further develop guidelines and a framework for educators to use, to test how affective an agriculture literacy program was, and to assess agriculture literacy. Programs included in

these studies were affective in increasing agriculture literacy, but many of the populations involved were deemed agriculturally illiterate (Kovar & Ball, 2013).

Based on these studies, it has been found that American Youth tend to be agriculturally illiterate. None of these studies, however, fully address why participants were lacking in knowledge about agriculture. People being removed from a farming environment and removed from seeing where their food originates may be contributing to this lack of knowledge about agriculture.

Natural Settings

The concept of a person's environment having an effect on health and wellbeing has been used extensively for a basic premise for further investigative work. There are many theories and perceptions about the effects of nature and a natural environment on humans. Psychological and physiological effects of natural versus urban environments have been studied extensively.

A well-known experiment created by Roger Ulrich (1984) was implemented to investigate the effects of a natural view from a window (trees) compared to an unnatural view (a brick wall). This study consisted of the examination of the recovery records of forty-six patients in a Pennsylvania hospital between 1972 and 1981. All of the participants were recovering from a cholecystectomy (gallbladder surgery). Each participant was matched with someone similar to them with regards to multiple criteria and room settings were as identical as possible for pairs besides the contrasting view from the window. During this experiment, he found that patients with the natural view recovered quicker, took less powerful pain medications, and received less negative notes from nurses (Ulrich R., 1984). Although this study is limited in regards to implications

and cannot be generalized, it can and did serve as a catalyst for further research into the possible effects of viewing nature.

In order to further investigate the possible effects of nature an experiment was performed to record and evaluate the stress recovery of 120 participants after viewing a stressful movie followed by a ten-minute video of one of six selected outdoor settings (four urban and two natural). Each of the six settings was different, considered “everyday setting”, and was randomly assigned to twenty of the participants. Measurements that were taken while participants watched the ten minute video of the assigned setting consisted of physiological measures such as heart rate, skin conductance, muscle tension, and pulse transit time as well as self-report of emotion. Evaluations of these measurements indicated that stress recovery was faster and more complete when participants were exposed to natural compared to urban settings. Based on cardiac responses, researchers also concluded that natural environments elicited more attention and intake of information. Overall, it was found that natural environments can have positive effects on humans’ emotional state and physiological activity levels (Ulrich et al., 1991).

Berman et al. (2008) found that interactions with nature can enhance cognitive control. Participants were asked to take part in two studies. The first experiment required them to repeat a sequence of digits/ numbers backwards after they were given to them audibly. Several trials were performed while participants were also given a directed-forgetting task meant to hinder their short-term memory. Next participants were randomly assigned to take a walk ranging from fifty to fifty five minutes through one of two selected areas. One of these settings was considered a natural environment while the

other was considered urban. Next the participants performed the digit-span tasks again. Results from this first study indicated that participants performed significantly better on the tasks after taking a walk in the natural environment than after walking in the urban environment. Evaluations of participant's moods before and after their walks indicated and improvement in mood after walking in the natural environment compared to the urban environment. The second experiment performed by Berman et al. (2008) required participants to perform the Attention Network Test (ANT) during which "participants responded to the direction of a centrally presented arrow" (p. 1209), digit-span tasks, and the same mood indicating test as was used for experiment one. The participants then viewed fifty pictures of nature and fifty pictures of urban settings and rated how much they liked them. The tests and tasks were then repeated and results were compared to those derived before the picture viewing. Results indicated that viewing photos of nature enhanced executive attention performance than viewing urban images did. Mood did not seem to be effected by viewing photos of either nature or urban settings, but participants rated photos of nature as more refreshing, enjoyable, and the overall liking rating was higher than for urban photos (Berman et al., 2008) These experiments and their results address not only effects of nature on mood and emotion, but also on cognitive function; two crucial elements of health.

Kuo (2015) has gathered, analyzed, and grouped many of the studies that have been completed on nature's impacts on human health. She makes an argument for further review of the past literature and the defining of the "potential pathways by which nature might promote health" (p. 2). Her criteria for redefining them as an overarching pathway for nature to influence human health are that it must account for the size of nature's

impact and specific health consequences linked to nature and if it incorporates other smaller pathways (Kuo, 2015) Her arguments are influential as they promote more specific and concise research on themes that have already been found through previous research.

These studies indicate that natural environments can be less stressful and can even reduce stress levels for humans. In general, it is accepted that stress can have adverse effects on health and well-being. Therefore the possible positive effects of a natural environment on human health should not be overlooked when considering the environment in which therapeutic interventions occur. Day et al. (2012) have made similar arguments for the more consideration to be given to nature and natural environments as facilitators of health promotion.

Horticulture

There are many sources about horticulture and its effects on people's health and wellbeing. Many studies have been completed in an attempt to investigate the relationship between human health and working with plants. These studies have found that gardening and horticultural activities can have positive impacts on human health and wellbeing. Studies selected to be included in this literature review showcase a variety of populations and how horticulture activities address their needs.

Healing gardens is a term used for areas with natural surroundings (such as vegetation, water features, stones, etc.) that are aimed at providing a place for mental and emotional health enhancement or restoration. Some health care facilities such as hospitals incorporate them into their design and space for their patients, staff, and visitors to use (Sherman, Varni, Ulrich, & Malcarne, 2005). Results from a post-occupancy evaluation

by Sherman et al. (2005) found that healing gardens in a pediatric cancer center were most frequently used by adults including hospital staff and the parents/caretakers of patients. Although the gardens had interactive stations for children, they were rarely used. This may have been simply caused by the patients' inability to go out into the gardens. The adults that frequented the gardens usually just walked through them or participated in sedentary behaviors such as sitting on a bench and eating. Although there was not a lot of active engagement occurring in the healing gardens of this cancer treatment center, study results found that all groups of people considered had lower emotional distress and pain when in the gardens than when inside the hospital (Sherman et al., 2005). This study reveals the importance of a garden being not only a place to actively be involved in planting, nurturing, and maintain vegetation, but also a place to temporarily remove one's self from everyday situations and stressors.

There are numerous garden programs being used in group home settings such as senior-living facilities and group homes for disabled individuals. Overall, these gardening programs have been shown to give people a feeling of purpose and calmness while participating in them (Diamant & Waterhouse, 2010; Slavens, 2007). Gigliotti & Jarrott (2005) conducted a study on the effect of horticulture therapy (HT) on clients with dementia at an adult day service (ADS). Forty eight clients, ranging in age from forty-six to ninety-eight, were interviewed and observational data were collected and coded with regards to clients' affect and behavioral responses to the HT intervention. Although the HT activities only lasted half an hour and occurred once a week for nine weeks, the researchers observed differences in affect and engagement. Higher levels of positive affect and engagement and lower levels of non-engagement were observed as a result of

participation in HT activities compared to traditional ADS activities (Gigliotti & Jarrott, 2005). Despite cognitive and physical abilities, horticulture activities can be engaging, but they must be structure and created to fit people's abilities and interests.

Parkinson, Lowe, & Vecsey (2011) found that there are qualifiers to the effectiveness horticulture based programs in regards to health and wellness. Their mixed-methods study consisted of interviews of ten participants and fifty sets of participants' answers to a questionnaire assessing motivation. This study included six separate horticulture projects and involved a wide age range (18-65) of participants. The researchers found that the therapeutic value of horticulture activities is not innately the same for everyone. Personal factors such as personal interests, gender-based preferences, and social needs were found to be determinates of participants' motivation to take part in such programs. An interesting finding from this study also included that participants seemed more interested and motivated if the horticulture activity involved using produce or growing vegetables (Parkinson et al. 2011). This study is a reminder of the importance of being able to manipulate and adapt horticulture activities to address individuals' needs and interests. Findings of higher motivation when activities involved produce and vegetables are very applicable to the argument for agriculture based therapy programs that involve enhancing knowledge of food origin.

Social and Therapeutic Horticulture (STH) is one type of horticulture based programs aimed at promoting human health and wellbeing. Through a study that analyzed the effects of STH on people with disabilities (predominately mental and learning disabilities), it was found that STH could improve social interaction within ninety days of participants being involved in a program. The group that seemed to benefit

the most was persons with learning disabilities. Participants were asked to do general gardening tasks such as planting seeds, potting plants, and maintaining the garden through sweeping, weeding, and using garden tools. It was found that the duration of a program is an important key to how well participants respond and develop skills (Sempik, Rickhuss, & Beeston, 2014).

Daimant & Waterhouse (2010) concluded that STH may promote a sense of belonging and in turn promote health and wellbeing. They focused their study on a gardening program created for people with learning, mental, and/or physical disabilities to work together in groups creating, maintaining, and using a public garden. Although people receiving services were being directed by therapists and were in groups, individual needs and capabilities were addressed and activities were client-centered. The goal of STH is to provide opportunities for socializing, create an environment where everyone plays an important role, and to generate a feeling of accomplishment. The authors indicated that even the task of pulling weeds provides instant feedback and a sense of accomplishment. One can see the area in which they are working becoming cleaner with less weeds (Daimant & Waterhouse, 2010).

During the literature searches that were conducted, two articles were found that were aimed at reviewing the literature about horticulture therapy or gardening. These articles sought to derive a consensus on the personal meaning held by those involved with such programs and the programs' overall effects on their health and wellbeing. A recurring theme among the literature is that raising and nurturing plants gives people physical results of their efforts that can in turn improve confidence and feelings of satisfaction and accomplishment (Lin, 2013; York & Wiseman, 2012). Lin (2013)

mentions that plants don't showcase judgment on people and respond positively to nurturing and care regardless of who is providing it. York & Wiseman (2012) concluded in their review of four well developed studies on gardening programs that "the natural, outdoor environment acted as a democratizing, neutral platform, on which people could develop on emotional, cognitive, physical and spiritual levels" (p. 81). Gardens offer peace, stability, safety, and a place to escape from stress (York & Wiseman, 2012).

School programs that offered gardening allowed students to have real examples and experiences that reinforced what they learned about plants, weather, and nature as a whole (York & Wiseman, 2012). Those programs also sparked creativity, fascination, investigation into plants, and the development of planning skills (Lin, 2013). Gardening programs can be utilized for education and advancement in agriculture literacy as well as for therapy interventions. Furthermore, gardening and horticulture programs may provide therapeutic benefits while increasing agriculture literacy.

The results from studies on gardening's effects on human health and the systematic reviews that have been completed on this subject all tend to find positive results. Much of the positive results tend to be indirectly or directly attributed to the natural settings in which gardening typically takes place. Other positive outcomes from therapeutic gardening range from promoting one's self-confidence to learning about plants and how they grow. Gardening and horticulture therapy should be considered tools and practices to be used as a segment of a holistic agriculture-based therapy program because they can promote health and wellbeing while increasing agriculture literacy.

Animal-Human Interactions

Using animals in therapeutic interventions and for activities aimed at enhancing humans' health and wellbeing in health care has been growing in popularity for the past 40 years. Psychotherapists, nurses, various mental health professionals, and physical, speech, and occupational therapists are some of the various health care professionals that have been incorporating animals into their therapeutic interventions (Fine, O'Callaghan, Chandler, Schaffer, Pichot, & Gimeno, 2010). There have been multiple studies conducted with the purpose of revealing the dynamic factors that contribute to human-animal bonds as well as the benefits and pitfalls associated with utilizing those bonds through human-animal interactions. Utilizing animals to promote human health has many labels such as Animal Assisted Intervention (AAI), Animal Assisted Activities (AAA), and Animal Assisted Therapies (AAT). According to Kruger & Serpell (2010) there are many subgroups that are used to label specific types of human-animal interactions, especially those that utilize pets. Direct, universal definitions for these interactions seem to be lacking within the literature as well as confusion as to what should constitute therapy and what is merely recreational interaction. After reviewing the definitions of therapeutic human-animal interactions published by the Delta Society, "one of the largest organizations responsible for the certification of therapy animals in the USA" (p. 34), Kruger & Serpell (2010) conclude that the two common elements that define AAT are that the intervention involves the use of one or more animals and "the intervention must be delivered by, or under the oversight of, a health/human service professional who is practicing within the scope of his/her professional expertise" (p. 35).

Much of the literature surrounding AAIs address the use of dogs and other companion animals as well as the impact of pet ownership on people's health (Hart,

2010; Friedmann, Son, & Tsai, 2010; Fine & Beck, 2010). This literature review does not elaborate on studies regarding dogs and companion animals in detail because it is focused on the use of farm animals for therapeutic intervention; though some of the findings from these studies may imply the effect of animals on people. Various studies have found that stroking or interacting with animals, in general, can have a calming effect on people (Kruger & Serpell, 2010; Goddard & Gilmer, 2015; Mallon, 1994), provide social support or promote social interactions (Kruger & Serpell, 2010; Fine & Beck, 2010), and improve self-efficacy (Kruger & Serpell, 2010; Kale, 1992). When people care for animals they may develop a sense of responsibility and purpose (Kruger & Serpell, 2010; Fine & Beck, 2010). It has also been mentioned throughout the literature on AAs that animals don't judge people. They don't care about people's material possessions, status, or social, mental, emotional, or physical abilities; so people can talk to and interact with them without fear of judgment as might be expected from other people (Kale, 1992; Mallon, 1994; Fine & Beck, 2010; Kruger & Serpell, 2010; Kaufmann, 2008).

Equines are one type of farm animal that has been used for AAT. Therapeutic Riding (TR) and Hippotherapy (HPOT) are two types of AAT that utilize equines. HPOT has been defined by the American Hippotherapy Association (AHA) as "the incorporation of equine movement by physical therapy, occupational therapy, or speech language pathology professionals in treatment" (americanhippotherapyassociation.org). Therapists purposefully manipulate the movement of an equine "to engage the sensorimotor and neuromotor systems to create functional change in their patient". This practice is used as "part of a patient's integrated plan of care" (americanhippotherapyassociation.org). Therapeutic Riding is not considered a

therapeutic treatment. It is “an equine-assisted activity for the purpose of contributing positively to the cognitive, physical, emotional and social well-being of individuals with special needs” (PATHintl.org). There have been multiple studies completed to evaluate TR and HPOT, but many of them are small and difficult to form generalizations from. Yet when considering them all together, implications and results are similar and steady. Multiple studies suggest that TR and HPOT can lead to improvements in sensory integration (that in turn leads to other benefits), balance and coordination, and social interactions (Bass, Duchowny, & Llabre, 2009; Ward, Whalon, Rusnak, Wendell, & Paschall, 2013). Ajzenman, Standeven, & Shurtleff (2013) measured postural balance and movements with force plates and a video capture system. They found that HPOT can improve postural balance and stability. It has been suggested that postural stability can lead to further motor development and an increased ability to perform daily tasks (Ajzenman et al., 2013). Through their own literature review, Granados & Agís (2011) concluded that HPOT affects “multiple systems such as the sensory, muscular, skeletal, limbic, vestibular, and ocular systems simultaneously [which] leads to psychologic, social, and educational benefits” (p. 191). There are other forms of activities and interventions that utilize equines to influence human health, but the breadth of this paper does not vindicate the inclusion of descriptions for all of them.

Green Chimneys Children’s Services in Brewster, New York is a “year round residential treatment center and special education program for children and youth with special needs” (Mallon, Ross, Klee, & Ross, 2010, pp. 136-137). They focus on utilizing aspects of farming such as caring for animals and gardening to provide treatment to children and youth. Most of the population that is treated at Green Chimneys has

experienced major psychological stressors in many areas of their lives. The goal of this program is to rehabilitate and reintroduce at-risk children and youth into society after providing them with skills and confidence to do so. Green Chimneys has adapted their program throughout the years to meet the needs of their target population, but has always kept a focus on human-animal interactions. Being in business since 1947 showcases their ability to successfully facilitate these interactions and positive results (Mallon et al., 2010). This unique, agrarian based treatment center not only provides interventions, but they also survey their clients and conduct studies to further advance the use of human-animal interactions in health care. Mallon (1994) discussed findings from an exploratory study that was completed at Green Chimneys to gain a better understanding of how children in the residential program utilize the farm and its animals. Eighty children, ranging in age from seven to sixteen years old, and five staff members were included in this study that utilized interviews and questionnaires. It was found that the children interacted with and used the farm animals as they would have used or interacted with a therapist. The children often stated that they talked to the animals, visited them to feel better when they felt sad or angry, and learned to be more caring and nurturing to other living things. Overall, results from this study suggests that farm animals can fulfill similar needs of children as companion animals have been found to fulfill in other studies (Mallon, 1994). Although companion animals such as dogs can be used for beneficial human-animal interactions, utilizing farm animals in a farm environment may take benefits a step further. A person's health and wellbeing may be positively impacted as well as enhancement of their knowledge about agriculture.

It is reiterated throughout the literature that this emerging field of utilizing animals for therapeutic interventions is limited in scientific research (Fine & Beck, 2010; Goddard & Gilmer, 2015). Larger, well designed studies need to be completed to make therapeutic interventions using animals better understood and evidence-based. More research and a better understanding can lead to specific protocols and make these interventions more reputable (Fine et al., 2010).

Green Care and Care Farms

Searching databases and reviewing literature related to agriculture and its possible uses for healthcare revealed the terms “green care” and “care farm”. These terms are predominately used in Europe to describe farms that provide services to individuals in the form of organized agrarian activities (growing plants, taking care of animals, etc.) in an attempt to positively influence people that have a variety of difficulties in the areas of physical, cognitive, social, or emotional health. Many of these farms operate as traditional farms while offering work tasks that stimulate meaningful work for people that come to them for “care” (Granerud & Eriksson, 2014). These farms serve a variety of populations such elderly adults with dementia (de Bruin, Oosting, Kuin, Hoefnagels, Blauw, de Groot, & Schols, 2009), people with Autism Spectrum Disorder (ASD) (Ferwerda-van Zonneveld, Oosting, & Kijlstra, 2012), and other mental health problems (Granerud & Eriksson, 2014).

Granerud & Erikson (2014) found that “work in a social context close to nature and work with animals increased mastery and meaningfulness” (p. 317) for people with mental-health and drug related problems. Their qualitative, descriptive study consisted of twenty participants that had mental-health problems; some of which had drug use issues.

All of the participants had been unemployed for an extended period of time and lacked confidence in their ability to work. Interviews revealed that by nurturing and caring for plants and animals, participants were able to develop a more positive self-image, a sense of purpose, new skills, and an overall sense of meaningfulness (Granerud & Erikson, 2014).

Comparative cross-sectional studies of elderly individuals and groups with and without dementia at green care farms and regular day care facilities were conducted to evaluate their activities. It was found that the stimulating environment and activity opportunities of green care farms creates more possibilities for elderly people with dementia to be more physically active, engaged in a wider variety of activities, and be outdoors more than regular day care facilities. Because of this, green care farms may be more beneficial to that population (de Bruin et al., 2009).

Ferwerda-van Zonneveld et al. (2012) found that certain characteristics of care farms are beneficial for children with ASD. Three common aspects of care farms that were believed to provide benefits to children with ASD were derived from interviews with the primary farmer/ owner of seven care farms in the Netherlands that provided services to children with ASD. These common aspects were a structured and predictable routine, a calm, safe environment that provides space to move around, and animals that children could interact with. Although the study was extremely limited, it provided important insight into what could be seen as care farm elements that should be considered for the specific population of children with ASD. The authors of this study also stated that “literature on this subject is scarce, since care farming is a relatively new kind of

care” (p. 39) and that the farmers expressed a desire for more training that would allow them to better work with their clients (Ferwerda-van Zonneveld et al., 2012).

According to Hassinkl, Zwartbol, Agricola, Elings, & Thissen (2007) “care farming is by far the fastest growing multifunctional agricultural sector [in the Netherlands]” (p. 33). A push to diversify agriculture and a growing population of people that may benefit from green care and care farming has caused this growth. Many of these farms continue to be key producers of agrarian products, while also providing care services for people with disabilities (Hassinkl et al., 2007). The literature that has been published about green care and care farms is still limited to small studies. More research about these agrarian based care facilities can lead to a better understanding of the effect on people receiving care, the needs of facilitators (training, education, financial advisement), and more structured guidelines and protocols for such businesses. Legislation within the Netherlands has allowed farmers to provide these services (Ferwerda-van Zonneveld et al., 2012). Although it is not within the realm of this paper, investigation into laws, funding methods, and business plans associated with the care/green care farms in the Netherlands would be a logical step towards implementing such programs in the U.S.

Research Method

A survey was published using an online survey service provider, SurveyMonkey.com. This survey was published on a social media site specific to the city of Shelbyville, KY. The survey consisted of nine questions that were crafted with the purpose of generating data that would give insight into this particular community’s views on agriculture, the possibility of an “agriculture related therapy program” and what it

should entail, and basic information about respondents. Responses were voluntary and anonymous. Electronic collection of responses occurred from June 17th to June 23rd, 2015. All questions except for one were multiple-choice requiring only the selection of one optional answer. The one question that was not formatted as multiple-choice allowed respondents to select multiple answers and fill in any answers that they had for the question that were not initially listed. The first two questions asked respondents to rate the value and importance of agriculture and agriculture education for children that they personally have. Rating options were given on a scale of one to five with one being minimal value or importance and five being of the greatest value and utmost importance. Questions three and four were designed to assess how much interest and likelihood of usage that respondents may have or personally anticipate for a hypothetical agriculture related therapy program. Five possible responses for questions three and four ranged from not interested or likely to very interested or likely respectively. Question five allowed for respondents to choose all aspects of agriculture that they felt should be included in an agriculture related therapy program. Pre-determined answers that could be chosen were horticulture, animal husbandry, equine assisted activities and therapies, construction, and aquaculture. Each pre-determined answer was defined in parenthesis next to the general category. Respondents could select each answer that they felt should be included as well as provide suggestions by typing into a fill-box entitled “other” at the bottom of the answers list. The sixth question asked respondents to choose the degree in which they felt about a statement regarding possible overall effects of an agriculture related therapy program on their community. Five possible answers ranged from “strongly disagree” to “strongly agree”. The final three questions were asked for the

purposes of data grouping and inquiry of personal aspects of respondents including gender, age, and status of having or caring for a child. The final question specifically inquired if respondents have cared for or currently care for a child that receives or has received therapeutic intervention via Physical, Occupational, Speech, or any other form of therapy. The option to skip questions was allowed.

Before respondents could begin responding to survey questions, they were provided with an explanatory paragraph briefly describing the purpose and context of the survey. This paragraph included information such as the survey being part of a thesis project for the Honors Program at ECU, the focus of that project being agriculture related therapy practices, and the survey's overall purpose being to determine the value placed on agriculture and the level of interest in an agriculture or farm based therapy program respondents' community. Possible respondents were also informed that their responses were anonymous and that completing the survey should take no more than three to five minutes to complete. Respondents indicated consent to participate in this study by clicking on a button to view questions and begin the survey. A short description was also used when the link to the online survey was posted on social media. The description summarized the purpose of the survey in regards to being part of a larger project and that it was posted on the community site to gain opinions from people that live in the Shelbyville area. The option to contact the researcher through a message on the social media site was also stated. Only one set of responses were allowed per computer. This study was approved by ECU's Institutional Review Board prior to the survey being made available for responses.

Sampling Size

Out of about 2,400 members of the Shelbyville, KY community social media site, 250 people completed the survey. Not every respondent answered every question, but no more than three respondents skipped each individual question. Of the 250 respondents, 87.4% indicated that they were female, 12.6% indicated that they were male, and three respondents skipped the question. When asked whether or not the participant have or care for a child that has ever received speech, physical, occupational, or any other form of therapy, 34% indicated that they do, 49.8% indicated that they do not, and 16.2% indicated that they have no children. There was a large range of ages of respondents with the youngest group being between the ages of eighteen and twenty-five (10.9%) and the oldest group being seventy-six or older (.8%). Majority of respondents were between the ages of twenty-six and fifty-five (66.4%). It is assumed that respondents resided in Shelbyville or Shelby County, KY. Factors requiring this to be an assumption will be discussed later in limitations.

Discussion

Survey results will be interpreted in relation to the purpose of this study, to assess the level of interest in an agriculture based therapy program that includes multiple sectors of agriculture. The first six questions are discussed and the findings are interpreted. The last three questions that were included in the survey were primarily used for demographic information used to determine sample characteristics. Some of the data collected through the last three questions is, however, also used for context when evaluating and discussing data derived by the first six questions.

Respondents were asked to rank on a scale of one to five how much they value agriculture with regards to their everyday life. Options were given ranging from “I place

no value on agriculture” to “I value agriculture very highly” and numeric values were placed on options ranging from one to five respectively. The average rating of the value indicated by respondents was 4.42 which falls between the descriptive options of “I place a lot of value on agriculture” and “I value agriculture very highly”. Only one participant indicated that he/she placed no value on agriculture (see Appendix A: List of Tables and Figures- Table 1, Figure 1). Assessing the value that people place on agriculture in their everyday lives may have implications as to how valued an agriculture based therapy program may be in Shelbyville. The data suggests that respondents would be likely to see value in the proposed program because they value what is at its core, agriculture.

Respondents were asked to rank how important that they thought it is that children learn about agriculture. It was assumed that the general societal view of the classification of children as being ages 17 and under based on cultural and legal context of the surveyed area. The scale ranged numerically from one to five and descriptively from “children should not learn about agriculture” to “it is very important for children to learn about agriculture” respectively. The average rating of importance by respondents was 4.55. This rating is between the descriptive options of “important” and “very important”. None of the respondents indicated that they felt children should not learn about agriculture (see Appendix A: List of Tables and Figures- Table 2, Figure 2).

Although a holistic agriculture based therapy program could be used for many populations, the survey used for this study focused primarily on children. Asking whether or not it is important for children to learn about agriculture further explored the foreseen value of the proposed program. The participation of a child in an agriculture based therapy program does not necessarily translate to an increase in their agriculture literacy.

It is assumed, however, that the exposure to agrarian activities via the program would provide learning opportunities for children. Since the average rating of importance was relatively high for this subject, it may be postulated that residents of Shelbyville may see a therapy farm not only as a place for therapeutic practices for helping and healing, but also a place for learning.

The third question included in the survey asked how likely respondents would be to express interest in an agricultural related therapy program. 4% of the respondents indicated that they would not be interested, about 24% indicated that they would be somewhat interested, 40% indicated that they would be interested, and about 32% indicated that they would be very interested (see Appendix A: List of Tables and Figures- Table 3, Figure 3). In order for any program or business to be successful, people must be interested in it. Although they may see value in it, if people aren't interested, the program is likely to not have much support when it comes down to establishing and implementing it. It was expected that some people may be either not interested or only somewhat interested because their life situation doesn't merit consideration of the proposed program. Majority of the respondents (about 72%) indicating that they would be either interested or very interested suggests the Shelbyville residents may be supportive of a therapy farm. The correlation between level of interest and level of support or use does not always exist. Some respondents may have been interested in the program simply because they were unsure of what it might entail; therefore they would like to find out more information. It is not safe to assume these conclusions to be absolutely true, so a question regarding intended use of the program was asked.

Question four asked how likely respondents would be to utilize an agriculture related therapy program if it existed. Choices for answers ranged from “not likely” to “very likely”. Response percentages for this question had a lesser range than other questions; with 18.1% indicating that they would be not likely to use such a program, 30.2% indicated they’d be somewhat likely, 29.8% likely, and 21.8% respondents indicated that they’d be very likely (see Appendix A: List of Tables and Figures- Table 4, Figure 4). As previously stated, a person’s interest in a program or business does not exactly translate to how likely they are to utilize the services it provides. It is understandable that the likelihood of utilizing an agriculture related therapy program is more evenly distributed than likelihood of expressing interest. Although a program may be intriguing, it may not suit a person’s needs and therefore would not be of use. A clear definition of what the proposed program would encompass was not included in this survey. This was done on purpose to encourage respondents to keep an open mind in order to answer question five without influence from the researcher. Therefore, ambiguity of what services or activities may be available through the proposed program may have caused respondents to be more apprehensive to say that they would be likely to use it. If a business plan and clear layout of the practices and activities to be used on the proposed therapy farm were to be created through further research, respondents could be given more contexts to better answer this question. Overall, it is encouraging that 81.8% of the respondents indicated that they would be at least somewhat likely to utilize the program. This is significant because people seem to consider the program useful, although they may not know what all it will encompass.

Further evaluation of the survey responses from people indicating “having or caring for a child that has received some form of therapeutic intervention” (Appendix B: Question nine) was completed. After reviewing the answers of those that said “yes” to question nine it was found that 14.5% indicated that they would be “not likely”, 27.7% “somewhat likely”, 37.4% “likely”, and 20.5% “very likely” to use the proposed program (see Appendix A: List of Tables and Figures- Table 7, Figure 7). This indicates that people with children or care for children that receive therapy are not necessarily more likely to indicate that they would use the program compared to all survey respondents. Again, ambiguity about what exactly the program may encompass may have had influence on their response to this question. Also, the individual needs and personalities of their children were probably factored into their decision of whether or not they think they would use the program. This particular group of people would be a target population for further investigation into whether or not people with children that receive therapeutic services would expect a therapy farm to be useful. Further inquiry should be done with this population after an organized plan for the program is put together.

Question five addressed what sectors of agriculture that should be included in an agriculture based therapy program. Respondents were asked to select as many sectors from a list that they felt were appropriate. They were also given the option to fill in an “other” category as they felt necessary. The listed sectors and the percentage of respondents that selected them were; 94.8% selected horticulture (plants/gardening), 89.1% selected animal husbandry (caring for animals), 70.2% selected Equine Assisted Activities and Therapies (therapeutic riding, hippotherapy, etc.), 70.2% selected construction (small projects/crafts), and 51.2% selected aquaculture (raising/managing

fish) (see Appendix A: List of Tables and Figures- Table 5, Figure 5). Other suggestions included farm to school/table recipes and cooking, machinery operation and repair, canning produce, farm and home repairs and troubleshooting, farm economics (funding and budgeting), sustainable farming, and historical practices and the future of farming. Although some of the suggestions would not be appropriate for all ages, they provided insight into other possible program opportunities. The suggestion to include cooking and recipes in the proposed program is also supported by Parkinson et al. (2011) that found including growing and preparing vegetables and other produce contributed to higher levels of interest in horticulture activities. Food preparation was suggested by multiple respondents. Question five had a dual purpose. It was not only used to indicate the most popular sectors of agriculture for a therapy program, according to Shelbyville residents, but also to indicate whether or not respondents believe that an agriculture based therapy program should include multiple sectors of agriculture. Majority of the respondents selected multiple sectors from the list and none of the listed sectors were selected by less than half of the respondents. This can be interpreted as respondents supporting a holistic approach to agriculture related therapy. Creating a program that includes multiple sectors can create an environment in which clients can be exposed to and learn about all of the avenues involved with raising and producing substances that sustain our lives. As discussed in the literature review, agriculture based therapies focused on one of these avenues have provided beneficial results. Therefore, combining those therapies into one program should also be beneficial. There are programs that have done this and have proven this approach useful and beneficial. It seems as if Shelbyville residents may also be supportive of this holistic approach.

Respondents were then asked to indicate how they felt about the statement; “an agriculture related therapy program can benefit my community”. An overwhelming 54.8% of respondents indicated that they strongly agreed with the statement and 38.8% indicated that they agreed. None of the respondents indicated that they disagree with the statement, but 1.2% indicated that they strongly disagree. Only 5.2% indicated that they were neutral (see Appendix A: List of Tables and Figures- Table 6, Figure 6). A vast majority (93.6%) of the respondents either agreed or strongly agreed that the proposed agriculture based therapy program would benefit Shelbyville. The perception of this program/ business as something that will be beneficial may be indicative of the community’s need of a holistic agriculture based therapy program. If the community did not need such a program, it would be expected that respondents would not see the benefit of one being created in their community.

After reviewing individual responses the three respondents that indicated that they strongly disagree with the statement indicated that they valued agriculture “a lot” or “very highly” within the context of their daily lives, feel that it is “important” or “very important” that children are educated about agriculture, would be “interested” or “very interested” in an agriculture related therapy program, and would be “somewhat likely” or “very likely” to utilize such a program (see Appendix A: List of Tables and Figures- Table 8). Despite indicating that they were interested in and likely to use the proposed program and valuing agriculture and children learning about agriculture, these three respondents did not feel that the program could benefit Shelbyville. This is not typical compared to the rest of the responses. It would be typical that someone would think that the program would not benefit the community if they did not intend to use or express

interest in it and they did not value agriculture. Possible explanations of this may be that there was a technical glitch while they responded or they misinterpreted the question.

Also, these respondents could have thought that the therapy programs in and around the community are already sufficient in serving Shelbyville. These explanations are merely assumptions that have been made on the premise that the responses did not seem typical.

Conclusion

The current evidence suggests that agrarian based therapies, using plants and animals, are generally effective at promoting humans' health and wellbeing. Multiple researchers have tested the influence of nature and being in an environment that has natural characteristics. Such studies have produced evidence suggesting that nature also benefits human's health and wellbeing. Therefore a program that combines multiple sectors of agriculture into one holistic program and operates in a farm setting should produce positive results for people that utilize its services.

Knowing and understanding where the basic substances that enables us to live is very important. With majority of our population concentrated in urban areas in which agrarian practices aren't as readily observed, it is understandable that much of the population is agriculturally illiterate. Although the program that is proposed in this paper would not be intended to educate an extensive amount of people, people that utilize its services would learn about agriculture by actively participating in agrarian based activities.

Multiple programs have already been established that combine the uses of horticulture and animals in a farm setting to provide services to different populations. Positive results on the people they serve have been the product of these programs. Yet,

there could be more of these programs that serve a different range of people. New programs also means new research can be conducted to make agrarian practices more evidence based leading to clear and concise regulations and practices that will further advance this unique field.

Support for implementing a holistic agriculture based therapy program or therapy farm, as I would rather call such a program, cannot be drawn only from the literature that discusses agriculture based therapies, programs that combine multiple agrarian sectors, and the need to promote agriculture literacy. The community in which a therapy farm is to be created needs to be supportive of its existence. The need and people's intentions to utilize such a program should be assessed before creating one. Data suggests that majority of the survey respondents from the community of Shelbyville, KY would be interested in a therapy farm and believe that a program such as that would benefit their community. Interest in the proposed program may be due respondents' high levels of value placed on agriculture and educating children about agriculture. Though more needs assessments are needed to verify that area as a possible location for a therapy farm, it can be concluded that this location may benefit from such a program and residents would be likely to support its implementation.

Limitations

There were several limiting factors associated with this study. Limited sample size, accessibility to the survey, demographics, and potential bias due to personal relationship to the author of the study may have influenced results. A sample of 250 respondents of the total population of Shelbyville, KY (25,558 (U.S. Census Bureau, 2010)) is relatively small. The survey was available through a social media site that is

intended to share news and events that happen or are going to occur in Shelbyville.

People had to have access to this site and notice the post including the link to the online survey in order to participate. This method of publication might have drastically limited the sample, but it was deemed the most feasible option considering constraints of the time frame in which this study needed to be completed and convenience of data collection.

Majority of respondents were female (87.4%). Only a small portion of the respondents were male (12.6%) and therefore underrepresented in this evaluation of Shelbyville resident's opinions. Potential bias within this study may be results of the way in which the survey was published. The name of the author was included in the posting of this survey on the social media site. People that know the author may have been more inclined to feel obligated to respond to the survey. Bias due to personal relationship with the author is likely to be minimal because of the number of responses and publication on a public page with a large amount of members. The public nature of the media site page also could have allowed anyone to access the survey link, making it possible for people outside of the Shelbyville area to respond. The survey's introduction clearly stated that it was intended for residents of Shelbyville; therefore people that may have responded that did not live in Shelbyville could be presumed to have an interest in that community. That interest justifies their inclusion in the survey. Demographics, economic, political, and cultural characteristics specific to Shelbyville could have had significant impacts on the responses to the survey. Shelbyville is predominately surrounded by farmland and therefore might have caused data to indicate high regards and positive opinions of agriculture than what may have been indicated if surveying a more urban area. This study

should not be generalized as it is meant to represent opinions of residents from a small, specific geographic area.

Implications

Survey results reveal that the residents of the Shelbyville, KY area may be interested in the implementation of an agriculture based therapy program that incorporates multiple sectors of agriculture. This project was intended to be a seed-study from which further investigation is needed before implementing such a program. Further needs-assessment measures and tools would need to be utilized and assessment of areas surrounding Shelbyville, KY should be used to examine the feasibility of a therapy farm in that area.

The literature that was reviewed for this project indicates a need for further research regarding the specific elements of nature and agrarian based activities and therapies on how they influence human health and wellbeing. Although the literature showcases increased interests in such programs and agriculture literacy, it is still lacking in high quality research. In order to fulfill the requirements to conduct evidence-based practices, for therapeutic intervention, there should be more high quality research conducted on more holistic approaches to agrarian based programs aimed at promoting health, wellness and agriculture literacy.

After determining feasibility of a therapy farm in Shelbyville, KY, needs assessments of other geographic areas may need to be conducted to find other possible locations for a program. Business plans and program outcomes would need to be carefully constructed with consideration given to past literature and evidence behind agrarian based health care programs. Programs similar to the one being proposed through

this project are rare within the U.S. The rarity of them indicates the importance for such a program, if created, to conduct reliable, high quality research. This could lead to expansion of this field and guidelines for future use.

References

- Ajzenman, H. F., Standeven, J. W., & Shurtleff, T. L. (2013). Effect of Hippotherapy on Motor Control, Adaptive Behaviors, and Participation in Children With Autism Spectrum Disorder: A Pilot Study. *American Journal Of Occupational Therapy*, 67(6), 653-663. doi:10.5014/ajot.2013.008383
- Bass, M. M., Duchowny, C. A., & Llabre, M. M. (2009). The Effect of Therapeutic Horseback Riding on Social Functioning in Children with Autism. *Journal Of Autism And Developmental Disorders*, 39(9), 1261-1267.
- Berman, M. G., Jonides, J., & Kaplan, S. (2008). The Cognitive Benefits of Interacting With Nature. *Psychological Science (Wiley-Blackwell)*, 19(12), 1207-1212.
- Colbath, S. A., & Morrish, D. G. (2010). What do college freshmen know about agriculture? An evaluation of agricultural literacy. *NACTA Journal*, 54(3), 14-17.
- Day, A. B., Theurer, J. A., Dykstra, A. D., & Doyle, P. C. (2012). Nature and the natural environment as health facilitators: the need to reconceptualize the ICF environmental factors. *Disability & Rehabilitation*, 34(26), 2281-2290.
- de Bruin, S., Oosting, S., Kuin, Y., Hoefnagels, E., Blauw, Y., de Groot, L., & Schols, J. (2009). Green care farms promote activity among elderly people with dementia. *Journal Of Housing For The Elderly*, 23(4), 368-389.
doi:10.1080/02763890903327275
- Diamant, E., & Waterhouse, A. (2010). Gardening and belonging: reflections on how social and therapeutic horticulture may facilitate health, wellbeing and inclusion. *British Journal Of Occupational Therapy*, 73(2), 84-88.
doi:10.4276/030802210X12658062793924

- Ferwerda-van Zonneveld, R. T., Oosting, S. J., & Kijlstra, A. (2012). Care farms as a short-break service for children with Autism Spectrum Disorder. *NJAS-Wageningen Journal of Life Science*, 59(1-2), 35-40.
doi:10.1016/j.njas.2012.01.001
- Fine, A. H. & Beck, A. (2010). Understanding our kinship with animals: Input for health care professionals interested in the human/animal bond. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 3-16). New York, NY: Academic Press.
- Fine, A. H., O'Callaghan, D., Chandler, C., Schaffer, K., Pichot, T., & Gimeno, J. (2010). Application of animal-assisted interventions in counseling settings: An overview of alternatives. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 193-222). New York, NY: Academic Press.
- Frick, M. J. (1990). A definition and the concepts of agricultural literacy: a national study. *Retrospective Theses and Dissertations*. Paper 9366.
- Friedmann, E. Son, H. & Tsai, C-C. (2010). The animal/human bond: Health and wellness. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 85-107). New York, NY: Academic Press.
- Gigliotti, C. M., & Jarrott, S. E. (2005). Effects of Horticulture Therapy on Engagement and Affect. *Canadian Journal On Aging*, 24(4), 367-377.
doi:10.1353/cja.2006.0008

- Goddard, A., & Gilmer, M. J. (2015). The Role and Impact of Animals with Pediatric Patients. *Pediatric Nursing, 41*(2), 65-71.
- Granados, A. C., & Agís, I. F. (2011). Why Children With Special Needs Feel Better with Hippotherapy Sessions: A Conceptual Review. *Journal Of Alternative & Complementary Medicine, 17*(3), 191-197. doi:10.1089/acm.2009.0229
- Granerud, A., & Eriksson, B. G. (2014). Mental health problems, recovery, and the impact of green care services: A qualitative, participant-focused approach. *Occupational Therapy In Mental Health, 30*(4), 317-336. doi:10.1080/0164212X.2014.938558
- Harmon, A. H., & Maretzki, A. N. (2006). A survey of food system knowledge, attitudes, and experiences among high school students. *Journal Of Hunger & Environmental Nutrition, 1*(1), 59. doi:10.1300/J477v01n01_05
- Hart, L. A. (2010). Positive effects of animals for psychosocially vulnerable people: A turning point for delivery. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 59-84). New York, NY: Academic Press.
- Hassinkl, J., Zwartbol, Ch., Agricola, H. J., Elings, M., & Thissen J.T.N.M. (2007). Current status and potential of care farms in the Netherlands. *NJAS- Wageningen Journal of Life Science, 55*(1), 21-36. doi:10.1016/S1573-5214(07)80002-9
- Hess, A. J., & Trexler, C. J. (2011). A qualitative study of agricultural literacy in urban youth: What do elementary students understand about the agri-food system?. *Journal Of Agricultural Education, 52*(4), 1-12.

- Horticulture. (n.d.). In *Merriam-Webster Online*. Retrieved from <http://www.merriam-webster.com/dictionary/horticulture>
- Kale, M. (1992). How some kids gain success, self-esteem with animals. *Interactions*, 10(2), 13-17.
- Kaufmann, M. (2008). Of children and animals: The story of how nature nurtures. *Green Chimneys*. (Premier Issue), 26-29.
- Kovar, K. A. & Ball, A. L. (2013). Two decades of agricultural literacy research: A synthesis of the literature. *Journal Of Agricultural Education*, 54(1), 167-178. doi:10.5032/jae.2013.01167
- Kruger, K. A., & Serpell, J. A. (2010). Animal-assisted interventions in mental health: Definitions and theoretical foundations. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 33-48). New York, NY: Academic Press.
- Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Front. Psychol.* 6:1093. doi: 10.3389/fpsyg.2015.01093
- Lin, C-H.. (2013). A review of horticultural therapy and caregiver's burden. *International Journal Of Organizational Innovation*, 5(4), 138-146.
- Mallon, G. P. (1994). Cow as Co-Therapist: Utilization of Farm Animals as Therapeutic Aides with Children in Residential Treatment. *Child & Adolescent Social Work Journal*, 11(6), 455-474.

- Mallon, G. P., Ross, Jr., S. B., Klee, S., & Ross, L. (2010). Designing and implementing animal-assisted therapy programs in health and mental health organizations. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy theoretical foundations and guidelines for practice* (3rd ed. pp. 135-148). New York, NY: Academic Press.
- Parkinson, S., Lowe, C., & Vecsey, T. (2011). The therapeutic benefits of horticulture in a mental health service. *British Journal Of Occupational Therapy*, 74(11), 525-534. doi:10.4276/030802211X13204135680901
- PATH International. (n.d.). *EAAT definitions*. Retrieved from <http://www.pathintl.org/resources-education/resources/eaat/193-eaat-definitions>
- The World Bank. (n.d.). *Population, total* Retrieved from <http://data.worldbank.org/indicator/SP.POP.TOTL>
- Sempik, J., Rickhuss, C., & Beeston, A. (2014). The effects of social and therapeutic horticulture on aspects of social behaviour. *The British Journal Of Occupational Therapy*, 77(6), 313-319. doi:10.4276/030802214X14018723138110
- Sherman, S. A., Varni, J. W., Ulrich, R. S., & Malcarne, V. L. (2005). Post-occupancy evaluation of healing gardens in a pediatric cancer center. *Landscape & Urban Planning*, 73(2/3), 167-183. doi:10.1016/j.landurbplan.2004.11.013
- Slavens, S. P. (2007). The Psychosocial Benefits of Exposure to Natural Settings in Long-term Care: An Evaluation of the Wellness Garden Program at Glacier Hills Retirement Community. *Journal Of Therapeutic Horticulture*, 1832-43.
- Ulrich, R. (1984). View through a window may influence recovery. *Science*, 224(4647), 224-225.

- Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal Of Environmental Psychology, 11*(3), 201-230. doi:10.1016/S0272-4944(05)80184-7
- U.S. Census Bureau. (March, 2011). *Population distribution and change: 2000 to 2010*. Retrieved from <http://www.census.gov/2010census/>
- U.S. Census Bureau. (2010). *2010 Census interactive population search*. Retrieved from <http://www.census.gov/2010census/popmap/ipmtext.php?fl=21>
- U.S. Department of Agriculture. (May, 2014). *Farm demographics - U.S. farmers by gender, age, race, ethnicity, and more*. Retrieved from http://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Farm_Demographics/
- Ward, S., Whalon, K., Rusnak, K., Wendell, K., & Paschall, N. (2013). The Association Between Therapeutic Horseback Riding and the Social Communication and Sensory Reactions of Children with Autism. *Journal Of Autism & Developmental Disorders, 43*(9), 2190-2198. doi:10.1007/s10803-013-1773-3
- York, M., & Wiseman, T. (2012). Gardening as an occupation: a critical review. *British Journal Of Occupational Therapy, 75*(2), 76-84. doi:10.4276/030802212X13286281651072