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Grow Where You Are Planted: The Use Of Gardening As Offender Rehabilitation In Prison

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GROW WHERE YOU ARE PLANTED: THE USE OF GARDENING AS OFFENDER REHABILITATION IN PRISONS

By

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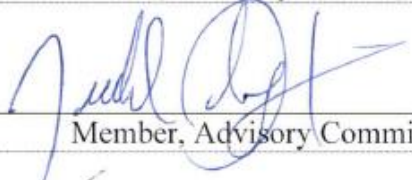

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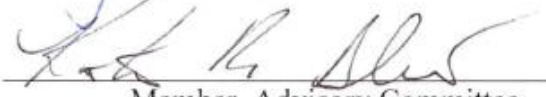

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Bachelor of Science
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DEDICATION

This thesis is dedicated to my grandfather, George S. Cooper, who instilled in me a love for nature and its great joys.

"His heritage to his children wasn't words or possessions, but an unspoken treasure, the treasure of his example as a man and a father."

You are forever in my heart.

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CHAPTER I

INTRODUCTION

It is not uncommon to hear someone tell a child to "get off the couch and go play outside" or hear an adult lament about being stuck at an indoor job on a pretty day. As someone who grew up on a working tobacco and cattle farm, I became interested in horticulture and farming from a very early age. Running barefoot outside and following my grandfather with a watering can in the garden was truly the best form of entertainment. In later years, I began to question why I thought that was the case. Why did fresh air always seem to put me in a better mood? Was it the same for others who came from different geographic areas without the same opportunities to cultivate life from soil? Psychologist and philosopher Carl Jung stated that humans need some sort of relationship with nature, asserting that rapid urbanization was preventing Americans from fostering an emotional connection with nature. Jung even stated that, "If I do not have what my psyche needs, I become dangerous" (Jung & Evans, 1977, p. 203).

Prison inmates lack consistent access to nature and outdoor spaces. While some prisons permit inmates to spend some periods of the day outside (in enclose spaces), rather than staying in their cells for twenty-three hours a day, prison yards are still not the most natural of spaces. Correctional facilities in the United States are frequently concrete and wire expanses; they are not designed to be naturally and aesthetically pleasing. Many prisons across the United States, however, have opted to devote space and time to green activities, such as horticulture programs. These programs typically last for several months and are designed to teacher those who are incarcerated a new trade or skill. But it

is possible that these programs can offer so much more: a therapeutic escape from the stresses of incarceration.

The present study examines the role of horticulture programs in decreasing symptoms related to negative mental health. It is a quantitative, exploratory study that uses the Symptom Check List 90 –Revised (SCL-90-R), a well-known and established psychological instrument, to measure symptoms of mental illness among a segment of a prison population in Kentucky. The study seeks to compare participants in a prison horticulture program with other incarcerated individuals. Because little research has been conducted on the impact of horticulture programs on offenders, this study is couched in the literature of multiple disciplines, including corrections, psychology, and occupational therapy.

This study takes place at two correctional facilities located in rural Kentucky and incorporates a variety of offenders who participate in the facilities' horticulture programs. If the results show that horticulture programs are helpful in decreasing negative mental health symptoms, then this study could serve as an impetus for future research and further implementation of horticulture as a rehabilitative option for offenders.

In Chapter II, I provide a history of agriculture in treatment and corrections. In Chapter III, I will review the literature pertaining to the health benefits of nature and outdoor spaces, define key terms such as "green exercise," and address the concerns of "greenification" of prisons. In Chapter IV, I will present the method and other details details of my research study, with the findings to follow in Chapter V. Finally, in Chapter IV, I offer a discussion of the results of the study with concluding thoughts on what they entail for future endeavors in corrections horticulture in Chapter VII.

CHAPTER II

HISTORY OF AGRICULTURE IN TREATMENT AND CORRECTIONS

The first known use of nature as a type of therapy began in ancient Egypt, when court physicians prescribed nature walks as treatment for mentally disturbed royalty (Lewis, 1976). It was not until the early 1800s, however, that the process became accepted as a more formal treatment for mental disorders (Tereshkovich, 1975; Simson & Strauss, 1997). Dr. Benjamin Rush, considered the Father of American Psychiatry by the American Psychiatric Association, recognized the benefits that nature and gardening had on those suffering from mental illness (Lewis, 1976). Friends Hospital, the first psychiatric hospital in the United States, was founded on Dr. Rush's principles of respect, kindness, and moral treatment of patients under their care; it was also the first hospital to install a greenhouse for therapeutic purposes in 1879 (Lewis, 1976).

Within corrections, horticultural therapy holds a quite different, sordid history. The Mississippi State Penitentiary, also known as Parchman Farm, was founded in 1901. With an inmate population more than 70% black and cotton as its main cash crop, this prison farm shared several characteristics with an antebellum plantation. Other than field labor, there were quite a few other work "opportunities" on the property, including a slaughterhouse, saw mill, and brick yard (Oshinsky, 1996).

To be clear, Parchman Farm was not intended to reform prisoners; its sole purpose was to make money, and the incapacitation of inmates in the meantime was an added bonus. In 1905, Parchman turned a profit of $185,000 for the state of Mississippi—the

equivalent of $4.8 million in 2017—all made off the backs of inmates and their forced, hard labor (Oshinsky, 1996).

While the inmates provided the state with revenue, treatment and living conditions at Parchman Farm were appalling, at best. Inmates were regularly beaten, assaulted, raped, and sometimes murdered. Due to the high inmate-to-guard ratio, prisoners were forced to guard themselves through use of the "trusty system," wherein certain inmates were given guns and given free reign over the others. The prison did not experience reform until 1970 when the state stepped in as a response to rights violations and extremely unsanitary conditions at the prison. At this time, they shut down the farm work, but replaced it with nothing for the inmates (Oshinsky, 1996).

As a consequence, inmates who were used to working hard labor jobs, sun-up to sun-down, were left indoors with nothing to do. Inmate-on-inmate assaults rose drastically in the following years, with Parchman emergency room treating over 2,300 cases of assault in 1990— more than the actual total inmate population. Oshinsky (1996) writes that, "In an odd way, the federal court had shifted the balance of terror from the keepers to the inmates" (p. 250). Horace Carter, a prisoner at Parchman for nearly fifty years, commented on the "new" prison with a bit of sadness: "What is missing today is the feeling that work counted for something… It kept us tired, kept us together, and made me feel better inside. I'm not looking to go backwards. I know the troubles at old Parchman better than any man alive. I'm 73 years old. But I look around today and see a place that makes me sad" (Oshinsky, 1996, p. 255). By eliminating the farm aspect of Parchman Farm, the Mississippi government eliminated unsafe working conditions, and put an end to using prisoners' hard labor to turn a profit. But it also eliminated

purposeful, constructive, outdoor work that inmates were able to take pride in and to some extent enjoy. The work may have been somewhat enjoyable or otherwise constructive due to the time that the men were able to spend outdoors instead of inside prison walls all day; this is particularly true when one considers the conditions in which they were living. Throughout their time at Parchman, many individuals were exposed to deplorable conditions and unfair treatment. However, the outdoors and the work which they performed there may have provided them with a bit of relief. There is quite a bit of research that promotes the physical and psychological benefits of being outdoors and otherwise interacting with nature which I will discuss next.

CHAPTER III

LITERATURE REVIEW

Health benefits of interacting with nature

There are several studies spanning across disciplines that suggest that interacting with nature by being outdoors, taking nature walks, or gardening and caring for plants can provide demonstrable physical and psychological health benefits. Aside from the general benefits associated with exercise, outdoor activities have been associated with decrease in depression; general lifted mood, particularly after a stressful life event; decreased risk of poor mental health (Marselle, Irvine, & Warber, 2014); improved mental focus (Bergman, Jonides, & Kaplan, 2008); increased creativity (Oppezzo & Scwartz, 2014); and improved self-esteem (Jiler, 2006).

Such health benefits have been observed in several different populations. Moore (1982) suggests that, within a prison setting, simply being able to *view* nature can improve physical and mental well-being. McGuire (1997) notes that patients in a geriatric long-term care facility may exhibit improvements on a number of different social and emotional scales. Richards and Kafami (1999) find that gardening can have a positive impact on those addicted to illicit substances, as their participants showed a decrease in vulnerability factors. In addition, Diamant and Waterhouse (2010) speak of the usefulness of social and therapeutic horticulture in an occupational therapy setting. Their participants, who had a variety of physical, mental, and learning disabilities, experienced quite a few social and emotional improvements as a direct result of the garden program.

Prisoners may share similarities with the geriatric population addressed in McGuire (1997) in a couple of ways. Nursing homes are often places whereby residents face restrictions with respect to where and when they can move freely about the building. In addition, they are not allowed to leave the facility whenever they want, and they may encounter restrictions with respect to outside visitors. Prisoners endure the same challenges, albeit some without the physical issues that surround the aging process, and thus may experience the same benefits of a gardening program in that regard.

While most of these studies do not focus specifically on prisoners, the results may be extended to the incarcerated population. Diamant and Waterhouse (2010) state that those with mental and physical disabilities do not have equal opportunity in society with regard to employment, housing, and education, and leisure. An argument could be made that people who are or have been incarcerated face the same issues, both while they are in prison and after their release; depending on the crime they committed, the stigmas and consequences of criminality may follow them for the rest of their lives, comparable to the stigmas that may surround those with disabilities. Ex-offenders face employment barriers upon re-entry into the community despite serving their time and purportedly "paying off their debt to society." In most states, public and private business may inquire about an individual's criminal record and use that information in making employment decisions, regardless of the type of crime the individual committed and its relationship (or lack thereof) to the employment. Furthermore, states can specifically bar ex-offenders from certain occupations that require licensure, including barbering, plumbing, real estate, funeral services, nursing, and education (Brisman, 2004; Brisman, 2007; Alexander, 2012; Laird, 2013; Hickox, 2016).

Definition of Green Care

Research has found that an individual's level of engagement with nature has an effect on the extent to which the individual sees improvements in his or her mental and physical functioning. Pretty and colleagues (2005) have identified three levels of engagement with nature. The first level is simply viewing of nature, either through a window or as depicted in a painting. It does not include any physical interaction with nature. Inmates may experience this level of engagement daily through windows in their living quarters or paintings/posters in communal areas.

The second level is exposure to nearby nature during another, non-nature based activity (Pretty et al., 2005). For instance, a study of Chicago revealed that areas with more surrounding vegetation were associated with significantly lower property and violent crimes than areas with very little vegetation. Thus, areas with higher crime rates experienced less exposure to nature in day-to-day activities (Kuo & Sullivan, 2001). It is important to note, however, that increasing vegetation in an area may come with its own risks. Crime Prevention Through Environmental Design (CPTED) is an approach that focuses on designing physical, built environments to reduce or deter crime. While CPTED adherents encourage *some* landscaping in order to demonstrate that the area is safe and that residents cared about their surroundings, they warn against large or overgrown plants. Improper maintenance of vegetation can obscure views of a property, making it easier for crime to occur away from the eyes of the public or law enforcement ("Crime Prevention Through Environmental Design," 2015).

The third and final level of engagement with nature is termed "green exercise." This level involves directly enjoying nature through physical exercise or activities, such

as a nature walk, and is associated with the most pronounced positive changes in self-esteem and mood (Barton & Pretty, 2010; Pretty, et al., 2013).

A branch of green exercise, "green care" is a term that encompasses all nature-based therapies and can occur on a self-help or formal therapy level. It includes direct contact with nature through physical activities, but also incorporates the psychological aspect of a therapeutic model. Green care includes many different types of therapy, the most common of which are care farming, animal-assisted therapy, wilderness adventure therapy, and horticulture therapy (Sempik, 2010), which are all examples of green exercise (Pretty, Wood, Bragg, & Barton, 2013). These activities will be defined and described individually

"Care farming," also called "social farming," "farming for health," or "green care farming," is the therapeutic use of farming practices, and has been implemented for a variety of vulnerable populations across several disciplines. It has been used for occupational therapy patients, those with mental health issues, those battling addictions, as well as both victims and offenders of crime. Studies show that care farming provides positive physical, mental, and social health outcomes for these populations (Pretty et al., 2005; Hineet al., 2008; Pretty, et al., 2013; Leck, et al., 2015). While it is relatively common method in Europe, there are relatively few "care farms" located in the United States. Here, the typical care farm is a working ranch devoted to "troubled or broken" adolescents, with a smattering of farms devoted to victim care. Relf (2006) cites the issue of liability as the reason care farms have not taken root in the United States. Care farming is most likely to be a small, family-run business, operated off of the family's own farm. Opening that farm to the business of care farming means the family now has to pay

a potentially large sum in liability insurance, and/or exposes the family to the risk of being sued. Care farming in the United States is quite literally "betting the farm" that the venture will succeed.

"Animal-assisted therapy" uses human-animal interactions to establish the potential for therapeutic paths to the subject. Again, this is a therapeutic method that has been studied across multiple disciplines and with a variety of populations and demographics. Many different types of animals have been used, the most common of which have been various breeds of dogs; livestock animals, such as horses, are also fairly commonplace (Furst, 2006). Animal-assisted therapy has been utilized for many different illnesses, ranging from blindness to chemical addiction, as well as mental health disorders and issues associated with the aging process (Beck & Katcher, 1996; Arkow, 1998; Furst, 2006). It has also been implemented in different prisons across the United States; however, prison animal programs do have a different dynamic than the typical therapeutic approach. The animal is not present solely for therapy purposes, and the presence of the animal is not just an avenue or tool towards clinical counseling methods. Instead, inmates interact with and train the animal, sometimes to be adopted by someone else, and the program often is not accompanied by formal therapeutic methods. Even so, the opportunity to care for a dependent animal provides inmates with a sense of responsibility and the ability to form an empathetic connection with another being (Furst, 2006).

"Wilderness adventure therapy," otherwise known as just "wilderness therapy," is a therapeutic technique most commonly used with youth-at-risk. It removes juveniles from daily negative influences and places them in a safe, outdoor environment (Peacock,

Hine, & Pretty, 2008). Activities of wilderness therapy can be likened to a summer camp, and include various team-building exercises, as well as technical skills, such as outdoor cooking and building fires. Beyond that, though, wilderness therapy is associated with many positive outcomes for mental and social health, such as improvements in self-esteem, self-awareness, self-confidence, communication, cooperation, and decreases in anxiety and tension (Peacock et al. 2008; Pretty et al., 2013; Barton et al., 2010).

"Horticulture therapy" is defined as "a process that uses plant-related activities through which participants strive to improve their well-being through active or passive involvement" (GrowthPoint, 1999, p. 4). Often, the lessons learned in the garden or greenhouse are accompanied by clinical therapy and/or counseling that relate the participant's life to that of the plant. For instance, there are some horticulture therapy programs devoted specifically to those battling drug addictions. In the program studied by Richards and Kafami (1999), the body of the addict is compared to the plant, and organic, chemical-free gardening methods are employed as an example for how one should treat one's physical self. Thomas (2014) discusses programs which further use the plants as metaphors for the participants' lives: "I especially liked the lesson imparted by a demonstration that some plants fail when trying to thrive on their own, in contrast to a group of plants that were supported by stakes that bound them together for mutual support" (p. 155). In short, participants in horticulture therapy learn skills related to gardening while also engaging in therapeutic exercises and discussion.

Greenification of prisons

The construction of new correctional complexes has received quite a bit of backlash for their impact on the environment as well as the impact that the environment has on the inmates; there has also been criticism directed at prison "sustainability" practices (Piché, Kleuskens, & Walby, 2017). Prisons are often built in rural areas; considering the fact that a prison is basically its own city tucked into one vast, concrete expanse, it is not a stretch to see how they disrupt the landscape and ecology of a rural area. For instance, a proposed prison in Letcher County, Kentucky, has met with biting opposition from both anti-prison and environmental activists. The proposed site occupies nearly 700 acres on top of a mountaintop removal strip mine, approximately three miles away from the Lilley Cornett Woods. These woods are home to over 530 species of flowering plants and an endangered species of bat. Not only would the prison be potentially toxic to these woods, with its extensive construction and utility/waste management facilities, but the proposed site could be dangerous to those imprisoned there, as well. The coal mines in the area have poisoned the water, making it unsafe for locals and those downstream. Thus, it is an unsafe building site for any inmates and staff of this proposed prison (Washington, 2016).

Letcher County, Kentucky, is not the only prison bringing environmental and human rights' concerns. Rikers Island, New York, is built atop a landfill and close to power plants, exposing its occupants to a number of pollutants (Washington, 2016). In California, new prisons have met opposition on the grounds that they would consume electricity and water that are already in danger of scarcity in the area (Braz & Gilmore, 2006; Piché et al., 2016). The United States Department of Justice (DOJ) has responded

to the environmental concerns by proposing new, "green" prisons, characterized by sustainable infrastructure, policies, and programs. The DOJ's "Strategic Sustainability Performance Plan" (2010), which pertains to environmental sustainability in federal correctional facilities, hopes to achieve zero-net energy for all new federal buildings by the year 2030, and reductions of energy, water, and material consumption for all existing buildings. Concurrently, an increase in the implementation of "green" activities for inmates has been made in an attempt to provide inmates with employable skills, thus reducing recidivism (Moran & Jewkes, 2014). This has been met with some criticism, however, which I will address further in the Discussion section.

CHAPTER IV

METHOD

Horticulture program description

The two horticulture programs examined in this study were located in medium security prisons in rural Kentucky. They were remarkably similar in their administration. Both programs lasted for a duration of ten months, and students attended the program instruction at least five days per week for several hours per day. There were people present in the greenhouse every day, however, to water and care for the plants. There was a combination of classroom and hands-on learning applied. Students typically spent half of their day in the classroom learning proper names for plants and different methods of caring for them. This classroom knowledge was then demonstrated and tested in the greenhouse in the latter part of the day. It is treated much like a typical school environment, with paper tests and a teacher, who is trained in the material, that lectures from a book. Students are given the opportunity to become certified in different horticulture-related areas such as chemical spraying. Finally, when the students successfully complete the horticulture program, they are given a certificate of achievement from the prison and a small amount of money on their commissary. In many cases, completing educational programs also helps the student earn time off of his sentence.

Procedure

Institutional Review Board approval from Eastern Kentucky University was obtained for the current study, as well as necessary approval from the Kentucky

Department of Corrections. While the original intent of this study was to perform a true pre- and post-test experiment, time restraints made that difficult. Instead, horticulture participants were surveyed twice at two different points in time: July 2016 and January 2017 ("administration one" and "administration two," respectively). The comparison group was surveyed at one point in time, which was during administration two.

The test administration began with the informed consent forms. The participants were provided with two copies of the researcher's form, one of which they were instructed to keep, and given an opportunity for questions. The participants were then provided with their demographic sheets and surveys, which took approximately fifteen to thirty minutes to complete. When the participants handed in their materials, the demographic sheet and survey were both assigned the same participant number in order to match them later. These forms were then stored separately.

The facilities were chosen for their use of horticulture programs. All members of the horticulture programs in these prisons were invited to participate in this research study. The comparison group was chosen by the deputy warden at Facility B, who reviewed inmate records and identified those who were not, at that time, enrolled in an educational or rehabilitation program. She then compiled a list of these inmates and asked them to participate until she received twenty volunteers.

Measures and materials

The scale that was used at both administration points is known as the Symptom Check List 90 Revised (SCL-90-R) (see Appendix A), which is often employed to assess treatment outcomes. The SCL-90-R is a well-known and established psychological assessment that measures a broad range of psychological problems. The ten scales that it

measures are the following: Somatization; Obsessive-Compulsive; Interpersonal Sensitivity; Depression; Anxiety; Hostility; Phobic Anxiety; Paranoid Ideation; Psychoticism; and Additional Items (Derogatis & Unger, 1977). These scales would be the dependent variables in this study, with the implementation of the garden programs being the independent variable. The scales are made up of ninety individual questions/symptoms, which the participants rate on a scale of zero to four, with zero being "'Not at All' bothered by this symptom within the last week" and four being "'Extremely' bothered by this symptom within the last week." We will be able to examine scale averages as well as individual questions and symptoms outside of their inclusion in their respective scale. See Table 1: Survey Scales for information pertaining to which questions were included under which scales.

Additional materials beyond the actual survey included a demographic sheet provided to the participants which asked them to provide their age, race, education level, and whether or not they were a repeat offender (see Appendix B). Participants were provided with an informed consent form prepared by the researcher (see Appendix C), as well as a consent form prepared by the correctional facility (see Appendix D).

Statistics

The data were entered into IBM Statistical Analysis Software Package (SPSS) for analysis. Statistics that were performed on the data included descriptive statistics, correlations, independent samples T-test, paired-samples T-test, and ANOVA. Statistical significance was determined by a p value of less than or equal to .05 (95% confidence interval).

Scales and scale definitions

The following is a breakdown of the scales on the SCL-90-R. The numbers indicate what number that item was on the survey, to show that individual scales were not grouped together on the survey.

Table 1: Survey Scales

Somatization	***Obsessive Compulsive***	***Interpersonal Sensitivity***
1. Headaches 4. Faintness or dizziness 12. Pains in heart or chest 27. Pains in lower back 40. Nausea or upset stomach 42. Soreness of your muscles 48. Trouble getting your breath 49. Hot or cold spells 52. Numbness or tingling in parts of your body 53. A lump in your throat 56. Feeling weak in parts of your body 58. Heavy feelings in your arms or legs	3. Repeated or unpleasant thoughts that won't leave your mind 9. Trouble remembering things 10. Worried about sloppiness or carelessness 28. Feeling blocked in getting things done 38. Having to do things very slowly to insure correctness 45. Having to check and double-check what you do 46. Difficulty making decisions 51. Your mind going blank 55. Trouble concentrating 65. Having to repeat the same actions such as touching, counting, or washing	6. Feeling critical of others 21. Feeling shy or uneasy with the opposite sex 34. Your feelings being easily hurt 36. Feeling others do not understand you or are unsympathetic 37. Feeling that people are unfriendly or dislike you 41. Feeling inferior to others 61. Feeling uneasy when people are watching or talking about you 69. Feeling very self-conscious with others 73. Feeling uncomfortable about eating or drinking in public
Depression	***Anxiety***	***Hostility***
5. Loss of sexual interest or pleasure 14. Feeling low in energy or slowed down 15. Thoughts of ending your life 20. Crying easily 22. Feelings of being trapped or caught 26. Blaming yourself for things 29. Feeling lonely 30. Feeling blue 31. Worrying too much about things 32. Feeling no interest in things 54. Feeling hopeless about the future 71. Feeling everything is an effort 79. Feelings of worthlessness	2. Nervousness or shakiness inside 17. Trembling 23. Suddenly scared for no reason 33. Feeling fearful 39. Heart pounding or racing 57. Feeling tense or keyed up 72. Spells of terror or panic 78. Feeling so restless you couldn't sit still 80. The feeling that something bad is going to happen to you 86. Thoughts and images of a frightening nature	11. Feeling easily annoyed or irritated 24. Temper outbursts that you could not control 63. Having urges to beat, injure, or harm someone 67. Having urges to break or smash things 74. Getting into frequent arguments 81. Shouting or throwing things

Table 1: Survey Scales (continued)

Phobic Anxiety	***Paranoid Ideation***	***Psychoticism***
13. Feeling afraid in open spaces or on the streets 25. Feeling afraid to go out of your house alone 47. Feeling afraid to travel on buses, subways, or trains 50. Having to avoid certain things, places, or activities because they frighten you 70. Feeling uneasy in crowds, such as shopping or at a movie 75. Feeling nervous when you are left alone 82. Feeling afraid you will faint in public	8. Feeling others are to blame for most of your troubles 18. Feeling that most people cannot be trusted 43. Feeling that you are watched or talked about by others 68. Having ideas or beliefs that others do not share 76. Others not giving you proper credit for your achievements 83. Feeling that people will take advantage of you if you let them	7. The idea that someone else can control your thoughts 16. Hearing voices that other people do not hear 35. Other people being aware of your private thoughts 62. Having thoughts that are not your own 77. Feeling lonely even when you are with people 84. Having thoughts about sex that bother you a lot 85. The idea that you should be punished for your sins 87. The idea that something serious is wrong with your body 88. Never feeling close to another person 90. The idea that something is wrong with your mind

The following are the SCL-90-R scale definitions as set forth by Derogatis and Unger (1977):

Somatization: This measure reflects distress arising from perceptions of bodily dysfunction. Complaints focus on cardiovascular, gastrointestinal, respiratory, neurological, and other systems with strong autonomic mediation.

Obsessive-Compulsive: This measure focuses on thoughts, impulses, and actions that are experienced as irresistible and unremitting and that are of an ego-alien or unwanted nature.

Interpersonal Sensitivity: This measure focuses on feelings of inadequacy and inferiority, particularly in comparison to other people. Self-deprecation, self-doubt and marked discomfort during interpersonal interactions are characteristic manifestations of this syndrome. Self-consciousness and negative expectations about interpersonal relations are hallmark features of I-S.

Depression: This measure reflects a representative range of the manifestations of clinical depression. It comprises symptoms of dysphoric mood and affect, signs of withdrawal of life interest, lack of motivation and loss of vital energy. Feelings of hopelessness, thoughts of suicide and other cognitive and somatic correlates of clinical depression are included in this measure.

Anxiety: This measure attempts to discern general signs of anxiety such as nervousness, tension and trembling are included in the domain definition, as are feelings of apprehension, dread, terror and panic. In addition, some somatic manifestations of anxiety are also reflected in the domain.

Hostility: This measure includes thoughts, feelings, and actions that are characteristic of the negative affect state of anger. Items reflect all three modalities of expression, and demonstrate qualities such as resentment, irritability, aggression and rage.

Phobic Anxiety: This measure defines the syndrome as a persistent fear response to a specific person, place, object or situation, which is disproportionate to any actual threat, and leads to avoidance or escape behavior.

Paranoid Ideation: This measure represents paranoid behavior as fundamentally a disordered mode of thinking. The items comprising Paranoid Ideation reflect the cardinal clinical features of projective thought, hostility, grandiosity, suspiciousness, centrality, and fear of loss of autonomy.

Psychoticism: This measure is designed to represent the construct as a continuous dimension, from a withdrawn isolated lifestyle at one pole to demonstrable psychotic behavior at the other. The measure attempts to reflect a graduated continuum from mild social alienation to first-rank symptoms of psychosis.

Participants and demographics

This is an exploratory study that focuses on current prisoners who participate in horticultural programs in two medium-security, male facilities in Kentucky, located on the eastern and western ends of the state. A total of sixty-three separate surveys were administered in this study, though this does not necessarily mean that there were sixty-three separate participants. Some inmates took the survey twice: Once during administration one (July 2016) and once during administration two (January 2017). Due to the dynamic nature of the prison population and rehabilitation programs, it was not possible to survey exactly the same inmates during both administrations. Some inmates were released in the interim between tests, and others were simply unable to participate

on the day of administration two. Individuals voluntarily participated in this research study and were not compensated for their participation.

Demographics for combined data

Participants from both facilities ranged in age from 20 to 58 years, with the median age being 39. The majority of participants were white (n=36; 58.1%). The most common level of education achieved was a high school diploma or GED. The median sentence length was 15 years; the mean sentence length was 23.79 years. Please note that for those serving a life term, a sentence length of one-hundred years was used, which may skew the average sentence length.

The deputy warden was asked to help create a comparison group of inmates that were not, at that time, enrolled in any rehabilitative programs within the prison. The comparison group consisted of 17 participants, and they were surveyed once. The average member of the comparison group was white (70.6%), and the average age of the comparison group was 42.47 years. Only one prison, Facility B, was able to provide a comparison group. Facility A did not have inmates that met specifications of not being enrolled in a rehabilitative or educational program, thus it was unable to provide a comparison group for this study.

The remaining surveys (n=45; 72.6% of total participants) belonged to the experimental groups. Please see Tables 2 through 4 for more information.

Table 2: Age and Length of Sentence Statistics for Combined Data

		Age	Length of current sentence
N	Valid	62	61
	Missing	0	1
Mean		38.87	23.7869
Median		39.00	15.0000
Mode		53	10.00

Table 3: Race Statistics for Combined Data

	Frequency	Percent	Valid Percent	Cumulative Percent
White	36	58.1	58.1	58.1
Nonwhite	26	41.9	41.9	100.0
Total	62	100.0	100.0	

Table 4: Experimental and Comparison Group Statistics for Combined Data

	Frequency	Percent	Valid Percent	Cumulative Percent
Experimental	45	72.6	72.6	72.6
Comparison	17	27.4	27.4	100.0
Total	62	100.0	100.0	

Demographics for Facility A

Participants at Facility A ranged in age from twenty-two to forty-eight years, with the median age being thirty-two. The majority of participants were non-white (n=14; 70%). The most common level of education achieved was a high school diploma or equivalent (n=12; 60%). Again, the median sentence length was 15 years; the average sentence length was 15.55 years. There were no participants serving a life sentence in our data sample from Facility A. The majority of participants at Facility A indicated that they were first-time offenders (65%).

Please see Table 5 and Figures 1 through 2 for more information on demographics for Facility A.

Table 5: Age and Length of Sentence Statistics for Facility A

	Age	Length of current sentence
Mean	33.45	15.5500
Median	32.00	15.0000
Mode	23[a]	20.00

a. Multiple modes exist. The smallest value is shown

Figure 1: Race Chart for Facility A

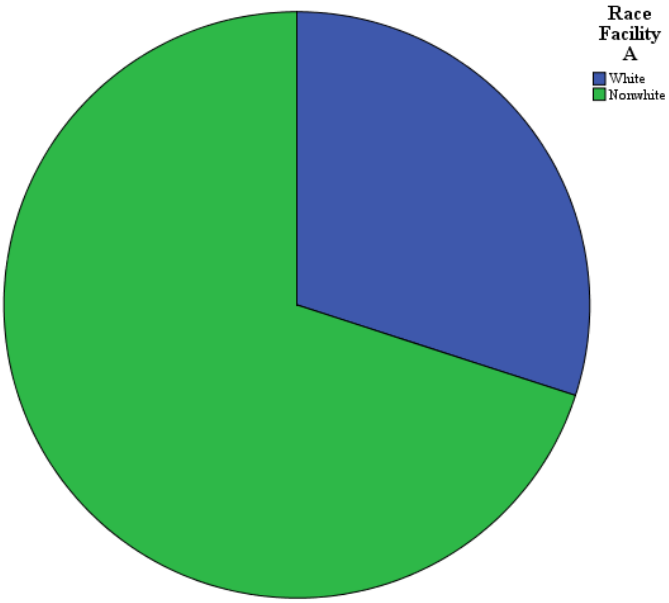
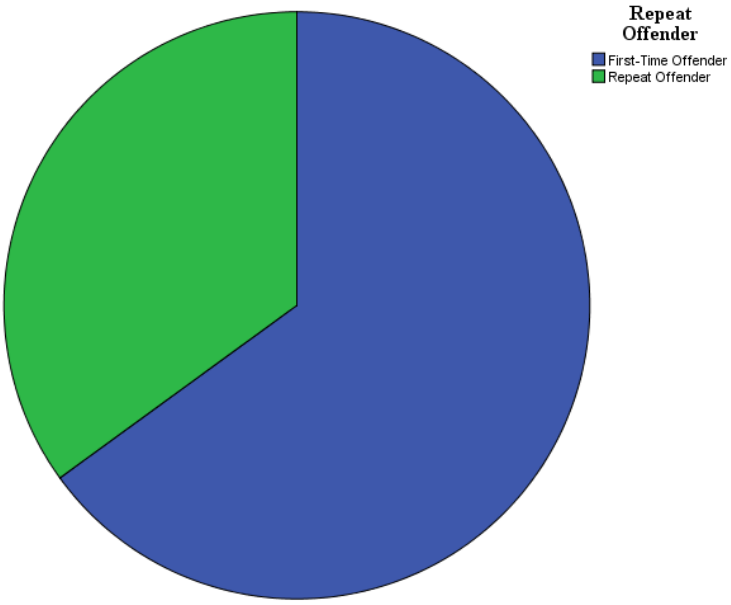


Figure 2: Repeat Offender Data for Facility A



Demographics for Facility B

Participants at Facility B range in age from 20 to 58 years, with 40.5 being the median age. The majority of participants were white (n=30; 71.4%). The most common level of education achieved was a high school diploma or equivalent (n=19; 45.2%). The median sentence length was 13 years; the average sentence length was 27.80 years. There were five participants serving a life sentence in our sample from Facility B, which skewed the mean sentence length. The majority of offenders at Facility B indicated that they were repeat offenders (n=31; 73.8%). Please note that these demographics include our comparison group members.

Please see Tables 6 and 7 as well as Figures 3 and 4 for more information on demographics for Facility B.

Table 6: Age and Length of Sentence Statistics for Facility B

	Age	Length of current sentence
Mean	41.45	27.8049
Median	40.50	13.0000
Mode	53	10.00

Figure 3: Race Chart for Facility B

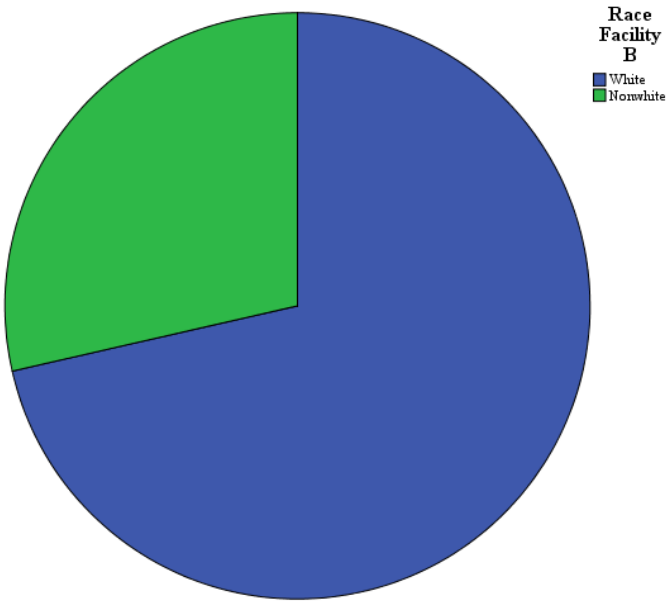
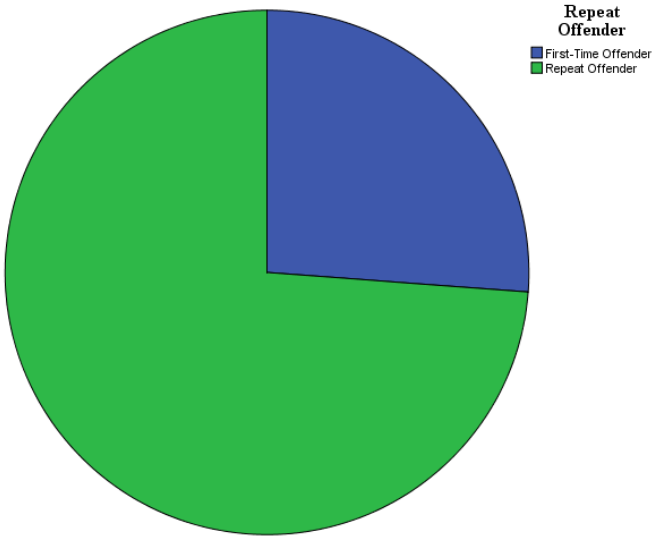


Table 7: Experimental and Comparison Group Statistics for Facility A

	Frequency	Percent	Valid Percent	Cumulative Percent
Experimental	25	59.5	59.5	59.5
Comparison	17	40.5	40.5	100.0
Total	42	100.0	100.0	

Figure 4: Repeat Offender Data for Facility B



CHAPTER V

RESULTS

This study explores the therapeutic impact of horticulture programs in prisons on inmates and their role in decreasing negative emotionality. Facility A and B were examined separately due to the fact that Facility A did not have a comparison group and thus needed different statistical tests. Combined results and general conclusions will also be offered.

Because the survey items were rated on a Likert scale of zero (Not at All) to four (Extremely), means that are lower are considered more favorable.

Facility A

Because Facility A did not have a comparison group, efforts were made to match cases from the pre- and post-test for comparison. A total of five cases were matched and compared across all ten scales through use of a Paired Sample T-Test. While there were no statistically significant differences found, the post-test cases displayed lower, more favorable means on all but two scales: Obsessive-Compulsive and Additional Items. Means were the same for both pre- and post-test groups on one scale: Phobic Anxiety. Please see Table 8 for Paired Samples Statistics.

Table 8: Paired Samples Statistics for Facility A

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Somaticism 1	.2833	5	.29226	.13070
	Somaticism 2	.2333	5	.32489	.14530
Pair 2	Obsessive Compulsive 1	.2250	4	.17078	.08539
	Obsessive Compulsive 2	.3750	4	.30957	.15478
Pair 3	Interpersonal Sensitivity 1	.4889	5	.75605	.33811
	Interpersonal Sensitivity 2	.2889	5	.41276	.18459
Pair 4	Depression 1	.7115	4	.59044	.29522
	Depression 2	.5000	4	.60406	.30203
Pair 5	Anxiety 1	.2800	5	.51672	.23108
	Anxiety 2	.1800	5	.24900	.11136
Pair 6	Hostility 1	.3333	5	.33333	.14907
	Hostility 2	.2667	5	.25276	.11304
Pair 7	Phobic Anxiety 1	.0857	5	.12778	.05714
	Phobic Anxiety 2	.0857	5	.12778	.05714
Pair 8	Paranoia 1	1.0833	4	.50000	.25000
	Paranoia 2	.5417	4	.41667	.20833
Pair 9	Psychoticism 1	.2000	5	.28284	.12649
	Psychoticism 2	.1000	5	.22361	.10000
Pair 10	Additional Items 1	.5429	5	.50910	.22768
	Additional Items 2	.7429	5	.81691	.36533

Facility B

An independent sample T-test was performed on data from Facility B for comparison between experimental (n=12) and comparison groups (n=17). There were no statistically significant differences found between the experimental and comparison groups for this facility. The experimental group did, however, display slightly more

favorable means on six scales: Somaticism, Depression, Hostility, Paranoia, Psychoticism, and Additional Items. The comparison group scored more favorably on two scales: Anxiety and Phobic Anxiety. The comparison and experimental group scored the same (less than 0.10 difference) on two scales: Obsessive-Compulsive and Interpersonal Sensitivity.

Additionally, Independent samples T-tests were performed on data from both Facility B groups based on race. There were several statistical significances noted among the two categories of race. Whites (n=21) consistently scored less favorably on every scale than did non-whites (n=9), and statistical significance was achieved for four of these scales: Somaticism, Interpersonal Sensitivity, Depression, and Anxiety. The mean differences approached statistical significance, but did not quite achieve it, for two scales: Obsessive-Compulsive and Phobic Anxiety.

Mean scores for participants from Facility B were also examined with regard to repeat offenders. Independent samples T-tests showed no statistical significances were found between repeat (n=24) and first-time (n=6) offenders. Repeat offenders did score less favorably on nearly every scale; first-time offenders scored less favorably on two scales: Anxiety and Phobic Anxiety. The very small sample size for first time offenders, however, could easily have influenced these results.

A One-Way ANOVA was used to examine potential mean differences across education levels. No statistical differences were found between education levels, although the group of three participants with college degrees or higher scored more favorably on every scale. Again, it is important to note that only very large differences produce in statistically significant results when dealing with small sample sizes sresult

Pearson correlations were generated to explore relationships among the interval independent variables and the scales. There were several significant correlations between scales and the demographic factors of age and sentence length. There was a significant ($p \leq .01$) positive correlation ($r=0.544$) noted between age and length of sentence. In addition, there was a significant ($p \leq .05$) negative correlation ($r=-0.377$) between age and Hostility. See Appendix E for a full list of statistically significant correlations between scales for Facility B.

Combined Data (Facility A and B)

Independent-samples T-tests were performed using only the data from Facility A's administration two (n=9) combined with all of the data from Facility B (n=28). Means were compared between the experimental group (n=22) and comparison group (n=17). No statistically significant differences were noted in this comparison. Once again, however, the experimental group did consistently score more favorably than did the comparison group. This was true for nearly every scale, with the exception of one. The comparison group scored more favorably on the Phobic Anxiety scale than did the experimental group.

Repeat offenders (n=38) were also examined within the combined data. As demonstrated in previous data, first-time offenders (n=24) scored more favorably on nearly every scale with the exception of one. Phobic Anxiety produced the same scores for first-time and repeat offenders within 0.01 of each other. There were three scales here that approached statistical significance: Obsessive-Compulsive, Psychoticism, and Depression. There was one scale that was significant at the $p \leq 05$ level, which was Additional Items.

The race variable yielded several statistically significant differences for combined data. In fact, there were only three scales that were not statistically significant with regard to race: Hostility, Paranoia, and Additional Items. Hostility and Paranoia, however, still approached significance. Non-whites (n=14) consistently scored more favorably on all of the scales than did whites (n=25).

The experimental group for Facility A (n=9) seemed to have lower, more favorable means than either the experimental group from Facility B (n=13) or the comparison group (n=17). This was true for seven total scales: Obsessive-Compulsive; Interpersonal Sensitivity; Depression; Anxiety; Hostility; Phobic Anxiety; and Psychoticism. The experimental group from Facility B had overall most favorable means on three scales: Somaticism, Paranoia, and Additional Items. The comparison group was not most favorable in any scale, although they were above Facility B on two occasions: Anxiety and Phobic Anxiety.

Finally, Pearson correlations were produced among the scales using data from both facilities (experimental groups only). Age and hostility were, again, negatively correlated at a level that approached statistical significance. There were several correlations noted that were statistically significant at the $p<0.01$ level; in fact, nearly every scale was significantly correlated with every other scale. See Appendix F for a full list of statistically significant correlations between scales for combined facility data.

CHAPTER VI

DISCUSSION

The overall findings of this study indicate that there are no statistically significant differences in negative mental health for inmates enrolled in a horticulture program versus those who were not. Despite the insignificant statistical analyses, results are somewhat consistent with the literature noted earlier in this paper. The participants included in the experimental groups consistently had more favorable means on a majority of mental health scales included in the survey. It is important to note that the small sample size of this study could have influenced results in either direction, and that the small sample size could have influenced the lack of statistical significance.

The one scale that the experimental group scored less favorably on in the combined data was Phobic Anxiety. By definition, Phobic Anxiety is a fear response to a specific person, place, or situation that may lead the individual to engage in avoidance behavior (Derogatis, 1977**)**. This scale was also noted in paired sample tests for Facility A as remaining constant and unchanged throughout the pre- and post-test groups, and again for first-time offenders from Facility B.

It was rather interesting that the combined data for the experimental groups showed an increase in means on this particular scale given their current incarceration. There are a few possible explanations for this. With first-time offenders, this increase in Phobic Anxiety could be attributed to their exposure to an unfamiliar environment and new sets of social rules during the course of their first incarceration. (Similar means on Phobic Anxiety were noted for repeat and first-time offenders in combined data, as well

as Facility A; first-time offender scores were elevated for Facility B.) Possible explanations are not as clear-cut for the horticulture program groups, however. The increased levels of Phobic Anxiety could, perhaps, suggest that those included in the horticulture groups responded differently to their incarceration than did the control group, though it is not possible to say with any certainty. In addition, it could mean that the horticulture program did not serve as an outlet or escape for the anxiety caused by the prison environment. Finally, the elevated levels of Phobic Anxiety in the horticulture participants may be due to the decrease in other negative symptoms, "freeing up" emotions and other mental resources to examine their current environment. This seems unlikely, however, due to the unchanging nature of Phobic Anxiety levels in the paired-samples test from Facility A while prevalence of other symptoms decreased.

Previous research suggests comorbidity/overlap in primary care among symptoms of depression, anxiety, and somatization (Lowe, et al. 2008). The present study does support these findings, though it suggests that there may be comorbidity among other scale symptoms, at least for the current prison demographic. Pearson correlations run on combined data for the scales suggest a statistically significant correlation among nearly all of the scales included in the SCL-90-R. In addition, age and hostility were negatively correlated at a nearly statistically significant level. This data supports other research that suggests a decrease in hostility levels (or "mellowing out") as one ages (Shallcross, et al. 2012).

Repeat offenders examined within the combined data yielded higher scale means than first-time offenders. Three scales approached statistically significant higher means: Obsessive-Compulsive, Psychoticism, and Depression. The Additional Items scale was

found to be statistically significant. These results are not necessarily surprising. It is well documented that those with mental health issues or symptoms are more much more likely to become involved in the criminal justice system—an issue to which I return below.

It is interesting that a survey of negative mental health symptoms includes symptoms which society expects or even wants offenders to feel. Emotions such as guilt, anxiety, paranoia, fear, worries about the future, and so on are all feelings that offenders are expected or even encouraged in some ways to experience, often for prolonged periods of time. If the offender no longer experiences intense guilt for the crime that he/she committed ten years ago, then he/she is looked down upon or seen as "psychopathic." Instead of treating incarceration itself as the punishment, society wants offenders to suffer further while they are there, such as by feeling as if they cannot make connections with others inside or outside prison walls or experiencing fear and anxiety about possible attacks by guards or other prisoners. These are all questions/symptoms on a scale measuring mental illness. It is somewhat disheartening to think that our current system of punishment is only seen as "effective" if it emulates the symptoms of a mental illness.

That being said, individuals who are incarcerated may already have mental health issues that are exacerbated by the prison environment. There is quite a bit of research on mental health issues in corrections settings. Correctional facilities, including both jails and prisons, have a much higher prevalence rate than the general population. According to the National Institute of Mental Health (2015), approximately 17.9 percent of American adults experience a mental illness within a given year (excluding drug and alcohol related disorders). In contrast, however, mental illness prevalence rates range

from 44.8 percent in federal prisons to 64.2 percent in local jails, with state prisons falling in between at 56.2 percent. Fewer than half of inmates with a mental health problem have ever received treatment (National Institute of Mental Health, n.d.; Department of Justice, 2002, 2004).

Because of this, participants' scores on the SCL-90-R were not compared to general population (non-patient) scores. In addition, the traditional method of scoring the SCL-90-R was not used for the purpose of this research project, and instead was substituted for mean scale scores. The reason for this is that the traditional scoring method involves T-Scores that only reach a certain level, and can be misleading if trying to compare scores among groups (i.e., a person could have potentially scored a T=100+, but T-scores on the SCL-90-R only reach T=81) (Derogatis, 1977). As a result, using the traditional method of scoring could have made the individual's scores appear much lower than they actually were.

The data collected for race regarding mental health status was consistent with previous research. In this study, it was noted that non-whites repeatedly displayed more favorable scores than whites on mental health symptom scales. The National Institute of Mental Health (2015) suggests that whites are more likely to seek outpatient treatment for mental health issues than non-whites; however, non-whites (in particular, black adults) are more likely to seek inpatient mental health care than whites. In addition, the National Alliance on Mental Health (n.d.) noted whites as having higher prevalence rates of mental illness than all minorities, with the exception of American Indians/Alaska Natives. It should be noted that these prevalence rates are based on those who are seeking treatment, which may be less accessible to minorities (NAMI, n.d.).

Facility A generally displayed more favorable scale means than did Facility B. It is unclear what caused these differences, as there are no notable differences between the two horticulture programs and their administration. Both programs last for a duration of ten to eleven months and result in a horticulture certificate issued to the participant after completion. Both programs also use a greenhouse year-round for their plants and combine hands-on learning with traditional classroom learning. Due to time restraints, it is possible that the surveys were administered at different points in the separate programs; this will be addressed further in the study limitations section.

The "greening" of prisons is an issue which has recently been drawing more attention, both from the Department of Justice and academia. The DOJ's "Strategic Sustainability Performance Plan" (SSPP) (2010), which I discussed earlier in the literature review section, is the DOJ's attempt to lessen the impact that prisons have on the environment. SSPP is basically a plan to drastically reduce or eliminate utility usage through "green" methods, thus helping the environment as well as saving money. These efforts have been met with some criticism, however. The main concern with the greening of prisons is that it creates an excuse to house more inmates without added expense while ignoring the social impacts of its "human warehousing." As expressed by Moran and Jewkes (2014), as well as Piché and colleagues (2016), the most environmentally friendly and ethical measure that could be undertaken with respect to corrections in the U.S. would be to decrease the number of people incarcerated in the first place.

While policy-makers can do everything in their power to make the current penal system in the United States environmentally sustainable, ultimately, mass incarceration is *socially unsustainable* and thus *environmentally unsustainable*. With approximately 2.2

million adults incarcerated in the United States and another 4.7 million adults on probation or parole, the country has skyrocketed to having the largest population under criminal justice supervision in the world (Bureau of Justice Statistics, 2014). The incarcerated population has increased 500 percent in forty years (The Sentencing Project, 2015) such that nearly three percent of the entire adult population of the United States is either incarcerated or under some sort of supervision. This trend in mass incarceration simply cannot continue without long-term adverse impacts on ecological, human and social health.

The horticulture programs examined in this study do operate sale programs in which they sell plants, such as flowers and ferns, to the general public and prison staff. These programs do not generate a profit for the prisons themselves, however. Instead, the money is put back into the horticulture programs to purchase new equipment and supplies for the next round of plants. The horticulture programs are also too small to produce food on a large-scale for the prison. Instead, the vegetables produced in the greenhouses serve as a special treat for the people who grew them. Thus, Moran and Jewkes' (2014) concerns that green programs feed money and cheap labor into the carceral system may not apply to horticulture programs of this small size. While the programs do technically make money and provide food to inmates, they do so only to remain in operation and as an incentive/reward for the participants. The programs studied in this instance harbor no ulterior motives of making the prison self-sufficient or of creating a monetary profit, although there are certainly some green-collar prison programs that do. These programs do, however, provide the potential for stress relief and learning a new skill while incarcerated.

There are several things that can be done to decrease the number of incarcerated persons in the United States, but it is truly necessary that every group involved works toward achieving this goal. These groups involve the policy makers (both governmental and in corrections), the ex-/offenders, and the public. The public's help is desperately needed in order to influence the policy makers in government, yet it seems that the majority of society does not know there is an issue with mass incarceration at all. With recidivism rates hovering around 76 percent at five years post-release (56.7 percent rearrested by the end of the first year) (National Institute of Justice, 2014), the general public seems content to think that criminality is ingrained into an individual's very self; thus, everyone that is incarcerated deserves to be there in one way or another.

Reducing recidivism rates may be helpful in gaining the public's support in re-entry efforts in more than one way: First, by showing that criminality is not a facet of someone's being; that people make mistakes, and that change is possible (or even likely). Second, simply by sheer exposure to those who have been previously been incarcerated. With half to three-quarters of offenders returning to incarceration within one to five years of release, they do not have the opportunity to interact with the "outside world" for very long. Thus, it becomes easier for society to discard them; to create an "us versus them" mentality, and stigmatize both crime and those who commit it. By reducing recidivism rates, people would have more interaction with those who have been formerly incarcerated. Perhaps this could bring about a change of thought about ex-offenders as others work with them, get to know them, etc., and realize that they are people as well, instead of viewing them as this stigmatized, "other" being.

Of course, this is all based on a reduction in recidivism rates. Moran and Jewkes (2014) and Piché and colleagues (2016) note that the bottom line with corrections facilities always seems to be just that—the bottom line. Corrections facilities, typically, are first and foremost concerned with saving money wherever possible, and if these sustainable practices are beneficial to the inmates, then it is just an added bonus. Why must these causes be mutually exclusive of each other, however? Even if the "good intentions" of helping the environment or helping inmates are not necessarily there from the beginning, if it is truly beneficial to people, then why not allow it to happen? That is not to say, of course, that spending millions of dollars and hundreds of acres on new correctional facilities just because they are "energy efficient" is something worth supporting, but things like "green-collar" programming for inmates typically do not carry any ulterior agendas, are not expensive to implement, and can be beneficial for those participating.

While there was not technically a qualitative component to this study, many participants at both correctional facilities praised the horticulture programs. In informal conversations, they stated that it gives them an opportunity to stay out of the prison yard and out of trouble, and that they found gardening activities to have a calming, relaxing effect. Participants also mentioned the pride they took in their work and in learning how to properly care for their plants and that it was rewarding to watch their efforts literally blossom as a result of real-life implementation of classroom learning. Amusingly, though, when asked about their favorite part of the horticulture program, several participants enthusiastically responded: "We like to eat!"

Study limitations

There were several limitations to this study that it would be remiss not to address. First and perhaps most limiting was the small sample size of the study. This made it difficult to determine if results were real or influenced in either direction by a simple lack of numbers. There were also a couple of limitations related to the control group. Facility A was not able to provide a control group, which made comparisons difficult. Instead, a paired-sample method had to be used, which resulted in throwing out over half of the data from Facility A because only five cases could be matched. The control group that was provided for the study was chosen by prison officials, and thus was not randomly assigned. The prison did stay within the parameters provided by the study, however, and chose inmates who were not enrolled in an educational or rehabilitative program.

Time restraints were a further study limitation. It was not possible to survey participants in their separate programs at the same point in their program due to differing starting points. For example, even though both facilities were surveyed at roughly the same time, within a couple of weeks, the individual programs could have been at differing points of completion. This could have resulted in slightly skewed results. It would have been more effective to survey each individual program at its beginning and again at its completion.

CHAPTER VII

CONCLUSIONS AND FUTURE DIRECTIONS

This exploratory study set out to find the potential use of horticulture programs as a rehabilitation option in correctional settings. The study results were somewhat inconclusive. The horticulture group did in fact display more favorable scale means and reported less negative mental health symptoms than did a control group. While these differences did not reach a statistically significant level, there were a few limitations that may have prevented them from doing so. This study also revealed data that support previous research on race and mental health, age and hostility, and prevalence of mental health issues in prisons.

Future research is needed to further ascertain if horticulture programs are a therapeutic, rehabilitative option for those who are incarcerated. It may be helpful to compare programs that integrate formal therapy practices and those which are strictly skill-based. It also may be interesting to compare the effects of a horticulture program on violent versus non-violent and/or drug offenders. Overall, this study does contribute to currently scarce research on the subject of prison horticulture, but more work is to be done before any conclusive decisions can be drawn.

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APPENDIX A:

Symptom Check-List 90 – Revised

(SCL-90-R)

SCL-90-R

Grow where you are planted: The use of gardening as offender rehabilitation in prisons

Below is a list of problems and complaints that people sometimes have. Please read each one carefully. After you have done so, select one of the numbers that best describes HOW MUCH THAT PROBLEM HAS BOTHERED OR DISTRESSED YOU DURING THE PAST WEEK, INCLUDING TODAY. Circle the number in the space to the right of the problem and do not skip any items. Use the following key to guide how you respond:

Circle 0 if your answer is NOT AT ALL
Circle 1 if A LITTLE BIT
Circle 2 if MODERATELY
Circle 3 if QUITE A BIT
Circle 4 if EXTREMELY

Please read the following example before beginning:

Example: In the previous week, how much were you bothered by:

Backaches 0 (1) 2 3 4

In this case, the respondent experienced backaches a little bit (1).

NOTE: If you have trouble reading or have a question, you may work with a friend or ask the researcher.

	HOW MUCH WERE YOU BOTHERED BY:	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
1.	Headaches	0	1	2	3	4
2.	Nervousness or shakiness inside	0	1	2	3	4
3.	Unwanted thoughts, words, or ideas that won't leave your mind	0	1	2	3	4
4.	Faintness or dizziness	0	1	2	3	4
5.	Loss of sexual interest or pleasure	0	1	2	3	4
6.	Feeling critical of others	0	1	2	3	4
7.	The idea that someone else can control your thoughts	0	1	2	3	4
8.	Feeling others are to blame for most of your troubles	0	1	2	3	4
9.	Trouble remembering things	0	1	2	3	4
10.	Worried about sloppiness or carelessness	0	1	2	3	4
11.	Feeling easily annoyed or irritated	0	1	2	3	4
12.	Pains in heart or chest	0	1	2	3	4
13.	Feeling afraid in open spaces or on the streets	0	1	2	3	4
14.	Feeling low in energy or slowed down	0	1	2	3	4
15.	Thoughts of ending your life	0	1	2	3	4

HOW MUCH WERE YOU BOTHERED BY:		NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
16.	Hearing voices that other people do not hear	0	1	2	3	4
17.	Trembling	0	1	2	3	4
18.	Feeling that most people cannot be trusted	0	1	2	3	4
19.	Poor appetite	0	1	2	3	4
20.	Crying easily	0	1	2	3	4
21.	Feeling shy or uneasy with the opposite sex	0	1	2	3	4
22.	Feeling of being trapped or caught	0	1	2	3	4
23.	Suddenly scared for no reason	0	1	2	3	4
24.	Temper outbursts that you could not control	0	1	2	3	4
25.	Feeling afraid to go out of your house alone	0	1	2	3	4
26.	Blaming yourself for things	0	1	2	3	4
27.	Pains in lower back	0	1	2	3	4
28.	Feeling blocked in getting things done	0	1	2	3	4
29.	Feeling lonely	0	1	2	3	4
30.	Feeling blue	0	1	2	3	4
31.	Worrying too much about things	0	1	2	3	4
32.	Feeling no interest in things	0	1	2	3	4
33.	Feeling fearful	0	1	2	3	4
34.	Your feelings being easily hurt	0	1	2	3	4
35.	Other people being aware of your private thoughts	0	1	2	3	4
36.	Feeling others do not understand you or are unsympathetic	0	1	2	3	4
37.	Feeling that people are unfriendly or dislike you	0	1	2	3	4
38.	Having to do things very slowly to insure correctness	0	1	2	3	4
39.	Heart pounding or racing	0	1	2	3	4
40.	Nausea or upset stomach	0	1	2	3	4
41.	Feeling inferior to others	0	1	2	3	4
42.	Soreness of your muscles	0	1	2	3	4
43.	Feeling that you are watched or talked about by others	0	1	2	3	4
44.	Trouble falling asleep	0	1	2	3	4
45.	Having to check and double-check what you do	0	1	2	3	4
46.	Difficulty making decisions	0	1	2	3	4

HOW MUCH WERE YOU BOTHERED BY:		NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
47.	Feeling afraid to travel on buses, subways, trains	0	1	2	3	4
48.	Trouble getting your breath	0	1	2	3	4
49.	Hot or cold spells	0	1	2	3	4
50.	Having to avoid certain things, places, or activities because they frighten you	0	1	2	3	4
51.	Your mind going blank	0	1	2	3	4
52.	Numbness or tingling in parts of your body	0	1	2	3	4
53.	A lump in your throat	0	1	2	3	4
54.	Feeling hopeless about the future	0	1	2	3	4
55.	Trouble concentrating	0	1	2	3	4
56.	Feeling weak in parts of your body	0	1	2	3	4
57.	Feeling tense or keyed up	0	1	2	3	4
58.	Heavy feelings in your arms or legs	0	1	2	3	4
59.	Thoughts of death or dying	0	1	2	3	4
60.	Overeating	0	1	2	3	4
61.	Feeling uneasy when people are watching or talking about you	0	1	2	3	4
62.	Having thoughts that are not your own	0	1	2	3	4
63.	Having urges to beat, injure, or harm someone	0	1	2	3	4
64.	Awakening in the early morning	0	1	2	3	4
65.	Having to repeat the same actions such as touching, counting, washing	0	1	2	3	4
66.	Sleep that is restless or disturbed	0	1	2	3	4
67.	Having urges to break or smash things	0	1	2	3	4
68.	Having ideas or beliefs that others do not share	0	1	2	3	4
69.	Feeling very self-conscious with others	0	1	2	3	4
70.	Feeling uneasy in crowds, such as shopping or at a movie	0	1	2	3	4
71.	Feeling everything is an effort	0	1	2	3	4
72.	Spells of terror or panic	0	1	2	3	4
73.	Feeling uncomfortable about eating or drinking in public	0	1	2	3	4
74.	Getting into frequent arguments	0	1	2	3	4
75.	Feeling nervous when you are left alone	0	1	2	3	4
76.	Others not giving you proper credit for your achievements	0	1	2	3	4
77.	Feeling lonely even when you are with people	0	1	2	3	4

HOW MUCH WERE YOU BOTHERED BY:		NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
78.	Feeling so restless you couldn't sit still	0	1	2	3	4
79.	Feelings of worthlessness	0	1	2	3	4
80.	The feeling that something bad is going to happen to you	0	1	2	3	4
81.	Shouting or throwing things	0	1	2	3	4
82.	Feeling afraid you will faint in public	0	1	2	3	4
83.	Feeling that people will take advantage of you if you let them	0	1	2	3	4
84.	Having thoughts about sex that bother you a lot	0	1	2	3	4
85.	The idea that you should be punished for your sins	0	1	2	3	4
86.	Thoughts and images of a frightening nature	0	1	2	3	4
87.	The idea that something serious is wrong with your body	0	1	2	3	4
88.	Never feeling close to another person	0	1	2	3	4
89.	Feelings of guilt	0	1	2	3	4
90.	The idea that something is wrong with your mind	0	1	2	3	4

Reference: Derogatis, L.R., Lipman, R.S., & Covi, L. (1973). SCL-90: An outpatient psychiatric rating scale—Preliminary Report. *Psychopharmacol. Bull. 9*, 13–28.

APPENDIX B:

Demographic Information Collection Sheet

Demographic Information

Grow where you are planted: The use of gardening as offender rehabilitation in prisons

NOTE: This information will not be seen by anyone but the researcher and her faculty advisor.

Age: _____

Race: _____

Circle your education level:

Did not complete high school or GED

Completed high school or GED

Completed trade or technical school

Some college, no degree

College degree or higher

Length of current sentence: _____

Is this your first time in prison/jail? Yes No

FOR RESEARCHER USE ONLY

Participant #: _____

APPENDIX C:

Researcher's Consent Form

Informed Consent Form

Grow where you are planted: The use of gardening as offender rehabilitation in prisons

Project Title and Purpose

You are being invited to participate in a research study entitled **Grow where you are planted: The use of gardening as offender rehabilitation in prisons**. This study will help us to better understand gardening programs in prisons.

Investigators

This study is being organized by a graduate student at Eastern Kentucky University. No law enforcement personnel will be interviewing you.

Volunteer Statement

You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate.

Description of Participation

If you agree to participate in this study, you will be asked to fill out a form with questions about your recent feelings and emotions. This may take up to thirty minutes. Some of the questions you will be asked concern feelings of sadness, depression, and anxiety. You will be asked to fill out this same form again in a few months.

Length of Participation

Your participation will take up to thirty minutes. There will be one follow-up in a few months, which will also take up to thirty minutes.

Risks and Benefits of Participation

There are no known risks associated with this study. There may be risks which are currently not known. Nothing you share during this study can be used against you in a court of law. Likewise, your participation will not positively or negatively impact any parole board or probation status. Law enforcement will not have access to any of the information you provide during the study.

The benefits to the study involve gaining a greater understanding of the risks and/or benefits of gardening in a prison setting.

What happens if I get hurt or sick during the study?

If you believe you are hurt or if you get sick because of something that is done during the study, you should call the College of Justice and Safety at (859) 622-3565 and ask to speak with Dr. Brisman. You should also contact the prison's mental health professional for immediate, on-site help.

It is important for you to understand that Eastern Kentucky University will not pay for the cost of any care or treatment that might be necessary because you get hurt or sick

while taking part in this study. That cost will be your responsibility. Also, Eastern Kentucky University will not pay for any wages you may lose if you are harmed by this study.

What if I have questions?

Before you decide whether or not to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Kendahl, at the following:

Phone — (859) 622-3565 (College of Justice and Safety)

Address — School of Justice Studies
ATN: Kendahl Granger,
Graduate School
521 Lancaster Avenue #354
Richmond, KY 40475

If you have any questions about your rights as a research volunteer, contact the staff in the Division of Sponsored Programs at Eastern Kentucky University at 859-622-3636. We will give you a copy of this consent form to take with you.

Confidentiality

Your name and any other identifying information will be kept strictly confidential. NO IDENTIFYING INFORMATION WILL BE RELEASED. No participant will ever be mentioned by name in the reported results. The data will be reported as a group. Participants can end their participation at any time. Participant can choose not to respond to any question. Only the principal investigator and immediate research staff will have access to the raw data.

Fair Treatment and Respect

We want to make sure that you are treated in a fair and respectful manner. You may contact Eastern Kentucky University's Division of Sponsored Programs (859-622-3636) if you have any concerns about how you are treated as a study participant.

Participation Consent

I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project. I understand that I will receive a copy of this form after it has been signed by me and the interviewer.

PARTICIPANT NAME	DATE
PARTICIPANT SIGNATURE	DATE
INVESTIGATOR SIGNATURE	DATE

IRB Approval
16-237
THIS FORM VALID
06/24/2016 – 03/01/2017

APPENDIX D:

CPP 5-1 Consent Form for Non-DOC Sponsored Projects

KENTUCKY DEPARTMENT OF CORRECTIONS
RESEARCH PROJECT CONSENT FORM
FOR PROJECTS THAT ARE NOT SPONSORED BY DOC

I, _____ voluntarily choose to participate in the research project entitled: *(Please print)*

Grow where you are planted: The use of gardening as offender rehabilitation in prison

Sponsored by: _____

PARTICIPANT (*check one*)

☐ **Inmate** ☐ **Probationer/Parolee**
My decision to participate or not participate in this research project will have no impact on my incarceration or supervision and there is no penalty for not participating.

☐ **DOC Staff Member**
My decision to participate or not participate in this research project will have no impact on my employment with DOC and there is no penalty for not participating.

INDIVIDUAL IDENTIFICATION (*initial one*)

_____ I consent to having my identity revealed in the Research Project and any reports.

_____ I **DO NOT** consent to having my identity revealed in the Research Project or any reports.

GENERAL PROVISIONS (*initial all*)

_____ The project has been satisfactorily explained to me and all my questions have been satisfactorily answered.

_____ I understand that my participation is voluntary and of my own choosing. I know that I can choose to discontinue participation at any time.

_____ I understand that the decision as to whether my identity will be protected is up to the researcher and is not under the control of the Department of Corrections.

_____ I understand that the Department of Corrections is not a sponsor of this research project and is only providing me the opportunity to participate if I choose to do so. Therefore, I agree not to hold the Department responsible for any injury to myself and I release any claim against the Department related to my voluntary participation in the research project.

_____ _____
Printed Name of Participant Inmate Number/Employee ID

_____ _____
Participant Signature Date

When the participant is an inmate, his/her completion of this form shall be witnessed by a DOC staff member. The signed and witnessed consent form shall then be scanned into the electronic project file.

_____ _____
Printed Name of Staff Witness Position

_____ _____
Signature of Staff Witness Date

APPENDIX E:

Correlations Chart for Facility

Correlations Chart for Facility B

		SOM	OC	IS	DEP	ANX	HOS	PHO	PAR	PSY	ADD
SOM	Pearson Correlation	1	.731**	.532**	.649**	.711**	.353*	.610**	.475**	.538**	.732**
	Sig. (2-tailed)		.000	.001	.000	.000	.034	.000	.003	.001	.000
	N	37	37	37	36	36	36	37	37	37	36
OC	Pearson Correlation	.731**	1	.734**	.816**	.809**	.654**	.590**	.714**	.811**	.851**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	37	42	42	39	39	41	42	42	42	41
IS	Pearson Correlation	.532**	.734**	1	.847**	.844**	.676**	.698**	.852**	.766**	.799**
	Sig. (2-tailed)	.001	.000		.000	.000	.000	.000	.000	.000	.000
	N	37	42	42	39	39	41	42	42	42	41
DEP	Pearson Correlation	.649**	.816**	.847**	1	.851**	.561**	.648**	.777**	.764**	.832**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	36	39	39	39	36	38	39	39	39	38
ANX	Pearson Correlation	.711**	.809**	.844**	.851**	1	.517**	.841**	.719**	.777**	.752**
	Sig. (2-tailed)	.000	.000	.000	.000		.001	.000	.000	.000	.000
	N	36	39	39	36	39	39	39	39	39	39
HOS	Pearson Correlation	.353*	.654**	.676**	.561**	.517**	1	.473**	.622**	.801**	.728**
	Sig. (2-tailed)	.034	.000	.000	.000	.001		.002	.000	.000	.000
	N	36	41	41	38	39	41	41	41	41	41
PHO	Pearson Correlation	.610**	.590**	.698**	.648**	.841**	.473**	1	.514**	.658**	.570**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.002		.000	.000	.000
	N	37	42	42	39	39	41	42	42	42	41

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX E:

Correlations Charts for Combined Data

Correlations Chart for Combined Data (Experimental Groups Only)

		SOM	OC	IS	DEP	ANX	HOS	PHO	PAR	PSY	ADD
SOM	Pearson Correlation	1	.686**	.552**	.645**	.641**	.539**	.508**	.457**	.754**	.779**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.001	.003	.000	.000
	N	40	39	40	39	40	40	39	39	40	39
OC	Pearson Correlation	.686**	1	.724**	.836**	.804**	.578**	.584**	.632**	.857**	.691**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	39	44	44	41	43	44	43	43	44	43
IS	Pearson Correlation	.552**	.724**	1	.828**	.869**	.692**	.694**	.755**	.792**	.655**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	40	44	45	42	44	45	44	44	45	44
DEP	Pearson Correlation	.645**	.836**	.828**	1	.855**	.697**	.643**	.655**	.832**	.756**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	39	41	42	42	41	42	41	41	42	41
ANX	Pearson Correlation	.641**	.804**	.869**	.855**	1	.569**	.785**	.701**	.804**	.644**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	40	43	44	41	44	44	43	43	44	43
HOS	Pearson Correlation	.539**	.578**	.692**	.697**	.569**	1	.421**	.544**	.730**	.596**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.004	.000	.000	.000
	N	40	44	45	42	44	45	44	44	45	44
PHO	Pearson Correlation	.508**	.584**	.694**	.643**	.785**	.421**	1	.579**	.635**	.430**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.004		.000	.000	.004
	N	39	43	44	41	43	44	44	43	44	43
PAR	Pearson Correlation	.457**	.632**	.755**	.655**	.701**	.544**	.579**	1	.673**	.469**
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.000	.000		.000	.002
	N	39	43	44	41	43	44	43	44	44	43
PSY	Pearson Correlation	.754**	.857**	.792**	.832**	.804**	.730**	.635**	.673**	1	.701**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	40	44	45	42	44	45	44	44	45	44
ADD	Pearson Correlation	.779**	.691**	.655**	.756**	.644**	.596**	.430**	.469**	.701**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.004	.002	.000	
	N	39	43	44	41	43	44	43	43	44	44

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations for Combined Data (All Data, Experimental and Comparison Groups)

		SOM	OC	IS	DEP	ANX	HOS	PHO	PAR	PSY	ADD
SOM	Pearson Correlation	1	.719**	.556**	.657**	.728**	.453**	.548**	.475**	.601**	.730**
	Sig. (2-tailed)		.000	.000	.000	.000	.001	.000	.000	.000	.000
	N	56	55	56	54	55	55	55	55	56	54
OC	Pearson Correlation	.719**	1	.740**	.807**	.815**	.682**	.590**	.677**	.821**	.777**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	55	61	61	57	58	60	60	60	61	59
IS	Pearson Correlation	.556**	.740**	1	.849**	.847**	.694**	.659**	.823**	.760**	.766**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	56	61	62	58	59	61	61	61	62	60
DEP	Pearson Correlation	.657**	.807**	.849**	1	.847**	.605**	.618**	.734**	.767**	.795**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	54	57	58	58	55	57	57	57	58	56
ANX	Pearson Correlation	.728**	.815**	.847**	.847**	1	.586**	.798**	.718**	.785**	.723**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	55	58	59	55	59	59	58	58	59	58
HOS	Pearson Correlation	.453**	.682**	.694**	.605**	.586**	1	.464**	.605**	.809**	.714**
	Sig. (2-tailed)	.001	.000	.000	.000	.000		.000	.000	.000	.000
	N	55	60	61	57	59	61	60	60	61	60
PHO	Pearson Correlation	.548**	.590**	.659**	.618**	.798**	.464**	1	.525**	.626**	.508**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	55	60	61	57	58	60	61	60	61	59
PAR	Pearson Correlation	.475**	.677**	.823**	.734**	.718**	.605**	.525**	1	.705**	.651**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	55	60	61	57	58	60	60	61	61	59
PSY	Pearson Correlation	.601**	.821**	.760**	.767**	.785**	.809**	.626**	.705**	1	.782**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	56	61	62	58	59	61	61	61	62	60
ADD	Pearson Correlation	.730**	.777**	.766**	.795**	.723**	.714**	.508**	.651**	.782**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	54	59	60	56	58	60	59	59	60	60

**. Correlation is significant at the 0.01 level (2-tailed).