

A Review of Horticultural Therapy and Horticultural Therapy Education in the United States: Addressing Challenges and Opportunities

A Dissertation Presented for the
Doctor of Philosophy
Degree

The University of Tennessee, Knoxville

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December 2020

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ACKNOWLEDGMENTS

“If I have seen further, it is by standing upon the shoulders of giants”

Sir Isaac Newton

The process of completing a Ph.D. is far from an individual task. It has taken the guidance, encouragement, and dedication of many to help me through this journey. Without the help of those individuals, none of this would have been possible.

First, I would like to thank my wife, Tiffany, for her patience as I was a graduate student, working full time and helping raise our four children. Your constant encouragement has helped me work through the stress and challenges of my Ph.D. program.

I am also grateful for the encouragement of Dr. Caula Beyl to apply to graduate school. You saw potential in me, and your “strong suggestion” helped give me that boost of confidence I needed to make the first step.

Thank you to my parents for providing the love and encouragement all the years of my life. To my dad for planting a garden and teaching me how to grow. Thank you for giving me the chance to explore and learn about the healing powers of nature and the outdoors.

There are countless friends and colleagues have made this journey possible. I am indebted to all of you.

Dr. P.J. Snodgrass – Thank you for being willing to be part of my research team and assisting with coding the research interviews. Your support throughout this process has been invaluable.

René Malone - Thank you for encouraging me to keep working on becoming a HTR and for being willing to be my internship supervisor.

Leigh Ann Starling – Thank you for asking me to support the growth of the horticultural therapy profession by becoming a board member for the American Horticultural Therapy Association.

Dr. Diane Relf – Thank you for taking the time to meet with me and talk about your experience as a horticultural therapist. Thank you for providing guidance and direction for my work and future research ideas for the profession of horticultural therapy.

Dr. Susan Hamilton – Thank you for taking a gamble on hiring me to lead the UT Gardens education program. You have been a mentor, teacher and friend. Your passion for horticulture is infectious and it has pushed me to do more and use my creativity to develop the education and horticultural therapy program at the University of Tennessee Gardens. Your guidance has also helped me through the journey to become a horticultural therapist and work through my Ph.D. program.

My committee members, thank you for your guidance and direction: Dr. Susan Hamilton, Dr. Mark Fly, Dr. Bill Klingeman, Dr. Caula Beyl, Dr. Angela Wozencroft, and Dr. Douglas Airhart. You always challenged me and gave me guidance when it was needed.

Finally, and most importantly, thank you God. Your Creation has given me hope and peace among some of the most challenging times of my life. I can only hope to use your garden as a way to help others learn to heal and grow. Without your Grace and provision, none of this would have been possible.

ABSTRACT

The Horticultural Therapy (HT) profession has been formally organized in the United States since 1973. Despite the long history of horticulture being used as therapy, the profession of HT in the United States has not advanced as quickly as other allied healthcare professions. This study will review the current challenges and opportunities for HT and HT education in the United States.

A qualitative study of the status of the profession was conducted to determine what challenges and opportunities the profession of HT currently has and how the profession can meet those challenges and opportunities. The study sample was recruited from current and former members of the American Horticultural Therapy Association (AHTA). A total of 27 interviews were conducted between November 2019 and January 2020. Six main themes were identified from the interviews: Current State of the Profession, AHTA Operations and Structure, Education/Credentialing Opportunities, Funding/Job Opportunities, Public Awareness/Networking, and Research Opportunities.

Comments indicated the future of the profession is dependent on several factors including increasing awareness, collaboration, funding, educational opportunities, diversity, and research.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

Purpose

Gardening can heal. The profession of horticultural therapy (HT) combines a unique modality utilizing the connection between people and plants. Plants provide food, enjoyment, comfort, and clean air for the world. The increasing disconnection of people from the natural world has helped to create many modern health conditions caused by a sedentary lifestyle including lack of physical activity, obesity, and poor mental health. Horticultural therapy has incredible potential to enhance medical care and improve well-being for many different populations. However, the profession of HT has struggled over the course of its development. It has struggled with retaining members in the national professional organization, creation of a credentialing exam, obtaining payment through insurance, understanding the number of practitioners using HT, and being recognized as a therapy in healthcare settings and in the community. Therefore, this study was designed to identify the current challenges and opportunities of HT and HT education in the United States (US).

Problem Statement: HT and HT Education in the US

The profession of HT is a complementary health profession that can trace its beginnings to ancient history, and the use of horticulture in therapeutic settings has been documented in the US since the early 1800s (Simpson & Straus, 1998). In *Horticulture as Therapy: Principles and Practice*, Davis (1998) suggests the profession of HT needs validation and growth which can be achieved through three main components: clinical practice, education, and research (p. 13). Despite the long history of horticulture being

used as therapy, the profession of HT in the US has experienced a variety of limitations inhibiting its advancement as a medical modality and HT is still considered an emerging profession (Shoemaker & Diehl, 2010). Shifts in managed healthcare, moving from institutional-based care to community- and outpatient-based care, lack of robust research, differing opinions among professionals as to the preferred direction of the profession, and changes to how educational programs are being delivered, are all limitations. These limitations have kept the profession from advancing as fast as other therapeutic modalities, such as occupational therapy, physical therapy, music therapy, art therapy, and recreational therapy (Haller & Malone, 2019; Shoemaker, 2002a; Shoemaker, 2002b).

The profession of HT and HT education in the US have been part of an ever-shifting healthcare system. Some of the rise, fall, and rebirth of interest in HT and HT education may be related to general healthcare trends and an increasing interest in nature and complementary healthcare. Complementary healthcare is defined as “non-mainstream practices used together with conventional medicine” (National Center for Complementary and Integrative Health [NCCIH], 2018). Complementary healthcare is a growing industry as identified by a 2016 NCCIH report. Individuals in the US spend over \$30 billion on complementary healthcare each year (NCCIH, 2016). Current healthcare trends include the uncertainty of healthcare based upon changes related to the Affordable Care Act, new technologies, shifts in the idea of healthcare consumerism, increased healthcare costs, and continuing scrutiny related to paying healthcare benefits (Vogenberg & Santilli, 2018). This study was devised to fully understand these changes in healthcare and develop a plan for the future growth of HT and HT education in the US.

This study utilized a semi-structured interview of current and former members of the American Horticultural Therapy Association (AHTA) to identify issues, capture challenges, and discover solutions from individuals involved in the profession of HT.

Significance of this Study

A landmark survey on the use of horticulture in healthcare was conducted by Rhea McCandless in 1968. McCandless surveyed 216 hospitals and found that 64% had some form of therapeutic horticulture programming. The results from this survey had a significant impact on the development of the profession of HT by illustrating the number of healthcare facilities and professionals using gardens or gardening as a therapeutic modality (McCandless, 1972; Relf, 2019). A similar survey was conducted in 2007. This survey focused on healthcare organizations in Tennessee. Results showed 20% of the institutions completing the survey had some form of horticultural therapy program (Pfeffer et al., 2009).

Other past surveys of the horticultural therapy profession sampled AHTA members. One study surveyed AHTA members utilizing online survey methods (Larson, 2009; Larson et al., 2010). Larson recruited participants from the AHTA membership list. The survey was emailed to members and a follow-up email was sent to members who did not respond to the first email. Shoemaker (2003) conducted a ten-question mail survey that was sent to only HTRs. The sample size of Shoemaker's study was 220. The survey had a response rate of 54% (Shoemaker, 2003). Starling et al. (2014) conducted an online survey of 227 HTRs. The goal of this survey was to conduct a job analysis of horticultural therapists to identify the specific tasks related to the job of a horticultural therapist.

This current study will update previous studies on the profession of HT in the US. This study will also address HT education in the US. Results from this study will assist researchers in developing a plan for advancing the profession of HT and HT education in the US.

Definition of Terms

Various terms have been used to describe HT over the years. The terms have been confusing to practitioners and the general public. This section will define terms that are often used when discussing HT.

Nature

Haller and Kennedy define nature as “outdoor environments, plants, and animals – the natural, physical world” (2019, p. 24).

Horticulture

Horticulture is “the culture of plants for food, comfort, and beauty” (Arteca, 2015, p.46).

Horticultural Therapist – Registered (HTR)

A professionally registered horticultural therapist. This professional registration is granted by the AHTA based on a set of guidelines set by the professional association (AHTA, 2020b).

Therapeutic Horticulture

“Therapeutic horticulture is the participation in horticultural activities facilitated by a HTR or other professionals with training in the use of horticulture as a therapeutic modality to support program goals” (AHTA, 2017).

Horticultural Therapy

As a profession begins and matures, it further refines its definition, and there have been several definitions of HT over the years used by various professionals in the field. The Growing Center of Pennsylvania defines HT as “the use of live plants and horticultural activities to improve a person’s mental, physical and spiritual aspects of life” (The Growing Center, 2018). Thrive, a therapeutic horticulture organization based in the United Kingdom, defines social and therapeutic horticulture as:

The process of using plants and gardens to improve physical and mental health, as well as communication and thinking skills. It also uses the garden as a safe and secure place to develop someone's ability to mix socially, make friends and learn practical skills that will help them to be more independent (Thrive, n.d.).

Defining HT has been difficult as the term has been used in a variety of ways over the years. It is clear HT must include the three following components: clients, clinically defined goals, and active treatment. Hewson (1994) states HT is unique because “it uses living material, requiring nurturing and care, in its programs” (pg. 1). Haller and Capra (2016) define HT as “a professional-conducted, client-centered treatment modality that utilizes horticultural activities to meet specific therapeutic or rehabilitative goals of its participants. The focus is to maximize social, cognitive, physical and/or psychological functioning, and/or to enhance general health and wellness” (p. 6). The AHTA (2017) states that HT “is the participation in horticultural activities facilitated by a HTR to achieve specific goals within an established treatment, rehabilitation, or vocational plan” (p. 2). A definition of HT based on a model of HT proposed by Son et al. in 2014 reads:

Horticultural therapy is complementary medicine with the purpose of rehabilitation of the social, emotional, psychological, physical, and cognitive ability of clients. To this end, a therapist who received both horticultural and clinical training conducts the intended program to diagnosed clients through horticultural activities using living plants in order to obtain measurable goals, after which the results are scientifically assessed (Son et al., 2014 p. 86).

Research Questions

A semi-structured qualitative interview was conducted of members and former members of the AHTA. The primary research question was: What are the current challenges and opportunities for HT and HT education in the US? Additional questions are: 1.) What is the current status of HT in the US? 2.) What should the profession of HT look like in the future? 3.) What role does HT education play in the profession of HT? 4.) What steps are needed for the profession of HT to advance?

CHAPTER 2

LITERATURE REVIEW

What is a Profession

When defining a healthcare profession, it is important to understand its size, history, approach to health, and how healthcare is provided (Dower et al., 2001). To better understand the challenges and opportunity of HT as a profession and look at HT education, one must understand what a profession is and how professions develop. A profession is:

A disciplined group of individuals who adhere to ethical standards and who hold themselves out as, and are accepted by the public as possessing special knowledge and skills in a widely recognized body of learning derived from research, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others (Australian Council of Professions, n.d.).

A profession is further defined as having five elements that: 1) provide a service, 2) have a common goal and interest, 3) have a set of standards of practices and code of ethics, 4) utilize established scientific theories or models, and 5) include an established formal process of training and education (Carter et al., 1995, p. 40). Jenson (2015) suggests 12 steps in the professionalization process (Table 2.1).

An emerging profession needs to consider many variables when seeking legitimization by the healthcare industry. The Emerging Professions Guide for Professionalization suggests some professions may choose to stay outside of the “formal” healthcare system to help keep from limiting the profession and adding

Table 2.1. Professionalization Process.

Event	Activity
Informal Collaboration	Assembly of a group of people with common skills or knowledge
Formalized Collaboration	Formation of professional association (often national)
Authorized Practice	Passage of governmental sponsored licensure or registration
Standardized Qualification	Administration of professional examinations
Educational Identity	Establishment of distinctive programs for professional education
Educational Uniformity	Standardization of progress for professional education
Consolidated Beliefs	Establishment of professional code of ethics, values, and philosophies
Enhanced Communication	Publication of a professional journal
Regulated Education	Accreditation of educational process
Enlarge Influence	Expansion of practice scope
Intensified Training	Expansion of education to accommodate growth of practice scope
Specialization	Division into multiple and more restricted professions

Note: Reprinted from Jensen, C. B. (2015). The continuum of health professions.

Integrative Medicine: A Clinician's Journal, 14(3), p. 48.

additional challenges related to payment and reimbursement systems (Minnesota Department of Health, 2017). The guide states that the term “professionalize is used to describe the process towards further integration within the American healthcare system’s existing structures” (Minnesota Department of Health, 2017). Even if a profession decides not to fully integrate into the current healthcare system, one can utilize guidelines for a developing profession to legitimize the profession and most importantly ensure patient safety using best practices.

There are over 250 healthcare professions in the US (Jenson, 2015). Figure 2.1 illustrates Jenson’s (2015) continuum of healthcare professions, which illustrates both conventional and complementary types of healthcare. The profession of HT fits within the complementary healthcare category because it is non-invasive, natural, wellness-based, and individualized. Jenson suggests another characteristic of the complementary healthcare setting is the use of anecdotal evidence rather than research results. As professions mature, there is a need for additional research to support evidenced-based practice (Jensen, 2015). More research is needed to measure the impact of the interventions and determine what key elements are needed for HT to grow as a profession (Kreski, 2019; Shoemaker & Deihl, 2010).

Knebel and Greiner (2003) have listed five core competencies healthcare providers use when defining and practicing their profession: 1) provide patient-centered care, 2) work in interdisciplinary teams, 3) employ evidence-based practice, 4) apply quality improvement, and 5) utilize informatics. These five core competencies are important for any healthcare profession, including HT. Patient-centered care focuses on patients and their needs. This includes understanding patients may have different values

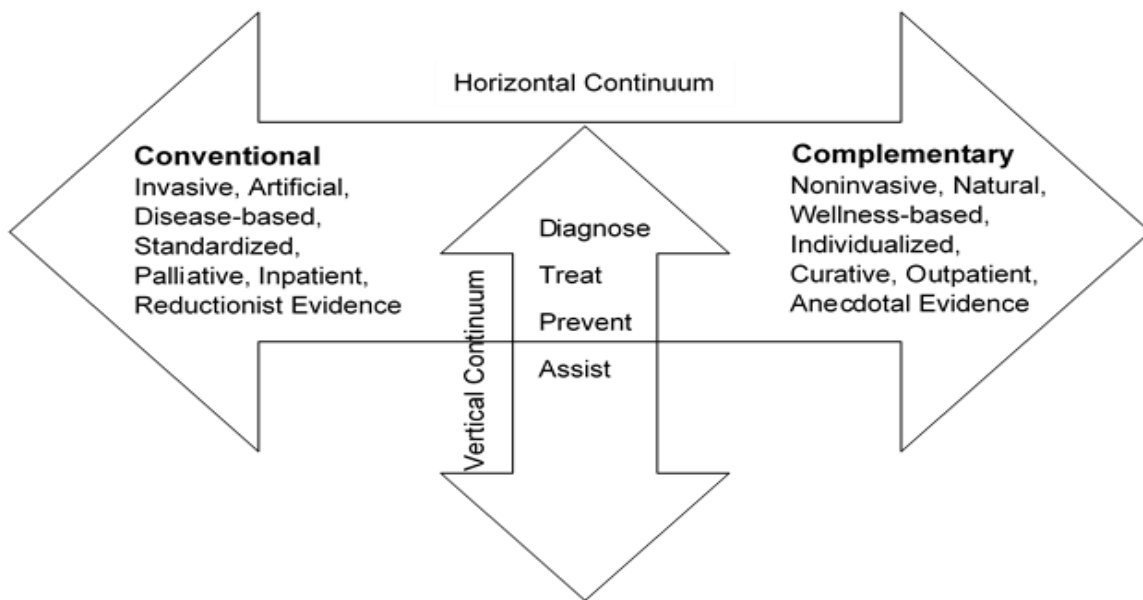


Figure 2.1. Continuum of Professions.

Reprinted from Jensen, C. B. (2015). The continuum of health professions. *Integrative Medicine: A Clinician's Journal*, 14(3), p. 48.

and beliefs. Healthcare professionals must also communicate and inform patients, so they make informed educated decisions about their healthcare. In any healthcare setting, many professionals may interact with a patient throughout the day.

Interdisciplinary teams help enhance healthcare through increasing communication and shared expertise between different healthcare professionals. Evidence-based practice utilizes research evidence with clinical expertise to make decisions about appropriate interventions for patients. Applying quality improvement includes understanding errors and safety issues that may occur in healthcare practices. Looking to revise and update processes and reduce opportunities for error or injury will improve patient's overall healthcare. Informatics uses technology to improve communication, decision making, and reduce error in healthcare. By taking healthcare data and analyzing it, healthcare professionals are able to make informed decisions for patients and improve the efficiency of care (American Medical Informatics Association, n.d.).

The healthcare industry uses professional credentials to help ensure safety and quality for clients, and several types of credentials are utilized (Raymond & Luecht, 2013; Starling, 2012). The first is a certificate that can be granted by colleges, for-profit companies, and non-profit organizations, which represent a completion of a body of coursework. The second is professional registration, that is a voluntary process, such as AHTA's professional registration or HTR. This process includes taking a coursework outlined by an organization, completing an internship supervised by a professional, and having a group of professionals review your application (Starling, 2012). The third is certification, a more formal process than registration, often includes passing a certification exam in addition to coursework and a supervised internship (The

International Board of Credentialing and Continuing Education Standards, n.d.; Raymond & Luecht, 2013). An example of this would be the Certified Therapeutic Recreation Specialist (CTRS) for the recreational therapy profession. The fourth is licensure, the highest level of professional credential, which occurs when government gives permission for a person to practice as a therapist or other professional (The International Board of Credentialing and Continuing Education Standards, n.d.; Raymond & Luecht, 2013). Licensure in the US is developed through laws passed in each state.

Changes in Healthcare and Related Professions

Healthcare in the US has undergone many changes and growth over the years. As new technology, greater understanding of the human body, and new policies develop, healthcare continues to evolve. There are many factors that impact healthcare including costs, insurance, and new knowledge of diseases. Understanding current trends can help the profession of HT adapt to changes and meet the needs of individuals and organizations.

The US healthcare system is one of the most expensive in the world (Ellner & Phillips, 2017). The Pew Health Professions Commission stated in 1998, “Most of the nation’s educational programs remain oriented to prepare individuals for yesterday’s healthcare system. They have not assimilated the new values, techniques, and skill sets required to pursue a satisfying and thriving practice in the managed care world” (p. 25). The Pew Health Professions Commission (1998) also found the following challenges in healthcare: 1) balancing interests of individuals and society, 2) accountability within the system, 3) managed care, 4) making consolidation of medical professions into work

groups, and 5) responding to demands of emerging healthcare markets. Managed care is considered the “process that works to rationalize the use of healthcare resources at the lowest possible costs and the highest possible quality” (Pew Health Professions Commission, 1998, p. 6). The Pew report also identified nine trends that would continue to impact healthcare in the United States: 1) pressures of costs, 2) oversupply of healthcare resources, 3) aging population, 4) new technology, 5) advances in disease treatment, 6) increased quality of healthcare, 7) changes in the health care consumer, 8) disparities in the population, and 9) a broader definition of health (Pew Health Professions Commission, 1998).

As more people become involved in their personal healthcare decisions, healthcare may shift and become more of a product for consumption. This change can be illustrated as people begin to research and learn more about their health conditions and alternative or complementary therapies to improve their health. The National Center for Complementary and Integrative Health (NCCIH) (2016) states over 30% of adults and 12% of children are now using healthcare approaches not considered part of traditional health services (Table 2.2) these complementary healthcare activities include natural products, mind & body practices, and other approaches. The profession of HT could fall within all three of these types of complementary health activities. Horticultural therapists can teach patients how to grow their own fresh fruits and vegetables, which can improve nutrition and assist with alleviating other medical conditions, such as obesity. The profession of HT can focus on mind and body practices, such as mindfulness, and the physical activity of gardening can improve overall physical health and reduce stress. The profession of HT can also fit within other approaches, such as

Table 2.2. Types of Complementary Healthcare.

Type	Activity
Natural Products	herbs vitamins, probiotics, dietary supplements, etc.
Mind & Body Practices	yoga, chiropractic, meditation, massage therapy, mindfulness, etc.
Other approaches	traditional healers, homeopathy, naturopathy, etc.

Note: Adapted from National Center for Complementary and Integrative Health (2018).

Complementary, Alternative, or Integrative Health: What's in a Name? Retrieved from

<https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name>.

homeopathy and naturopathy. Homeopathy is the use of natural substances, such as herbs and essential oils, that have been prepared in small amounts to improve health (National Cancer Institute, n.d.); HT can provide clients with skills to grow homeopathic herbs and other plants. Naturopathy is a form of medicine where prevention, treatment, and health are achieved through the use of interventions that make use of a person's self-healing process, and it also utilizes the healing power of nature (American Association of Naturopathic Physicians, 2011). Horticultural therapy can help to connect clients with nature through growing and caring for plants.

In 2016, the NCCIH reported Americans spent over \$30 billion on out-of-pocket complementary healthcare, which represents 9.2% of out-of-pocket spending for all types of healthcare spending in the US. The out-of-pocket costs do not include co-pays or deductibles. Because HT currently does not have third-party reimbursement, practitioners could utilize this trend to help further the profession. Finding ways to market and sell HT services as an out-of-pocket complementary health service may be one way to increase the practice of HT in the US.

In addition to HT being recognized as a complementary health profession, it is also considered an allied health profession (Haller & Kennedy, 2019). An allied health profession is a profession that provides healthcare or related services in conjunction with medical services provided by doctors or nurses (Association of Schools of Allied Health Professions, n.d.). Examples of allied health professions are music therapy, recreational therapy, art therapy, or respiratory therapy. Allied health professions account for almost 60% of the healthcare workers. However, funding research and training for allied health

professions is lacking when compared to medical services provided by doctors and nurses (Demo et al., 2015).

Education for allied health professions is a critical component to ensure patient safety. Thibault (2013) suggests six critical areas needed for reforming health professional education. The first area is “interprofessional education”, which happens when two or more professions learn about different health professions. The second area is “new models for clinical education”. Now that most healthcare is delivered outside of a hospital; new models of clinical education are needed to address the shift to less hospital-focused healthcare. The third area is “new content to complement the biological sciences”, which will need to focus on a variety of topics including social issues, management issues, and how health relates to different populations. The fourth area is “new educational models based on competency”, which is needed to ensure the time to train new professionals allows students to be competent in their delivery of services. The fifth area is “new educational technologies”, meaning electronic medical records, new diagnostic technology, and educational technology must be embraced to train new professionals. The sixth area is “faculty development for teaching and innovation”, because faculty can be directly involved in clinical practice. This is important to provide additional training to enable faculty to implement appropriate educational programs for students (Thibault, 2013).

Changes in healthcare must be understood to allow for development of educational programs to meet the needs of current and future healthcare systems. Some challenges include practitioners’ difficulty in assimilating research related to healthcare outcomes, slow adoption of new technologies, difficulty in addressing consumerism of

healthcare, workforce shortages, electronic learning, and societal changes (Densen, 2011; Knebel & Greiner, 2003; Ray & Berger, 2010).

Professional organizations are an important part in the development and continuation of a profession. A trend in many professional organizations is a decrease in membership. Some of the reasons for a downward trend are a lack of value for their membership fees, reduced time for professionals to participate in leadership of professional organizations, and lack of funds for professionals to pay for their membership fees. Communication of the benefits of membership in professional organizations is one of the ways shown to increase membership (Agarwal & Islam, 2016).

Trends in Higher Education

A review of trends in higher education will add to the understanding of current challenges and opportunities related to HT education. The National Center for Education Statistics (NCES) highlights data related to education in the US. A 2018 Digest of Education Statistics stated there were 19.8 million college students enrolled in the fall of 2017. Enrollment between 2017 and 2028 is projected to increase by three percent (2018).

Traditionally 18-24 has been the age range of the college student population. The traditional college aged population slightly decreased in the 1980-90s but has increased by three percent between 2007 and 2017 (Digest of Education Statistics, 2018). Adult learners, those over the age of 24, are considered non-traditional students. Trends in higher education have shown growth of the non-traditional learning population. Over 4.4 million students in the US are non-traditional and they account for over 26% of

higher education enrollment (NCES, 2019). Current projections from the NCES (2018) show a slight decrease in the enrollment of non-traditional students in higher education by 2028. Despite the projected decline in enrollment of non-traditional students (NCES, 2018), colleges and universities need to continue to address needs and programs for non-traditional students (Remenick, 2019).

Past research on horticultural therapists shows over 64% of horticultural therapists are 46-64 years old (Larson, 2009). A larger percentage of older professionals indicates educational programs for HT may want to consider enrollment challenges of adult learners. Ross-Gordon (2011) identifies multiple roles of adult learners that offer additional challenges to their education. These roles may include the following: working full or part-time jobs, being married, raising children, being a caregiver, and being involved in the community. These roles can pose challenges to adult learners wanting to complete a college program. They may also limit the ability of learners to take courses only offered during the day.

Awareness of the varying roles adult learners and their increasing population encourages higher education professionals to adjust programs to reach the current and future population of adult learners. Some of the potential adjustments include providing flexible learning opportunities. Ross-Gordon (2011) suggests the following adjustments for consideration by higher education administrators: 1) flexible learning opportunities; 2) flexible time and location of class offerings; 3) offering online courses and degrees, or certificate programs; 4) credit for work experiences; and 5) accelerated course offerings.

With the introduction of technology, such as computers, smartphones, the internet, and web-based apps, education systems have had to adjust to find the best

practices to enhance educational opportunities for students. One adjustment has been the introduction of online learning. It is understood that “emergence of online distance learning highlights a pressing need for educational institutes to embrace innovation and change” (Bozkurt et al., 2015, p. 333). Understanding the trends and research related to online and distance education gives higher education professionals and HT educators knowledge to make timely decisions regarding the development and delivery of educational components of degree or certificate programs. A content analysis by Bozkurt et al. (2015) found 1,225 published research articles related to distance education. This is an indication of the increasing body of literature and its importance to inform professionals about distance and online education.

Online education worldwide is a valuable tool for higher education institutions. Online education generates \$60 billion dollars in the US each year (Bannier, 2016). Groups serving disadvantaged populations are advocating for the use of online and distance education as a way to give access to education to a larger audience that otherwise may not be able to attend a traditional on-site college or university programs (Kumar et al., 2017). By offering online education programs, colleges and universities can reach a larger audience from almost anywhere in the world.

Online education does offer collaborative learning opportunities for students who live in other states and even other countries (Bannier, 2016). Researchers have identified countries where online education is growing in popularity: China, South Korea, Malaysia, India and South Africa (Kumar et al., 2017). India and China represent the two largest countries for international education. The demand for international education in Asia is projected to represent 70% of all education demand.

A study of online education (Allen & Seaman, 2016) found one in eight students in the United States were enrolled in a completely online program, and one in four students have taken an online course. Public institutions have experienced a 9% increase in online enrollments versus a 10% decrease in enrollment in private, for-profit colleges. Allen and Seaman (2016) also reported nearly half of all students (over 1.3 million students) taking online courses are doing so at a public institution. Prior to the COVID-19 pandemic of 2020, over 30% of higher education students in the US were taking online education programs (Bannier, 2016). These numbers illustrate an opportunity for higher education and HT educators to develop online-learning in this growing education market.

Accelerated programs are also a current trend in higher education. An accelerated program “is a form of college education that enables students to achieve a desired set of learning outcomes in a shorter period of time in comparison to the conventional learning format” (Lo et al., 2016). Non-traditional students have unique challenges that include such as working full-time and balancing family and community commitments (Lo et al, 2016). At least 800 colleges and universities in the US offer accelerated higher education programs (Pollard et al., 2017).

As previously mentioned, the majority of horticultural therapists are 46-64 years old. This may indicate those interested in HT education may also be interested in accelerated programs. Accelerated programs do have the same number of contact hours as a traditional course; however, the duration of a course is shorter. Traditional courses are 16-weeks long while accelerated programs may be four to nine weeks long.

This requires the course content to be taught in sessions that are longer compared to a traditional course of 1 to 1.5 hours per session (Lo et al., 2016).

Miller (2017) suggests retention in accelerated programs has been identified as a concern. Because most learners in accelerated program are adults, it is important to understand adult learners “are motivated from within; need a practical, real life application of knowledge; and bring prior knowledge and experience into the classroom” (Miller, 2017). Miller developed a model for helping increase retention of adults in accelerated programs. The model focuses on the need for professional development for higher education institutions. The first component listed is faculty professional development to help faculty gain additional skills that are effective for working with adult learners. The second component is professional development for administrative staff to teach skills for working with adult learners and to assist with student orientation programs for adult learners. The third component is developing a student orientation for adult learners to better prepare them for the accelerated program (Miller, 2017).

Health Professions Comparisons

There are many well-known and accepted therapies in the healthcare industry that are referred to as allied health professions. These include but are not limited to occupational therapy (OT), physical therapy (PT), music therapy (MT), art therapy (AT), and recreational therapy (RT). Each of these therapies have a long history and have had significant impact on the well-being of individuals. Therapists in the allied health professions work with a variety of clients including children, people with disabilities, and people recovering from injuries or other medical conditions. Allied health professions utilize assessment and evaluation to help determine a patient’s level of functioning and

establish treatment goals. To better understand each form of therapy, it is important to understand the history of each and the professional associations related to each.

The American Occupational Therapy Association (AOTA) was established in 1917 making it one of the oldest forms of therapy in the US. The establishment of a professional organization gives the occupational therapy profession an advantage in that it has over 100 years of history developing the profession, professional standards, education, research and practical applications. The professional association currently has about 60,000 members (AOTA, n.d.).

Occupational therapists (OTs) and occupational therapy assistants (OTAs) help clients with skills needed for everyday tasks, also known as “occupations.” Occupational therapists and occupational therapy assistants must be licensed to practice. To qualify for a license, a person must graduate from an accredited OT or OTA educational program, complete fieldwork under an occupational therapist, pass the National Board for Certifying Occupational Therapist Certification Examination, and apply for a license in the state where the therapist works (American Occupational Therapy Association, 2018). Licensing helps to ensure all therapists follow a set of industry accepted standards and protocols. It also helps to ensure patients are receiving quality care.

The second oldest therapy in the US is PT. The American Women’s Physical Therapeutic Association was the first physical therapy professional organization, and it was formed in 1921. This organization evolved over the years and eventually became the American Physical Therapy Association (APTA). The professional association currently has over 100,000 members. Physical therapy helps to improve or restore a person’s mobility. It can at times be an alternative to surgery or pain medication. The

licensure exam for physical therapists is managed by the Federation of State Boards of Physical Therapy. Physical therapy is a widely accepted therapy in the medical community and is utilized by many different populations and ages (APTA, n.d.). It is common to find occupational therapists and physical therapists in many medical settings. In many ways, these two therapies have set the standard when it comes to medical care and patient outcomes. This is also one reason why these therapies are reimbursable by insurance agencies.

Music therapy uses clinical and evidence-based musical interventions to meet goals set by a professional music therapist. Goals of MT includes improvement of physical, emotional, cognitive and social functioning. There have been several professional organizations serving music therapists over the years. The first professional organization was formed in 1950 as the National Association for Music Therapy. The American Music Therapy Association (AMTA) formed when the National Association for Music Therapy and the American Association for Music Therapy merged in 1998. The AMTA has over 5,000 members (n.d.). To be a music therapist, one must complete educational requirements and take a certification exam administered by the Certification Board for Music Therapist (AMTA, n.d.). Music therapy can be reimbursable by some insurance companies. However, to meet the definition of MT and be reimbursable, it must be prescribed by doctors (AMTA, n.d.).

Another therapy that is used in medical settings is AT, the use of art and creative process to help improve mental health (American Art Therapy Association [AATA], 2018). The AATA was formed in 1969. An art therapist must complete an AT master's degree program approved by the Council for Higher Education (AATA, 2018). The Art

Therapy Credentials Board (n.d.) currently has over 5,000 art therapists. Art therapy is reimbursable in some states, such as Maryland, that also has licensure for art therapists, if it is prescribed by a doctor and deemed medically necessary (AATA, 2017).

Recreational therapy has also been represented by several professional organizations. The first professional organizations were formed between 1948 and 1953. In 1966, the Hospital Recreation Section of the American Recreation Society, Recreation Therapy Association of the American Association of Health, Physical Education and Recreation; and the National Association of Recreation Therapists joined to become the National Therapeutic Recreation Society (NTRS), a branch of the National Park and Recreation Association (Van Andel, n.d.). In 1981, the National Council for Therapeutic Recreation Certification (NCTRC) formed to administer the certification exam for recreational therapists (NCTRC, n.d.a). Due to philosophical differences with NTRS, a new professional organization for recreational therapists was incorporated in 1984 as the American Therapeutic Recreation Association (ATRA, n.d.a). The concept of therapy versus recreation for people with disabilities was a main disagreement between NTRS and ATRA (Austin, 2007). In 2017, Dustin & Schwab stated that NRPA eliminated its branches and NTRS dissolved. The only remaining professional organization in recreational therapy in the US is ATRA. Recreational therapy is defined as the following:

A treatment service designed to restore, remediate and rehabilitate a person's level of functioning and independence in life activities, to promote health and wellness as well as reduce or eliminate the activity limitations and restrictions to participation in life situations caused by an illness or a disabling condition (ATRA, n.d.b).

Recreational therapists need to have a minimum of a bachelor's degree. In certain cases, recreational therapy can be reimbursed when prescribed by a doctor. As healthcare laws are constantly changing, ATRA closely monitors these changes and advocates for reimbursement. One more recent development within recreational therapy education is academic accreditation. The Committee on Accreditation of Recreational Therapy Education (CARTE) was formed in 2010 to develop minimum standards for recreational therapy education (ATRA, 2019). Academic accreditation of RT education programs is an accreditation separate from university or college accreditation.

Horticultural therapy was the next to form a professional organization. The National Council for Therapy and Rehabilitation through Horticulture was formed in 1973. This organization was renamed the American Horticultural Therapy Association (AHTA) in 1987. The AHTA has developed a voluntary registration program. A person must complete educational requirements and an internship to become a HTR. The profession of HT is not currently recognized by insurance companies as a reimbursable activity, which has limited the opportunities for horticultural therapists. As the profession continues to develop, insurance reimbursement may continue to be a goal to help fund therapeutic programs in various healthcare settings. The AHTA currently has 498 members (2019a), which is less than the 850 members identified in a 2009 study (Larson, 2009).

This brief history of OT, PT, AT, MT, RT, and HT provides an overview of the complexity of the healthcare industry. Although each therapy has a specific set of education and credential requirements, a specific set of outcomes, and a specific history, professionals need to have a basic understanding of the various therapies in order to

work with other professionals in healthcare settings. While HT is effective, it is a less recognized form of therapy and currently is not reimbursable by insurance companies. One reason for this lack of recognition is the need for robust research on HT outcomes. A simple search on PubMed Central of OT returns over 20,000 results, and a google scholar search returns over 600,000 results. A similar search using HT returns only 616 on PubMed Central and just over 7,000 results on Google Scholar. The lack of third-party reimbursement also limits salaries as healthcare facilities are not able to receive reimbursement for HT services. As healthcare budget cuts occur, many services, such as HT, are often cut because they are not reimbursable by insurance companies and do not produce enough revenue to support the programs.

Health interventions, such as OT, PT, MT, AT, and RT need to be prescribed by a healthcare professional in certain states. Regulations about the need for prescriptions to provide the therapies mentioned above are set by Federal and State laws. Each state has different laws that set who can and cannot prescribe allied therapies (American Music Therapy Association, n.d.; American Art Therapy Association, 2017; Stokowski, 2018). Healthcare practitioners must develop strong advocacy efforts to help get legislation passed related to the prescribing and reimbursement for allied therapies. An example of a bill that was introduced to add RT to the list of therapeutic modalities to the Social Security Act was the “Access to Inpatient Rehabilitation Therapy Act, H. ‘R. 1906” (2015). This bill was not passed despite efforts by many advocates. Currently HT is not prescribed by medical professionals. This can be due to the lack of awareness of the benefits of HT, lack of advocacy for HT, and lack of Federal and State regulations related to HT.

Comparison of Recreational Therapy and Horticultural Therapy Professions

Horticultural therapy has had challenges with growing as a profession over the years and has not grown as fast as other allied healthcare professions. A closer look between the similarities of RT and HT can provide some insight into challenges and potential pathways forward for the profession of HT. Both RT and HT grew out of principles of OT (Long & Robertson, 2020; Simpson & Straus, 1998). Both RT and HT played a significant role in the treatment provided at the Menninger Clinic during the time when the clinic was located in Topeka, Kansas (Robertson & Long, 2020; Simpson & Straus, 1998). Similarities also are found when looking at confusing terms used to define both RT and HT. The terms recreational therapy and therapeutic recreation have been used interchangeably at times, which has caused confusion and disagreement among professionals. Similarly, the terms horticultural therapy and therapeutic horticulture have also been used interchangeably causing confusion and disagreement among professionals.

Differing Philosophies of HT

Philosophical differences developed within the RT profession over the years based on two main ideologies; that the profession should focus on recreation for all (wellness model) or recreation for therapy (clinical model) (Austin et al., 2015; Wozencroft & Griffiths, 2012). These philosophical differences led to the development of different terminology for the profession: recreational therapy or therapeutic recreation. The term therapeutic recreation was developed in an attempt to compromise and work with both the therapy/clinical and recreation for all/wellness viewpoints. However, professionals who identified with the therapeutic or clinical model of RT did not embrace

the term therapeutic recreation (Wozencroft & Griffiths, 2012). Out of this debate, two professional organizations emerged for RT. The National Therapeutic Recreation Society, which was part of the National Park and Recreation Association, took the recreation for all viewpoint. The American Therapeutic Recreation Association took a more clinical viewpoint (Austin et al., 2015; Wozencroft & Griffiths, 2012). In 2010 the National Therapeutic Recreation Society ended when the National Park and Recreation Association decided to end its different branches (Austin et al., 2015).

Like RT, the profession of HT also has had two different philosophical viewpoints over the years. One being the idea of horticultural therapy using a wellness model and the other viewpoint that suggests using horticultural therapy within a clinical model (Shoemaker, 2002). Different terminology of horticultural therapy or therapeutic horticulture has also been used, often interchangeably, in the profession over the years causing confusion. The term horticultural therapy utilizes a clinical model and must be led by a HTR. Whereas, therapeutic horticulture can utilize a wellness model and is led by any trained professional, not limited to just a HTR. Despite the fact that both HT and RT have had two different viewpoints, RT had emerged from these two differences and is more recognized in healthcare than HT (Shoemaker, 2002).

The direction of the profession of HT has also caused some disagreement between professionals over the years. In a study by Strober & Mattson (1993), researchers found only a small percentage of Kansas State University students became registered through the AHTA. When asked if the profession of HT should move towards a credentialing exam or not, the majority of respondents were neutral and only half said a national certification exam was needed (Strober & Mattson, 1993). Shoemaker (2002)

noted that a voluntary registration system is not adequate if the profession of HT wants to gain more acceptance within the medical community. A certification exam has been identified by the membership of AHTA as an important step in the development of the profession (Starling et al., 2014). The current challenges of terminology and philosophy does not limit the future of the profession of HT. Finding a way to understand and overcome these challenges will be further explored in this study.

Foundations of Horticultural Therapy

Theories

A profession needs to have a theoretical foundation from which to draw its practice. This basis comes from theories and models which describe how an intervention works. Son et al. (2016) states that models and definitions are vital for the development of a profession. There are several theories that horticultural therapy utilizes when understanding how the interaction with horticulture can be therapeutic for participants. These theories are drawn from nature-based disciplines. Developing theories that are specific to the profession of HT is one challenge the profession must overcome. One of the theories often cited in HT research is Wilson's *biophilia* (Kellert & Wilson, 1993). This is the idea that humans have a strong connection to living things (Marcus & Sachs, 2013; Son et al., 2016) including connection to living plants.

Another theory cited when exploring how HT can improve health is Attention Restoration Theory (Kaplan & Kaplan, 1989). Attention Restoration Theory is based on the idea that individuals can focus and have directed attention on stressful tasks. The problem arises when an individual has continued high levels of stress. This leads to fatigue and the reduced ability to focus. Time and exposure to nature can restore an

individual's ability to focus attention (Kaplan, 1995; Ohly et al., 2016; Marcus & Sachs, 2013). Because HT focuses on the use of live plants, this connection to a plant and therefore nature can help restore an individual's attention capabilities.

Ulrich, who has published many research articles on the effects of plants and nature in healthcare settings, (Ulrich, 1984; Ulrich et al., 1991; Ulrich, 1983), developed the Theory of Supportive Gardens (Ulrich, 1999). This theory proposes that gardens helps reduce stress in highly stressful situations, such as hospital settings. There are four main points of the theory: 1) physical activity has an impact on reducing stress; 2) social support reduces stress and this includes support among patients, visitors and staff; 3) a sense of control reduces stress. Patients often experience a loss of control when in a healthcare setting. Horticulture or being in a garden can help restore a sense of control for patients; 4) natural distractions can reduce stress in a healthcare setting and plants can be a natural distraction. These four components of Ulrich's theory help to reduce stress and improve coping skills. Ultimately, this theory proposes that by enhancing the coping strategies of individuals in a healthcare setting, improved health outcomes will result (Ulrich, 1999).

A final theory that is helpful when describing the mechanisms of HT is the Supportive Environment Theory, which proposes an individual's mental power and ability to interact with others depends on their environment (Stigsdotter & Grahn, 2002). The Supportive Environment Theory Pyramid (Figure 2.2) illustrates that individuals can come into a treatment program at any level. Patients who are at the bottom of the pyramid have lower mental power and may not be able or ready to interact fully with

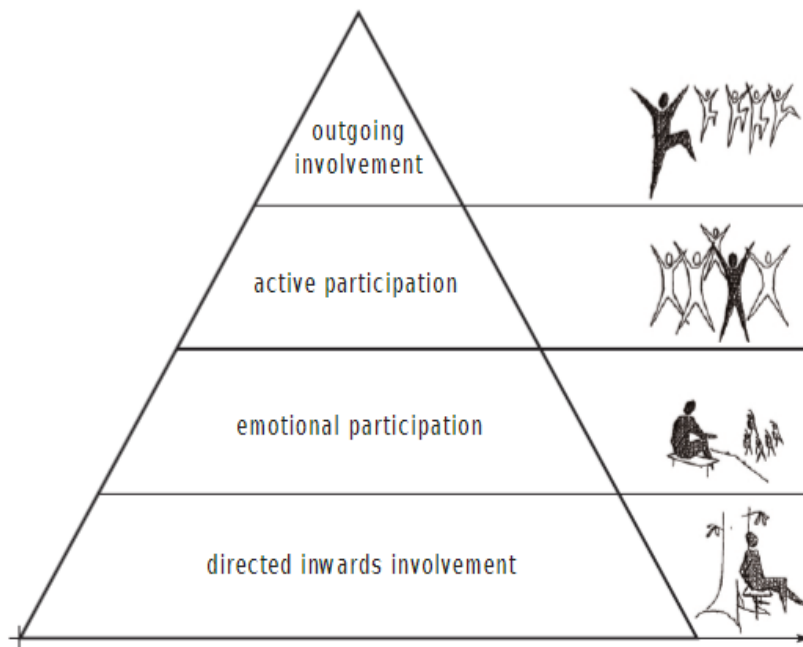


Figure 2.2. Supportive Environment Theory Pyramid.

Note from Stigsdotter, U., & Grahn, P. (2002). What makes a garden a healing garden? *Journal of Therapeutic Horticulture*, 13(2), p. 64.

others in a group therapy situation. As they progress through treatment, a patient's mental power increases and at the top of the pyramid, patients have the ability to be fully involved in a group and be part of creative processes related to completing group horticulture tasks (Stigsdotter & Grahn, 2002). This theory is especially helpful when conducting HT in a group setting. It also helps to understand another group development model, Tuckman's Stages of Group Development. In Tuckman's model, there are four stages of small group development. The first stage of a new group is the forming stage. The storming stage occurs when the group may experience conflict. The next stage is norming, when group norms begin to develop, and conflicts are reduced. The final stage is performing, when the group has worked through most conflicts and developed group norms. In this stage, the group takes on more initiative and the group facilitator steps back as the group performs tasks (Tuckman & Jensen, 1977).

Models of HT

Throughout the profession's development, several models of HT have been introduced including models from Relf in 1973, 1981, and 2004; a model from Mattson in 1982; a model from Takaesu in 1998; and a model from Haller and Kramer in 2006 (Son et al., 2016). Some of these models built upon previous models as the profession grew and advanced. The model suggested by Son et al. (2014) combined elements and perspectives from the previously described models. In developing the current model of

HT, authors grouped past models into three main perspectives: “therapeutic benefits perspective,” “therapeutic dynamics perspective,” and “relative roles perspective” (Son et al., 2014, p. 80). These three different perspectives look at the different ways HT can impact a patient.

The *therapeutic benefits perspective* looks at how benefits of horticultural therapy include emotional, social, physical and intellectual aspects. The *therapeutic dynamics perspective* looks at the interaction and response of growing and taking care of plants. The *relative roles perspective* looks at the roles involved in therapeutic horticulture programs such as goals, therapists, plants, and client or patient (Son et al., 2014).

The model of HT proposed by Son et al. (2014) starts with three elements of HT: horticultural activities, living plants, and diagnosed client. Son’s model then adds three factors of medical/scientific evaluation: programs, assessment, and measurable goals. Next, it includes dynamics of the therapeutic mechanism: mutual dynamics, biophilia, and allostasis (see Figure 2.3). Finally, Son et al. (20104) model adds the four areas that horticultural therapy affects: physical, cognitive, psychological/emotional, and social. Mutual dynamics are the positive benefits associated with horticultural therapy interventions, such as well-being, cooperation, and social interaction (Son et al., 2016). Biophilia is the idea that humans have a strong connection to living things (Kellert & Wilson, 1993; Marcus & Sachs, 2013; Son, Jung, & Park, 2016). Allostasis is the notion that organisms change or adjust to changing environments. This adaptation to change allows the organism to regain stability (Ramsay, & Woods, 2014). Allostasis also states diseases appear when equilibrium of an organization is disturbed (Son et al., 2016).

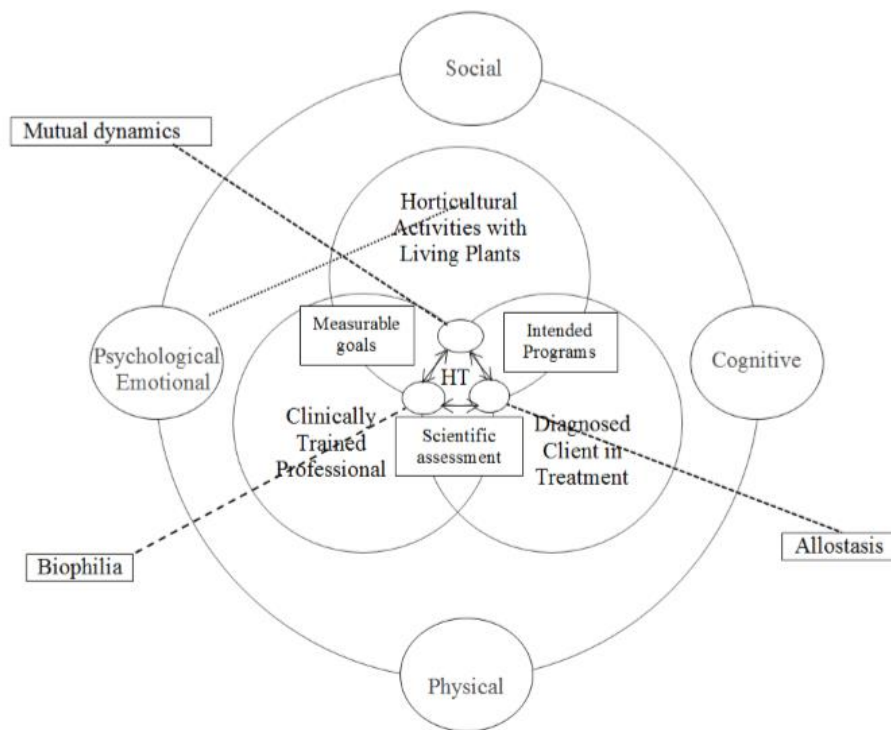


Figure 2.3. Model of Horticultural Therapy

Note: from Son, K. C., Jung, S. J., Lee, A. Y., & Park, S. A. (2014). The theoretical model and universal definition of horticultural therapy. In *XXIX International Horticultural Congress on Horticulture: Sustaining Lives, Livelihoods and Landscapes (IHC2014)*: XII 1121, p. 86.

Therapeutic modalities, such as HT, have the ability to allow a patient to change and adjust using the human-plant interactions to help a patient regain stability.

Relf described several theoretical models related to horticultural therapy in 2006. She also listed challenges surrounding the profession of HT. These challenges help to understand how the profession has progressed since 2006 and to determine what components should be included in the semi-structured interview outlined in the methods section of this dissertation.

One challenge of the profession is the definition of horticultural therapy. In 2005, the AHTA defined HT as “A process in which plants and gardening activities are used to improve the body, mind and spirits of people. Horticultural therapy is an effective and beneficial treatment for people of all ages, backgrounds, and abilities” (Relf, 2006). This definition lacked clarity, such as clinical diagnosis, and trained therapists. The AHTA has redefined the definition several times since 2005. AHTA’s current definition of HT is the following:

The participation in horticultural activities facilitated by a HTR to achieve specific goals within an established treatment, rehabilitation, or vocational plan.

Horticultural therapy is an active process which occurs in the context of an established treatment plan where the process itself is considered the therapeutic activity rather than the end product (2017).

Relf states, “When we cannot even define what we are talking about, it is exceedingly difficult to develop a coherent research program that quantifies and qualifies the depth and breadth of the profession and the efficacy of the activity in a treatment or other therapeutic context” (2006, p. 4). Kennedy and Haller’s (2019) Therapeutic Use of

Horticulture Spectrum Model can also help illustrate the difference between the terms horticultural therapy and therapeutic horticulture. The current definitions from AHTA and Son et al. (2014) are more in line with other healthcare professions' clients and include diagnosis, measurable goals, and a trained therapist. These new definitions set a clear standard for what is HT. Relf further stated that:

Attempts to broaden the profession of HT by claims that it encompasses all positive benefits of human-plant interaction have instead created the impression that it cannot be a legitimate profession because anyone can do it and all people benefit (analogous to claiming that all physical activity is therapeutic; therefore if anyone runs/walks/swims, it is physical therapy) (2006, p. 3).

The profession of HT cannot continue to grow as a profession if practitioners are not willing to acknowledge that trained therapists are required for HT interventions. Without this acknowledgment, activities led by untrained individuals are simply garden activities. This is important because untrained individuals may not have the skills, knowledge and abilities necessary to manage programs for special populations or patients, thus jeopardizing patient safety. A lack of training and understanding of medical conditions could lead to further physical or mental injury to patients due to improper program planning and implementation (Pew Health Professions Commission 1998).

Research

Research is a critical element to furthering the development of the profession of HT. Although more research on HT has continued to be published, including several meta-analyses, additional research, including randomized controlled studies is needed (Soga et al., 2017; Jang et al., 2010). In 2006, Relf identified the need for more rigorous

research on therapeutic outcomes and concluded many practitioners do not understand the need for research. Relf has laid out a final challenge related to HT. Relf (2006) stated, “There have been no comprehensive national studies conducted that would provide the baseline data against which is possible to determine if the utilization of horticulture and landscaping as a treatment modality is growing, static or declining” (p. 4). Relf mentioned landscaping because horticultural therapy is conducted using plants. This can be done indoors or outdoors. Landscaping in a garden space is one area where horticultural therapy can be offered. One issue with this comprehensive study was the question, “Are people practicing HT without formal training or professional registration?” There are currently 233 HTRs (AHTA, 2019a) which is a very small number compared to other healthcare professions. If a national study is done, one question to answer beforehand is “Should non-registered HT individuals who are conducting therapeutic horticulture, gardening programs for special populations, and other programs related to plants be included in the research?” Would this data allow the profession to get a better understanding about future potential growth and the needs of individuals who may want to become a horticultural therapist and contribute to the profession of horticultural therapy?

Relf states that a comprehensive study about HT will aid in determining what elements are needed to enhance horticultural therapy education, professional development, and ways to expand the use of HT (Relf, 2006). A job task analysis of horticultural therapists was completed and published in 2014 which provided information related to knowledge, skills and abilities needed to practice HT (See results of this study in Appendix 14) (Starling et al., 2014). The job task analysis identified how knowledge,

skills, and abilities can provide a basis for reviewing and updating HT education curriculum and coursework.

Relf outlines several needed research elements including: programming data, number of HT programs, populations served, professional development information, including number of other professionals using HT, and criteria for evaluating programs, such as number of participants, progress on goals, and cost effectiveness of the interventions (Relf, 2006).

Horticultural Therapy Education in the United States

The following section will discuss the growth of HT education in the US (Shoemaker, 2003, 2002; Shoemaker & Diehl, 2010; Neuberger, 2010; Fung & Shum, 2010; Moore, 1989; Son et al., 2014; Toyoda, 2008; Pfeffer et al., 2009). In order for a profession to develop, educational programs are critical for training future professionals, practitioners and researchers.

History of Horticultural Therapy in the US

Significant advancements in the use of HT have come about as a result of both World Wars. Returning soldiers took part in horticulture as diversions from their injuries in the 1940s and 1950s. The first training in the use of horticulture by healthcare professionals was led by the OT department of Bloomingdale Hospital, NY in 1917 (Simpson & Straus, 1998). During the 1940's, garden clubs began to visit Veteran Affairs Hospitals and bring flowers, which led to more organized plant-based activities for veterans (AHTA, 2012). The garden clubs and volunteers were led by occupational therapists and the programs conducted resulted in reduced hospital stays for those individuals who took part in them (Simpson & Straus, 1998).

Another component in the evolution of a profession includes the sharing of information in the form of various publications. The use of horticulture as therapy began to find its way into occupational therapy books in the 1920s. The vocational aspect of HT emerged from the fact that occupational therapists began using horticulture as therapy for their programs and thus included horticulture as therapy in books and degree programs. The first HT book was written by Burlingame in 1960, titled *Therapy Through Horticulture*, which chronicled her experiences of establishing therapy programs with volunteers of the National Farm and Garden Bureau and leading the first HT workshops (AHTA, 2012).

In 1971, Kansas State developed the first bachelor's degree program in HT. Milwaukee-Downer College offered the first course in horticulture within an occupational therapy degree in 1942. In 1951, the first week-long HT workshop was held at Michigan State University (AHTA, 2012). This workshop was led by Burlingame and Watson and resulted in Michigan State University awarding the first master's degree in HT 1955 (Simpson & Straus, 1998, p. 8). Even though the first master's degree was awarded in 1955, the first official degree program in the US was not developed until 1972. Burlingame's influence on the development of the profession of HT has been significant. In recognition of her contributions, the AHTA created the Alice Burlingame Humanitarian Award, which is given on a yearly basis (AHTA, n.d.b). Clemson University started an HT graduate degree program in 1973. In 1976, Relf received the first Ph.D. in HT from the University of Maryland (AHTA, 2012).

The number of educational programs focused on HT has fluctuated over the years (see Figure 2.4). In 1982, a non-comprehensive list of 31 colleges and universities

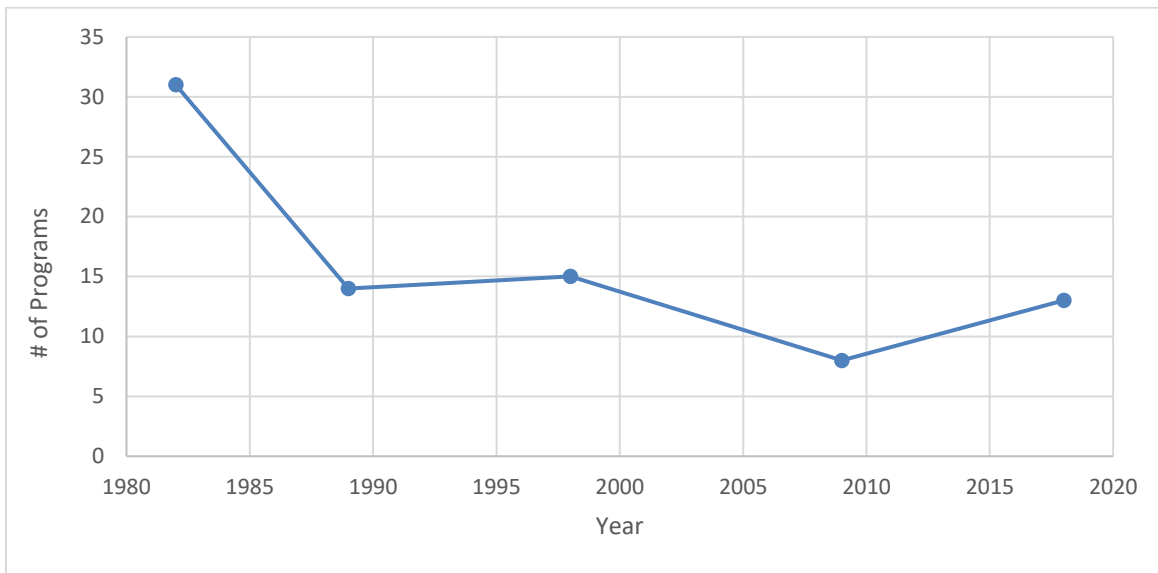


Figure 2.4. Number of Horticultural Therapy Education Programs in the United States

that offered coursework in HT was published (see Table 2.3) (Ellis). In 1989, Moore listed 14 colleges that offered a range of HT education from bachelor's degrees to options in HT and special programs in HT (see Table 2.4). In 1998, Simpson & Straus identified two degree programs in HT, 10 colleges that offered coursework in HT, one certification program in HT, and three colleges that were developing opportunities for HT education (see Table 2.5). In 2009, Larson listed two college programs offering a degree in HT and six programs offering certificate programs in HT (see Table 2.6).

Current Status of Horticultural Therapy Education in the US

Horticultural therapy education in the US has declined from a high point in 1982. However, there has been a slight increase in the US since 2009. A second paradigm that will be analyzed through this study is that members of the AHTA who are using or practicing horticultural therapy methods without seeking professional registration. There was a decrease in professional registration between 1993 and 2009 and a slight increase between 2009 and 2019. Strober & Mattson (1993) reported that 68% of AHTA members were professionally registered. By 2009, that number had dropped to 48% (Larson, 2009). This figure has held steady since 2009. Currently, 46.8% of AHTA membership is professionally registered (AHTA, 2019a).

In 2016, the AHTA member meeting reported 50.8% of members were professionally registered, however, at that time, there were only 467 members (242 professionally registered members) (AHTA, 2016) compared to 504 current members (233 professionally registered members) (AHTA, 2019a). Larson's study found that out of 850 members of AHTA in 2009, 220 were professionally registered (2009). In 2019,

Table 2.3. Horticultural Therapy/Therapeutic Horticulture Education in 1982.

University/College/Organization	Type of program offered
Auburn University	Unlisted
University of Illinois	Horticultural Therapy Special Students
Purdue University	Horticultural Therapy within Horticulture, B.S.
Kansas State University	Horticultural Therapy Degree, B.S. or M.S.
Morehead State University	Unlisted
Eastern Kentucky University	Horticultural Therapy within Horticulture, B.S.
Charles County Community College	One-year Certificate in Horticultural Therapy
University of Massachusetts	Horticultural Therapy within Horticulture, B.S.
Michigan State University	Horticultural Therapy within Horticulture, B.S.
University of Minnesota	Horticultural Therapy Special Students
University of Missouri	Horticultural Therapy Special Students
Longview Community College	Horticultural Therapy Special Students
Meramec Community College	Horticultural Therapy Special Students
Bergen Community College	Horticultural Therapy Special Students
Community College of the Finger Lakes	Unlisted
Wilkes Community College	Unlisted
Ohio State University	Horticultural Therapy Options within Horticulture, B.S. or M.S.
Eastern Oklahoma State College	Unlisted
Temple University	Horticultural Therapy Courses as Electives in A.S. programs; Horticultural Therapy Special Students
Delaware Valley College of Science and Agriculture	Horticultural Therapy Special Students
Clemson University	Horticultural Therapy Options within Horticulture, B.S. or M.S.
Midlands Technical College	Unlisted
Texas A & M University	Horticultural Therapy Special Students
Texas Tech University	Horticultural Therapy Options within Horticulture, B.S.
University of Vermont	Unlisted
Virginia Polytechnic Institute and State University	Horticultural Therapy Options within Horticulture, B.S. or M.S.
Northern Virginia Community College	Unlisted
Edmonds Community College	Horticultural Therapy Two-Year Program, A.A.
Spokane Community College	Horticultural Therapy Special Students
Clark College	Unlisted
University of Wisconsin, River Falls	Unlisted

Note: Adapted from Ellis, B. W. (Eds.) (1982). *North American Horticulture: A Reference*

Guide. pp. 154-15. Charles Scribner's Sons: New York.

Table 2.4. Horticultural Therapy/Therapeutic Horticulture Education in 1989.

University/College/Organization	Type of program offered
Kansas State University	Horticultural Therapy Degree, B.S. or M.S.
Virginia Polytechnic Institute & State University	Horticultural Therapy Options within Horticulture, B.S. or M.S.
Herbert H. Lehman College	Horticultural Therapy Options within Horticulture, B.S.
New York Botanic Garden	Horticultural Therapy Options within Horticulture, B.S.
Purdue University	Horticultural Therapy Options within Horticulture, B.S.
Texas Tech University	Horticultural Therapy Options within Horticulture, B.S.
Texas A & M University	Horticultural Therapy Options within Horticulture, B.S.
Temple University	Horticultural Therapy Special Students Programs in Horticulture
University of Connecticut	Horticultural Therapy Special Students Programs in Horticulture
University of Massachusetts	Horticultural Therapy Special Students Programs in Horticulture
Michigan State	Horticultural Therapy Special Students Programs in Horticulture
University of Rhode Island	Horticultural Therapy Special Students Programs in Horticulture
Bergen Community College	Horticultural Therapy Two-Year Program
Edmonds Community College	Horticultural Therapy Two-Year Program, A.A.

Note: Adapted from Moore, B. (1989). *Growing with gardening: A twelve-month guide for therapy, recreation, and education*. pp. 215-216 UNC Press Books.

Table 2.5. Horticultural Therapy/Therapeutic Horticulture Education in 1998.

University/College/Organization	Type of program offered
Kansas State University	Horticultural Therapy Degree
Virginia Polytechnic Institute and State University	Horticultural Therapy Degree
Texas A & M University	Horticultural Therapy Option within Horticulture
University of Rhode Island	Horticultural Therapy Option within Horticulture
College of DuPage	Coursework in Horticultural Therapy
Rockland Community College	Coursework in Horticultural Therapy
SUNY Cobleskill	Coursework in Horticultural Therapy
Temple University	Coursework in Horticultural Therapy
Tennessee Technological University	Coursework in Horticultural Therapy
University of Massachusetts	Coursework in Horticultural Therapy
Tulsa Junior College	Coursework in Horticultural Therapy
New York Botanical Garden	Certificate Program
Western Piedmont Community College	Additional Opportunities Developing
University of Florida	Additional Opportunities Developing
Northern University of Florida	Additional Opportunities Developing

Note: Adapted from Simpson, S. P., & Straus, M. C. (1998). *Horticulture as Therapy:*

Principles & Practice. pp. Boca Raton, FL: CRC Press.

Table 2.6. Horticultural Therapy/Therapeutic Horticulture Education in 2009.

University/College/Organization	Type of program offered
Kansas State University	Horticultural Therapy Degree
Rutgers University	Horticultural Therapy Degree
Temple	AHTA Accredited Certificate Program
Horticultural Therapy Institute	AHTA Accredited Certificate Program
University of Minnesota Landscape Arboretum	AHTA Accredited Certificate Program
New York Botanic Garden	AHTA Accredited Certificate Program
University of Cincinnati - Clermont College	AHTA Accredited Certificate Program
Rutgers University	AHTA Accredited Certificate Program

Note: Adapted from Larson, J. M. (2009) *Exploratory Research of Training and Practice*

in Horticultural Therapy. (Doctoral dissertation). University of Minnesota.

Retrieved September 13, 2013 from [https://conservancy.umn.edu/handle/](https://conservancy.umn.edu/handle/11299/49908)

11299/49908

AHTA had 498 members, and 233 members were professionally registered (AHTA, 2019a).

In recent years, there have been fewer college credit options for HT education (*College or University Programs*, 2020). As professors retire, universities are not continuing their HT courses for several reasons including lack of qualified professors, lack of understanding of the demand for horticultural therapists, and lack of a job category listed by the Bureau of Labor Statistics. Currently, there are eight colleges or universities offering HT education and seven AHTA Accredited Horticultural Therapy Certificate Programs. Two organizations are in the development stage of offering horticultural therapy education (see Table 2.7).

Development of Professional Organizations

One important aspect of a profession is the development of a professional organization. Professional organizations grow the profession by developing the scope of practice, setting standards of care, and much more. One critical element to a profession is advocacy and lobbying for laws and actions by federal and state governments to help advance the practice of a participating profession. This can include developing legislation for regulation of a profession and passing laws in each state for licensure of a profession. It also includes advocating for inclusion of HT programs in healthcare legislation and for reimbursement for health insurance. When looking at the allied healthcare professions in this study, HT is the only profession that currently does not list any information about advocacy on their website (see Table 2.8).

HT and Job Classification

The US Bureau of Labor Statistics (BLS) tracks employment information in the

Table 2.7. Horticultural Therapy/Therapeutic Horticulture Education in 2020.

College/University/Organization	Type of Program	Website listing course information
Delaware Valley University	AHTA Accredited Certificate Program	https://www.delval.edu/continuing-and-professional-studies/credit-certificate-programs/horticultural-therapy
Horticultural Therapy Institute	AHTA Accredited Certificate Program	https://www.htinstitute.org/
New York Botanical Garden	AHTA Accredited Certificate Program	http://adulted.nybg.org:8080/cart65/jsp/index.jsp?categoryId=10116
Portland Community College	AHTA Accredited Certificate Program	https://plantbiology.rutgers.edu/hort-therapy/
Temple University	AHTA Accredited Certificate Program	https://tyler.temple.edu/blog/one-year-horticultural-therapy-certificate
Rutgers University	AHTA Accredited Certificate Program	
Colorado State University (with Horticultural Therapy Institute)	Horticultural Therapy within Horticulture, B.S.	https://webdoc.agsci.colostate.edu/hortla/CS/hort_therapy_buff.pdf
Oregon State University		https://catalog.oregonstate.edu/college-departments/agricultural-sciences/horticulture/horticulture-bs-hbs/therapeutic-horticulture-option/
University of Tennessee	Three courses taken as Special Topics in Plant Sciences and Botanic Garden Practicum: Introduction to HT, HT Programming and Techniques, and HT Program Management.	
University of Florida	Online Certificate Program	https://wilmotgardens.med.ufl.edu/programming/graduate-education-in-therapeutic-horticulture-at-uf/

Table 2.8. Allied Healthcare Advocacy.

Allied Health Profession	Professional Organization	Advocacy Website
Occupational Therapy	AOTA	https://www.aota.org/Advocacy-Policy.aspx
Physical Therapy	APTA	http://www.apta.org/APTAAdvocacy/
Music Therapy	AMTA	https://www.musictherapy.org/policy/
Art Therapy	AAA	https://arttherapy.org/state-advocacy/
Recreational Therapy	ATRA	https://www.atra-online.com/page/FPPHome
Horticultural Therapy	AHTA	none listed

US and publishes the Occupational Outlook Handbook online. This information gives basic job outlook, education, pay, and numbers of people employed in a specific job. When looking up the allied health professions discussed in this review, PT, OT, and RT are listed with information about each career. Art therapy is mentioned; however, the BLS does not track data related to art therapy. Music therapy and horticultural therapy are not mentioned on the BLS website (United States Bureau of Labor Statistics, 2018a). In order for careers to be listed in the Occupational Outlook Handbook, they must have a code listed in the Standard Occupational Classification (SOC). This system is updated regularly to reflect changes in the job market. In 1991, the US Department of Labor did list horticultural therapy as a career as a medical model (Strober & Mattson, 1993). Since that time, that listing has been removed from the US Department of Labor. The latest version was updated in 2018b (United States Bureau of Labor Statistics). Prior to revising the SOC, the Executive Office of the President, Office of Management and Budget solicited public comments on the SOC. In 2014, the AHTA submitted a proposal to include the career of horticultural therapist into the SOC for the 2018 revision. However, the proposal was denied based on “Classification Principle 9 on collectability” (United States Bureau of Labor Statistics, 2017). Classification Principle 9 states that for an occupation to be included, there must be a way to collect and report data on the specific occupation (United States Bureau of Labor Statistics, 2010). Because of the low number of HTRs, and the number of individuals who state they are horticultural therapists without the voluntary professional registration, it is difficult to track occupational information.

Qualitative Research and Interview Protocol Refinement

Basic qualitative research helps to understand participants' points of view, and identify recurring patterns and themes (Ary et al., 2012). This study utilized semi-structured interviews to collect data on the challenges and opportunities for HT education in the United States. Castillo-Montoya (2016) discussed the interview protocol refinement (IPR) to help increase reliability of qualitative interview research. The interview protocol for this study was developed using the Castillo-Montoya's 4 phases:

Phase 1 - Align interview questions with research questions

This process includes developing a matrix with research questions as columns and interview questions as rows. A check can be placed in each box to see how interview questions fit within the research questions (Castillo-Montoya, 2016).

Phase 2 – Develop Inquiry-Based Conversation

This phase requires the researcher to develop the interview questions that help answer the research questions and include social rules. The questions need to also follow normal conversation flow, and this section allows for the development of a script for the interview (Castillo-Montoya, 2016). These types of questions need to include introductory, transition, key, and closing questions (Castillo-Montoya, 2016). The interview script for this research is included in Appendix 4.

Phase 3 – Receive feedback on interview protocols

During this phase, researchers review and provide feedback about interview protocols. Once feedback has been received, a pilot interview protocol can be finalized. An activity checklist is created for committee members to review the research protocol (Castillo-Montoya, 2016).

Phase 4 – Pilot the interview protocol

During this phase, researchers invite individuals to pilot the interview. These individuals should mirror the sample population being studied. The piloting phase provides researchers an opportunity to determine how much time it will take to complete the interview (Castillo-Montoya, 2016).

CHAPTER 3

MATERIALS AND METHODS

The purpose of this study was to gain an understanding of HT and HT education in the US. By conducting semi-structured interviews using Voice over Internet Protocol (VoIP), rich, detailed data from a smaller sample size were captured. This enabled the identification of common themes among study participants to explore viewpoints on HT and HT education in the US. This study obtained Institutional Review Board (IRB) approval in accordance with University of Tennessee policies and procedures. The IRB application forms are included in Appendix 6. This study utilized a semi-structured qualitative interview using Zoom, a software program using VoIP. This type of technology is gaining increasing acceptance in qualitative research (Redlich-Amirave & Higgenbottom, 2014; Markham & Buchanan, 2012).

Sampling Method

This study utilized maximum variation sampling, which is one of 15 purposeful sampling strategies in qualitative research (Patton, 1990). This is a form of purposeful sampling often used in qualitative research to help identify and select samples comprised of study participants knowledgeable about specific subjects the researchers are studying (Palinkas et al., 2015).

A maximum variation sample is created by identifying the key elements in variation of a population and then selecting different groups of samples that vary as much as possible. This helps to identify themes from a diverse group of individuals. The themes that emerge from the study provide a basis for making decisions (Suri, 2011). Maximum variation samples help researchers document unique and diverse cases by

gathering high quality data and descriptions of a particular phenomenon (Palinkas et al., 2015; Suri, 2011). Variations in a sample can be related to categories, such as gender, age, socio-economic status, job or other characteristic about a population (Coyne, 1997).

The following categories were used to create the sample for this study: horticultural therapy educators who teach at colleges or universities, horticultural therapy educators who teach at AHTA Accredited Certificate Programs, HTRs, associate-level members (non-registered members) of AHTA, and individuals who were at one time members of AHTA, but had not renewed their membership. These population variations provided diverse viewpoints about horticultural therapy education and the overall profession of horticultural therapy in the United States.

Recruitment and Study Participant Information

Three individuals were recruited to pilot the interview: one HT educator, one HTR, one previous member of AHTA. These pilot reviewers were recruited through personal contacts of the researcher. The pilot reviewers mirrored the sample population of this study. Pilot participants also reviewed a summary of the results and provided comments and feedback to increase the validity of the findings (Castillo-Montoya, 2016). The main researcher contacted AHTA to assist with recruitment of HTRs and Associate-level members. An email was sent out by AHTA asking members to contact the researcher to express their interest in taking part in the study (see Appendix 3). Educators and former members of AHTA were identified through researcher personal contacts and snowball sampling. A total of 32 individuals who were currently members of AHTA expressed interest in taking part of the study.

Collected data were analyzed from an initial sample of 25 interviews to determine if population saturation had occurred. Population saturation occurs when no new findings are collected from participants and the findings begin to be repeated (Creswell & Creswell, 2017, p. 189). Two additional interviews were conducted, and population saturation was determined by the researcher. A total of 27 interviews were conducted for this study. The sample variation consisted of four educators from colleges or university programs, seven educators from AHTA Accredited Certificate Programs, six HTRs, six Associate-level members of AHTA who were not HTRs, and four people who were former members of AHTA. Study participants lived throughout the United States in the following regions: South, Northeast, Midwest and West (see figure 3.1). When compared to the overall AHTA membership, this research sample is representative of the regions where members of AHTA live (see figure 3.2).

Instrumentation

Semi-structured Interview Development

This study utilized a semi-structured qualitative interview. This form of interviewing allows the researcher to develop questions to ask participants, while providing opportunity to add additional questions depending on dialogue between participant and researchers (DiCicco-Bloom, & Crabtree, 2006). The semi-structured interview was developed using Castillo-Montoya's (2016) IPR process. The interview consisted of 9 questions for non-educators and 11 questions for educators, designed to answer the main research question of this study: "What are the current challenges and opportunities for HT and HT education in the United States?" (see Appendix 4).

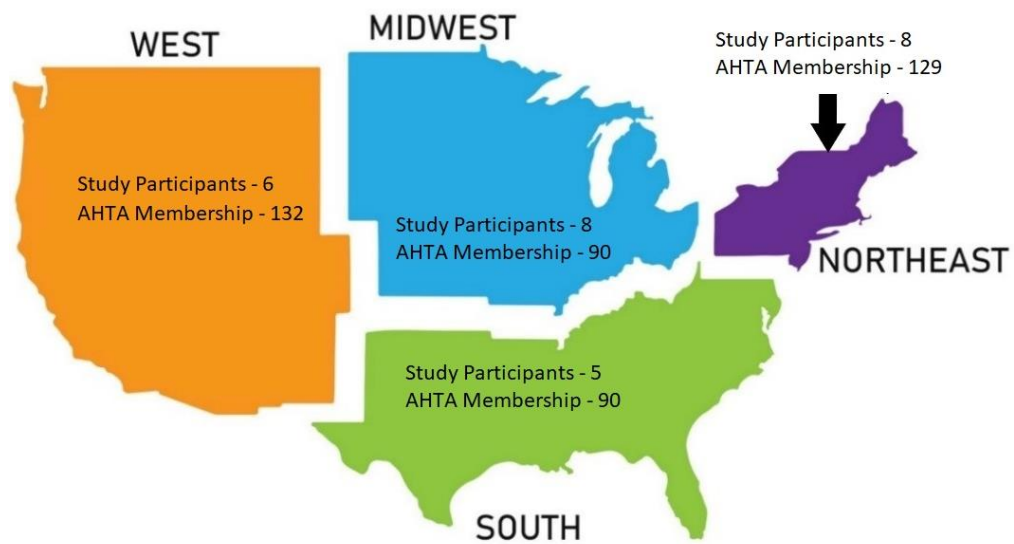


Figure 3.1. Study Participants by Residence Compared to 2019 AHTA Membership

* map graphic from <https://designbundles.net/arcsmultidesignsshop/247012-regions-of-the-united-states-map-vector-united-sta>



Figure 3.2. 2019 AHTA Membership by Residence

South – 91; Northeast – 129; West – 132; Midwest – 90

Reprinted from American Horticultural Therapy Association (2019a). Member Meeting held on October 4, 2019. Grand Rapids, MI.

Zoom Communications Inc.

Due to the large geographic distance between educators and the researcher, video conferencing was used to allow for an interview that was similar to a face-to-face conversation. The use of video conferencing cannot completely replace an in-person interview. However, when time and funds do not allow for in person interviews, video conference can be a viable alternative (Lo Iacono et al., 2016). Data collection utilized Video Conferencing Software (VCS), which is a form of VoIP. New technologies, such as VoIP, have begun to be used more often in qualitative research. In 2014, researchers identified that 88% of Americans use the internet (Wilkerson et al., 2014). Americans' familiarity with the internet makes the use of VoIP more feasible in research because participants will most likely be familiar with the technology being used in the study. Traditional phone interviews often do not show non-verbal communication that qualitative researchers observe during in-person interviews. Utilizing new technology like VoIP and video conferencing provides opportunities for researchers to conduct an interview that is a viable alternative to face-to-face interviewing. In fact, researchers are beginning to accept that internet-based qualitative research may be better than traditional face-to-face research methods depending on the study population (Wilkerson et al., 2014). Using VoIP, gives the participants flexibility by allowing them to choose to use audio only or video conferencing (Redlich-Amirav, & Higginbottom, 2014). Researchers using internet data collection need to be familiar with both traditional qualitative facilitation/interview skills and be comfortable with the technology used to collect data. They must also be able to manage audio and video file formats that are collected and used for data analysis (Wilkerson et al., 2014).

When selecting VCS, researchers need to determine how the data are collected, stored and encrypted. This is helpful in ensuring confidentiality and data integrity. This study utilized Zoom to conduct interviews. Ethical guidelines have been developed to help assist internet-based researchers (Markham & Buchanan, 2012). It is also important to have study participants be aware of their surroundings when conducting interviews to avoid having other people listening to the interviews (Barnhill & Barnhill, 2014). This can help increase confidentiality. A final note, using internet-based data collection cannot fully guarantee confidentiality and may lead to loss of anonymity, even when the researcher follows an approved and carefully planned research protocol (Wilkerson et al., 2014). Research protocol and management plans should include the following security procedures: using strong passwords, enabled computer firewall, up-to-date antivirus software, the latest security updates, encrypted data, password protect files, no use of wi-fi or an open network and never leaving a computer with research data on an unlocked and unattended computer (Barnhill & Barnhill, 2014).

Zoom is an internet-based Video Conferencing Software program (Zoom Video Communications, Inc., n.d.a). Zoom's programs have several features set up to assist users with security. Zoom is a HIPAA compliant company and has signed the HIPAA Business Associate Agreement (Zoom Video Communications, Inc., n.d.b). The Health Insurance Portability and Accountability Act (HIPAA) is a Federal Law that protects an individual's health information from being distributed or given to another party without signed approval by an individual (*Summary of the HIPAA Privacy rule*, 2013). A Business Associated Agreement allows for non-healthcare related companies to conduct business that could include the collection, storage, and distribution of an individual's

health information protected under HIPAA (United States Department of Health and Human Services, 2013). This study was not focused on collecting HIPAA information during the interview process. However, this is a compliance issue that may be helpful for future interview research.

Zoom utilizes several security features including end-to-end encryption to secure meetings and data. This allows encryption of recordings of Zoom meetings and is also part of Zoom's HIPAA compliance (Zoom Video Communications, Inc., 2020). The interviewer for this study enabled end-to-end encryption prior to beginning the interviews. Interviews using Zoom software, allowed the interviewer and research subjects to call using a phone line or an internet connection. The interviews utilized the recording feature of the Zoom software. Video and the audio files were automatically downloaded to the researcher's computer at the end of the interview. The researcher securely deleted the video files using the cipher command in Windows 10 Power Shell. This command overwrites deleted data on a computer's hard drive. The video files were encrypted on the researcher's computer and used to transcribe each interview.

Dragon Professional Individual v15

Dragon Professional Individual by Nuance is a VR software program. Each recorded interview was transcribed with the assistance of Dragon. After transcribing all interviews, the researchers listened to each recording as they read through the transcription text. Errors in the transcription were corrected. This process gave researchers a chance to become highly involved in the recordings by listening to the recording and reading the transcripts.

NVivo

Qualitative Data Analysis Software (QDAS) assists researchers in analyzing qualitative data (Zamawe, 2015; Maher, Hadfield, Hutchings & Eyto, 2018). A content analysis of research articles between 1994 and 2013 found 763 peer reviewed research articles that utilized two QDAS programs, ATLAS.ti and NVivo. Of the 763 articles, 349 used ATLAS.ti and 414 used NVivo (Woods et al., 2016). NVivo is one of the longest running QDAS and it is used in numerous research articles. NVivo was utilized for analyzing the interviews conducted for this study.

This study utilized NVivo version 12 to analysis the data gathered in the interviews. NVivo is a software program developed by QSR International that has many functions including transcription, code development, data analysis, creation of charts and visual representations qualitative research. It can also import video and audio files to allow for data analysis (University of Tennessee Office of Information Technology, n.d.).

DMP Tool

A Data Management Plan (DMP) is a way to describe how data for studies will be collected, stored and managed. The University of Tennessee Libraries have developed a free data management tool called DMP Tool (see DMP Tool). This tool uses a step-by-step process to develop data management plans. After completion of the DMP Tool, a data librarian will review the data management plan and offer feedback (University of Tennessee Libraries, n.d.). The data management plan for this research is found in Appendix 10.

Interview Procedures

A preliminary interview process was piloted with horticultural therapy professionals. These pilot reviewers allowed the researcher to conduct the interview and determine if the timing and structure of the interview was appropriate. The pilot interviews were not included as part of the 27 study participants and therefore not included in the analysis of this study. After completing three pilot interviews, the researcher determined the interview questions were not confusing for pilot reviewers and interview length was within the time limit of 30 minutes. The following protocol in Table 3.1 was followed prior to and after the phone interviews.

Once potential study participants were identified, an introductory email was sent to each of the study participants. This email described the research and included a copy of the consent form for the study. Interviewees were asked to respond to the email and include a signed consent form. The researcher responded with a second email to interviewees to set up a date and time for the interview. A follow-up email was sent one week after the initial email if interviewees did not respond.

Data Collection

Interviews were conducted between November 2019 and January 2020. The three pilot interviews totaled 38 min for an average of 12 min each. The shortest pilot interview was 9 min 47 s. The longest pilot interview was 17 min 46 s. The 27 study interviews totaled 8 hr 38 min for an average of 19 min each. The shortest interview was 11 min and 12 s. The longest interview was 38 min and 18 s. Averages of interview times for each sample population was also calculated (See Table 3.2).

Table 3.1. Interview Protocol.

Step 1 – Identify sample of individuals to email.
Step 2 – Send introductory email text – see Appendix 1
Step 3 - Follow-up email text – see Appendix 2
Step 4 - 2 nd Email/scheduling email – see Appendix 3
Step 5 – Conduct interview – see Appendix 4
Step 6 – Send thank you email – see Appendix 5
Step 7 – Transcribe interviews and determine if saturation has occurred
Step 8 – Recruit additional interview participants to reach saturation
Step 9 – Conduct 2 additional interviews and send thank you email
Step 10 – Transcribe additional interviews and determine if saturation has occurred. Saturation occurs with the researcher is no longer collecting new information from study participants.
Step 11 – Determined saturation

Table 3.2. Average length of interviews based on sample group

Sample Group	Number of Study Participants	Average Interview Time
Pilot Reviewers	3	12 min
Entire Study Sample	27	19 min
College & University Educators	4	15 min 52 s
Certificate Program Educators	7	28 min 25 s
HTRs	6	17 min 55 s
Associate-Level Members	6	17 min 51 s
Former members of AHTA	4	20 min 1 s

Data Analysis

Interviews were transcribed with the assistance of voice recognition software, Dragon Professional Individual v15 by Nuance. Derrick Stowell, the researcher, and Dr. PJ Snodgrass, second coder and Horticultural Therapy Program Assistant, then listened to recorded interviews while reading through the text of each transcribed interview. It is suggested a minimum of two researchers are necessary to establish reliability (O'Connor & Joffe, 2020). Data analysis was completed utilizing Creswell's (2014) six step method (see Table 3.3).

Transcriptions of study interviews were uploaded into NIVIVO 12 for codebook development and analysis. The lead researcher developed the initial code book (DeCuir-Gunby et al., 2011). Derrick Stowell and Dr. Snodgrass then met to discuss the codes based on qualitative data analysis methodology (Morse, 2015; Guba & Lincoln, 1985). The researcher and second coder came to a consensus on the code book. Data from the interviews were coded by the researcher and the second coder individually to increase interrater reliability. Coding utilized Tesch's Coding Process (1990). This process includes eight steps to give researchers an overall sense of the data and develop codes that help describe the common themes that are found in the interview data (Tesch, 1990). Creswell & Creswell (2017) have suggested codes typically fall into three main themes: 1) Expected codes - codes that someone may find based on past publications.; 2) Surprising codes - codes that were not considered at the start of the study.; and 3) Unusual codes – codes that can interest readers, such as words that cause readers to remember or recall specific facts, concepts, or ideas.

Table 3.3. Creswell's Six Step Method for Data Analysis

Step 1. Organize and prepare the interviews for analysis.
Step 2. Review all the data in the interviews to gain a general sense of the information gathered.
Step 3. Begin to code the data by creating a list of words that represent categories of data presented in the interviews.
Step 4. Use the codes created to begin to create descriptions, categories, and themes for analysis.
Step 5. Create how the descriptions and themes will be presented in a narrative. This could include figures or tables.
Step 6. Interpretation of the findings (Creswell & Creswell, 2017).

After initial coding, the researcher and second coder met to discuss main themes. Through this process, the researcher and second coder identified disagreement in interpretation of the coded data. Disagreement can arise for several reasons. Krippendorff (2008) identified two main types of disagreement in qualitative research: systematic and random. Researchers determined the disagreements identified during initial coding were systematic and required researchers to review the code book and make revisions. Some of the disagreement related to how much text a coder highlighted either a word, phrase, sentence or group of sentences. Another area of disagreement related to interpretation of the specific codes in the code book. After identifying the disagreement, researchers negotiated to clarify amount of text highlighted for each code and discussed the interpretation of the codes. When consensus was reached, the researchers revised the code book (Zade et al., 2018) and recoded each interview.

Cohen's kappa (1960) is a widely used statistic to give a quantitative measure of agreement between two or more coders otherwise known as interrater or intercoder reliability (Viera & Garrett, 2005). Cohen's kappa helps to illustrate a level of agreement that goes beyond chance. The kappa statistics is a number between zero and 1. Negative kappa scores often indicate a systematic disagreement between coders (Viera & Garrett, 2005). Cohen's kappa is calculated using the following formulas in Figure 3.3.

Cohen's kappa was calculated for each code utilizing NIVIVO 12 by comparing what sections of the interview text were coded and not coded by researchers. Percent agreement is calculated by the number of characters in the interview text that was coded by both researchers, only one researcher, and neither of the researchers (NIVIVO 12, n.d.). The kappa values and percent agreement for each code was then imported into

P_o = the portion of units which coders agreed

P_c = the portion of units which agreement of coders is by chance

$$k = \frac{P_o - P_c}{1 - P_c}$$

The formula can also be expressed as frequencies =

$$k = \frac{F_o - F_c}{N - PF}$$

F_o = the frequency by of units which coders agreed

F_c = the frequency of units which agreement of coders is by chance (Cohen, 1960).

Figure 3.3. Cohen's kappa formulas

Microsoft Excel to calculate the average kappa for all codes. The coders had 97.23% agreement and the average unweighted kappa was 0.62, which falls in the substantial agreement category (see Table 3.4) (Landis & Koch, 1977).

After the data were analyzed, the researcher shared results with the three members who assisted with piloting the interview protocol to help increase validity of the results. Pilot reviewers provided feedback on the results and that feedback was incorporated into the final write up of the results.

Table 3.4. Strength of Agreement Between Coders.

Kappa Statistic	Strength of Agreement
<0.00	Poor
0.00-0.20	Slight
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Substantial
0.81-1.00	Almost Perfect

Suggested levels of agreement from Landis & Koch, 1977.

CHAPTER 4

RESULTS

Initial content analysis revealed 15 codes and 28 subcodes that were identified from the transcribed interviews using Nvivo 12 (see Appendix 11). After further content analysis, the 15 codes were organized into six main themes (see Table 4.1). These six main themes were organized to answer the research questions of this study. What are the current challenges and opportunities for HT and HT education in the US? What is the current status of HT in the US? What should the profession of HT look like in the future? What role does HT education play in the profession of HT? What steps are needed for the profession of HT to advance?

Main Themes

Current State of the Profession

Current State of the Profession emerged as a main theme with four subthemes: what study participants **liked** about the profession, **nature**, professional **uniqueness**, and **diversity**. Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

Study participants were asked if they thought the profession was growing, shrinking or staying the same. The responses from study participants varied. One study participant stated, "I would have to say that to me it's a growing field, which is also very exciting." Another study participant stated, "I think it's growing because there's just more gardening awareness, physical movement, being important and you see that in marketing all the time." One study participant said the profession could continue to grow

Table 4.1. Six Main Themes Discussed by Study Participants

• Current State of the Profession
• AHTA Operations and Structure
• Education/Credentialing Opportunities
• Funding/Job Opportunities
• Public Awareness/Networking
• Research Opportunities

if the right things happened, “I think it has enormous potential because I see us moving into a time across the world really where we see the need for nature connections.”

Another study participant stated, “I think there is a huge potential for it [HT] to grow exponentially.” Five study participants mentioned the profession was staying the same. One study participant stated, “I think it [HT] is probably fairly constant right now.”. Another study participant stated, “I think it [HT] is staying the same. I am a little worried about it shrinking, but I think we are holding steady.” Three study participants mentioned the profession was shrinking. One study participant stated, “What I've seen is a plateau or a slight decline.” Another study participant stated, “I think it is probably fairly constant right now, but again my perspective tells me that we have shrunk.”

When further exploring the current status of HT in the US, participants were asked what they **liked** about the profession of HT. Study participants mentioned they **liked** how most people are very receptive to HT when they learn about the profession. Study participants **liked** that other healthcare staff are supportive and value the therapeutic and healing aspects of plants when they learn about HT. One participant stated what they liked most about HT is “Almost one hundred percent of the people that you speak to and explain what horticultural therapy is, are in agreement that working with plants, the people-plant connection is very important.”

When discussing the current status of the profession, 15 study participants mentioned **nature** as a positive aspect of the profession of HT a total of 54 times. **Nature**, as discussed by study participants, includes digging in the soil and the healing aspects of **nature** and plants. One study participant discussed their personal benefits, “I'm a professional horticulturist first and foremost, I know what being horticulturist

means for me in terms of my gardening and being out in nature and engaging with plants and digging in the dirt.” Another study participant stated:

I think that it [using nature as therapy] is growing in recognition, maybe not horticultural therapy per se, but the larger concept, the importance of nature interactions... I feel like people are starting to finally realize it is not just trendy, but there is actually some depth to it.

Another study participant mentioned the opportunity for HT professionals to use the growing interest in the healing aspects of **nature** to move the profession of HT forward:

When I look at the health needs, the technology lifestyle that we've acquired and our growing awareness with research evidence of how important nature and being around is, there's a phenomenal opportunity and I think if we had strong national leadership, it [HT] could really move past that emerging stage we have been in for 50, 60 years.

The ability to use growing plants as a way to connect to the concept of growth in people is a key component of the profession of HT. One study participant stated, “working with plants, the people plant connection is very important. They see the benefits of gardening or working with natural material.” The recent **nature** movements provide an opportunity for HT professionals to use their **unique** skills to grow the profession and improve health and wellness outcomes.

When discussing the current status of the profession, 11 study participants mentioned the **unique** aspect of the profession 34 times. The profession of HT was seen as being **unique** compared to other healthcare professions and HT practitioners use creativity in the development and implementation of HT programs. This **uniqueness**

also challenges the profession. One study participant stated, “I think one of the big challenges is moving as a profession towards taking the steps that might be necessary to have more credibility and at the same time keeping sight of unique and diverse applications of horticultural therapy.”

Horticultural therapy programs are also **diverse** throughout the United States. One study participant discussed **diversity** as a positive aspect and challenge of the profession. “I like its diversity, on the other side of that is probably what I dislike the most is that in some ways the diversity also keeps it from being able to be as focused and streamlined as some of the other allied disciplines.” Another study participant discussed how HT provides **unique** opportunities to help program participants understand how they spend their time, “What I like about it is that I think and again in US healthcare, there are few professions that really give attention, credence to the impact of how people spend their time, how and where they spend their time and I think HT is unique in understanding that.”

AHTA Operations and Structure

AHTA Operations and Structure emerged as a main theme with six subthemes: **board of directors, frustrations, inclusion, membership, clinical model versus wellness model, and vision**. Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

The **board of directors** for AHTA is a volunteer board and made up of horticultural therapists and other professionals, such as landscape architects or allied health professionals. The **board of directors** have a pivotal role in the profession and directing AHTA. The **board of directors** are members of AHTA who have been elected

by the membership. Study participants did recognize that an unpaid board did pose challenges because serving on the board is not a board member's primary job. One study participant stated, "They all volunteer and they all have jobs on top of doing this [serving on AHTA's board of directors]." Another study participant stated, "We have a volunteer board and I do understand that." It is typical for **board of directors** for nonprofits and professional associations to be volunteer. The **board of directors** currently relies on a paid Association Management Company to run daily operations of AHTA (AMC Advantage, 2017; AHTA, 2019c).

Frustration of members were discussed by 19 study participants for a total of 83 mentions. There has been **frustration** from members on a variety of issues, including lack of **membership** growth, finding courses to quality for HTR and the lack of progress on credentialing. Coursework related to professional registration fall within the education and credentialing and will be discussed in the Education/Credentialing main theme section below.

The lack of growth of the **membership** of AHTA was discussed by seven study participants for a total of 19 mentions. Membership numbers in AHTA have been stagnant or have declined from over 800 members in 2009 (Larson, 2010) to 498 in 2019 (American Horticultural Therapy Association, 2019a). One study participant recognized the need to grow **membership**, "We need to work on more membership in AHTA and also registration numbers need to go up." Some study participants attribute this trend in **membership** numbers to lack of **inclusion**, changes in the professional registration requirements, and the focus on credentialing:

A lot of people got lost along the way and did not feel included. My vision would include that national organization would become more inclusive and would find ways to get back people that were active before and that have a great interest in horticultural therapy.

Some study participants do not see the benefit of **membership** and belonging to AHTA, particularly if they did not intend to become registered. One study participant stated, “if they don't get them to become professionally registered within five years, they don't stay members anymore because there is just nothing there for them anymore.”

People are also **frustrated** the profession has not seemed to move forward on credentialing and that **membership** is not growing. One study participant stated, “We lose members. We are losing credibility because there's hardly any of us out there anymore and most of us are older and will eventually retire.” Another study participant stated:

I think we need to put a lot of pressure on our national organization as it exists now or as it needs to exist to serve the needs of those in the field. Can the field exist without a professional national organization? I don't know... I just think things aren't happening enough at the national organization level.

Another participant stated, “I do know their goal of getting a credentialed exam. It just seems to me like we are always in the same place.”

Inclusion was discussed by five study participants for a total of 26 mentions. **Inclusion**, as discussed by study participants, consists of several elements such as the feeling of being included as a professional, the ability of the profession to serve a broad and diverse audience, and having horticultural therapists who reflect diversity

themselves. Some members felt the focus on credentialing and registration made others feel less valuable, which has hurt **membership** numbers. Study participants mentioned there seems to be a divide between the clinical side of HT and wellness side of HT. This divide has hurt the growth of the profession. One study participant also expressed disliking the perception the professional association has given, “the message is that if you are not an HTR and you don't fit within a certain cookie-cutterness, you are not a legitimate practitioner and there's a lot of judgments and negativity put on people who don't fit within the mold. That's actually why I let my membership lapse.” Another study participant discussed this as related to **inclusion**,

I am concerned that a lot of the movement in our field is driven by those at work making great contributions, but in highly clinical settings, to the exclusion of what's going on, maybe in these other areas where horticultural therapy is certainly applicable and necessary and beneficial.

Study participants also discussed **frustrations** related to AHTA's lack of comment on coursework needed for professional registration. The professional association does have a list of coursework needed to qualify for HTR (AHTA, n.d.a). However, there is no pre-approval for courses that students take. Currently, the AHTA does not review courses until a student submits their professional registration application. Three study participants mentioned the frustration of AHTA of commenting on coursework a total of nine times. One study participant stated “The AHTA will not comment on any courses that students may take prior to putting in their applications in for becoming registered.” Another study participant mentioned their **frustration** related to AHTA and required coursework for professional registration and how it impacts

students:

I have just heard that they will call AHTA and say does this class work for counseling or does this class I took work for propagation and AHTA will not comment on that. They are submitting their registration packet not really knowing if it is going to work or not. So, they have it all ready and they feel like they have got it all in line, but then AHTA may come back and say 'Oh no, actually your plant propagation class and your group therapy skills class does not count', and they are pretty angry about that.

Study participants were asked about their **vision** for the future of the profession. Within the AHTA operations and structure theme, several study participants mentioned diversity in their **vision** for the future and its importance within the profession and the organization of AHTA. This includes diverse backgrounds of therapists and diversity of programs offered throughout the US to reach a wide audience. One study participant stated, "I hope that in 2030 we have an embracing of more diverse opinions. That the membership of AHTA is more diverse." Increasing opportunities for minorities to learn about HT as well as opportunities to become horticultural therapists was also identified. Another study participant stated

I think there needs to be an embracing of young practitioners and new practitioners because some people come to horticultural therapy from a third career and on top of that, diversity. We go to, and I'm sure you experienced this, when you go to AHTA conferences, which I've been to a few, it's all white women pretty much.

This study participant went on to express a desire for "more of a focus on diversity and

celebrating diverse voices, people of color.”

Study participants discussed the issue of what type of healthcare model AHTA should adopt. Nine study participants discussed the difference between using horticultural therapy as a **clinical model or a wellness model**. Some study participants felt AHTA needs to step back and determine if HT should follow a **clinical model or a wellness model**. One study participant discussed this by stating the profession needs to “decide if we want to be in the medical arena or in the health and well-being arena..., because that is one of the tensions, right, it would help clarify what a curriculum should be what the research should be.” There was concern that there is a “a big divide from the highly clinical side of horticultural therapy and horticultural therapy and other disciplines.” This study participant suggested the need to bring the profession along “simultaneously in different settings.” Other study participants saw a vision for both clinical and wellness models of HT. One study participant shared their **vision** for the future where HT is “well integrated into not only healthcare but a whole wide range of human services including wellness programs. That it really has a presence in human services and a general understanding by at least other practitioners of its value.” Another study participant suggested, “I would be pleased if, to believe that horticultural therapy is even more familiar to the medical community and is accepted as a complement to all other therapies not as a standalone.”

Education/Credentialing Opportunities

Education/Credentialing emerged as a main theme with nine subthemes: **enrollment, future of educators, appropriateness of coursework, continuing education units (CEUs), standardization, frustration of finding coursework,**

credentialing, need for **more educational opportunities**, **internships**, and **vision**.

Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

The study participants who were HT educators discussed **enrollment** numbers in HT courses. **Enrollment** numbers help to illustrate how many people are involved with the profession of HT. Educators of both college/university programs and AHTA Accredited Certificate Programs took part in interviews for this study. **Enrollment** numbers in this section reflect current and past programs that are currently not enrolling new students in HT classes due to educator retirement or other recent programmatic changes. Numbers are also difficult to compare due to the fact some students complete the coursework in one year and some students may take more than one year to complete coursework or a certificate program.

One HT certificate program had the ability to accept 20 to 25 students each year and regularly had a waiting list of 60 potential students. Other programs mentioned they did not have an issue with a waiting list. Class numbers ranged from 4 students to 35 students. Educators also mentioned it was common to have more students taking the Introduction to HT course and fewer students taking the rest of the HT class series or certificate program.

One concern that was brought up by study participants was the **future of educators**. Ten study participants mentioned concern about the future of educators a total of 21 times. As HT educators retire, participants expressed a need to identify those who would be eligible to teach HT and to mentor new educators or there will be no professional education options for HT in the future. One study participant stated that "It's

hard to find a professor that's teaching this [HT]." Another participant discussed their concern stating that "A lot of people that have been doing it [practicing HT] for years that are HTR's and used to be HTM's [Horticultural Therapists – Masters] that are now retiring." Current educators expressed concerns who will be qualified to teach HT at the college level when they retire. One educator discussed the problem of who will take over teaching HT courses:

It's going to be a problem because if I were to leave, I have no clue who they could hire to come and teach. They [colleges] have no one that's willing, I don't know people that have completed the program that are able to teach or have any experience.

The guidelines set by AHTA require that individuals teaching HT courses must have at least three years of experience as a HTR. Educators who took part in this study are unsure if there are enough qualified HTRs to maintain the current educational programs for the profession.

The **appropriateness of coursework** required for horticultural therapists was discussed by five study participants for a total of 16 mentions. Some study participants discussed that some of the non-horticultural therapy course work seemed not to provide the type of knowledge professionals would need to practice HT. An example would be a plant science course, such as propagation. One study participant stated for example, "A college level plant propagation course, the knowledge is great, the work [college level work] is there...But, I wonder if we could not streamline the horticultural sciences to include things that people are going to use in practice." This study participant went on to describe tasks related to propagation that would not be applicable to HT practice such

as tissue propagation. This study participant stated that knowledge about tissue propagation and other plant science topics are “All great things to know and they expand the knowledge base..., but honestly, I think if they [students] look at it [tissue propagation] they may say, why am I doing this?” Coursework selected for professional registration requirements was developed by AHTA. The goal of a job task analysis is to “identify the knowledge, skills, and abilities currently used and/or performed by horticultural therapists” (Starling et al., 2014, p. 646). Results from the last job task analysis for horticultural therapy reported therapeutic knowledge skills and abilities as well as horticulture knowledge skills and abilities needed for entry level horticultural therapists (see Appendix 14) (Starling et al., 2014).

Study participants discussed practitioner training. Participants mentioned some practitioners, horticultural therapists, may be untrained or need additional skills or training. One study participant stated when talking about the education program they took that “The range of people who had awareness of basic psychological practices or even basic horticultural knowledge, like what you know a perennial plant versus an annual plant was really then impacted the discussions that we could have.” It is important for a profession to have practitioners who are qualified to ensure safety of clients/patients and ensure the practice of HT is implemented using evidence-based practice. One study participant also asked about the level of training needed to be a therapist. “What level are we training to? Are we master’s level therapists like a lot of other professions are, are we just bachelor’s level?”. This study participant questioned whether an individual with a bachelor’s degree would be qualified to be considered a therapist in a healthcare setting. Currently PTs and OTs must have a doctorate, however

RTs only need to have a bachelor's degree. The profession of HT needs to discuss what educational level an entry level practitioner should have.

Continuing education units (CEUs) are elements of professional licensure and or certification in many professions that were identified as a subtheme of education. Continuing education of professionals is important to stay up to date on current trends and practice. The profession of HT currently does not have a **CEU** program for HTR. The board and credentialing work team is working on developing a **CEU** system for the profession. One participant said, "I could have become registered, which I did ..., and I have never been asked to do one more thing by the professional registration." This study participant acknowledged healthcare has evolved and "We need to really help people develop skills, to be a better practitioner because a lot of things have been happening since people got registered 20 and 30 years ago." Another participant stated, "I haven't been to college in a long time and I'm sure they've made some inroads with dementia, but I have no way of getting the training for that."

Standardization of educational training was also expressed by study participants. They indicated it is needed to ensure practitioners are implementing HT in a safe and effective manner, "I do hope we can just get more evidence based on how horticultural therapy helps many different populations." Several participants discussed dislikes including the quality of educational programming. One study participant stated, "There is too much disparity amongst the quality of programming, educational programming." They expressed the need for more **standardization** of the practice of HT. Research participants also discussed how the diversity of HT programming has

caused challenges, “In some ways the diversity also keeps it [HT] from being able to be as focused and streamlined as some of the other allied disciplines.”

This does not mean that all educational programs need to be the same. For example, one study participant stated, “I chose a school based on the type of landscape architecture education I wanted. It could be design oriented, it could be ecologically oriented, it could be construction oriented. It would be kind of cool to have horticultural therapy educational programs like that, they might have their specialty in a sense.”

There are unique elements to educational programs, but a basic set of educational elements needs to be reviewed periodically by qualified individuals to ensure the profession is developing and improving as the profession matures. Another study participant stated a need for both certificate and university programs to have the same standards, “I think the training needs to be aligned or unified across all entities that are offering any sort of HT training, whether it’s a certificate program, whether it’s an organization like the HTI in Denver, whether it’s coming out of the universities.” Participants felt qualified individuals to review educational components should include educators, researchers and practitioners. One study participant said, “I think the professors of horticultural therapy need to come together and talk about their curriculum.”

Horticultural therapy education requires HT courses, horticulture courses, and human science courses. Currently, individuals must piecemeal their education program to meet the AHTA registration requirements. One study participant described their **frustration of finding coursework** for professional registration:

I think the frustrating part is the education piece and having to piecemeal it

together and no one seems to know what is going on... There is always a lot of dialogue going on about you know where to get classes and who needs to do what. So that has been just very confusing and extremely frustrating to me and probably disheartening at times too.

Finding all the required educational classes in one location or in a format that meets the needs of students is a challenge, “The worst part of horticultural therapy is that it's not recognized [by the medical community] and it is not certified. But probably worse off is the fact that I can't get the education.” Another study participant stated, “The worst part about the industry is because it is not a legitimate practice in the medical community, so really making a profession out of it where you can make a decent wage is extremely challenging.” Because the profession is not regulated through licensure or a credentialing agency, anyone can call themselves a horticultural therapist. One participant disused this frustration by stating, “To be registered means nothing to anyone except AHTA.” Participants expressed the lack of regulation and **credentialing** hurts the profession and lowers the profession's legitimacy within the medical community and allied health professions. One study participant stated, “What I don't like, that we are not credentialed. We are not a licensed therapist that can bill or be recognizable.”

There is disagreement among study participants about whether credentialing is necessary. A **credentialing** system is one step toward gaining additional recognition by the healthcare industry and seeking out insurance reimbursement. Study participants see the challenge to get insurance reimbursement is difficult and as a result, some study participants question the need for a **credentialing** system. One study participant discussed the need of developing a **credentialing** system, “It just didn't seem necessary

and in talking with a lot of people, there is no way to get insurance reimbursement for horticultural therapy. It is difficult to get programs going in a place that didn't have funding." One study participant stated, "I think the board needs to really focus much more on that goal of completing the credentialing and make it the most important thing." Other study participants mentioned the possibility of further alienating members who don't pursue credentialing. Another study participant suggested "I would say not make it so hard to be registered and furthermore do away with registration!!"

Fourteen study participants mentioned the challenges of creating a **credentialing** system. The expense of creating a credentialing exam for AHTA is a major barrier. "I am really just not sure if we are anywhere close to having a credentialing exam, especially with the cost involved. I just don't see how that could happen. To make that type of a test, as you know, costs \$75, \$80, \$90, \$100,000. Where is our shrinking organization going to get the money to do that?" Another study participant stated, "Let's be realistic and pause and re-examine where we are. I know people worked very hard on getting that whole system in place."

Other study Participants felt **credentialing** could help bring professional recognition to HT. Credentialing is also seen as a step towards third party reimbursement. Participants feel it would allow HTs to be seen at a level equivalent to other allied health professions. One study participant stated:

I think that's really important. But, I think that the concept of we as a profession really need to say what is appropriate in terms of our skills and our education and that kind of thing. I think we are responsible for doing that and figuring out certification and that the job skills and that kind of thing. Once that's in place and

I think we can say that we are more professional in the way that we certify and license people, I think it will be much easier for us to go out and seek the resources like healthcare reimbursement, talk with more hospitals and medical facilities and doctors and schools in order to get the word out there. I do feel like we need to do something internally first and it just seems like that certification is the next big step.

Other study participants recognized in order for the profession to grow, a credentialing exam is needed. “I think we definitely have to go for the credentialing aspect of our profession. We have to get licensure like the other professions because there's no way that we're going to survive.”

Internships were identified as an important part of education and credentialing. Participants felt that locations to complete the 480-hour internship required for professional registration are hard to find and have been a challenging aspect of professional registration. One study participant stated, “I think there's a bottleneck on internships. There are not a lot of places offering internships.” Participants felt that more opportunities for internships are needed to advance the profession and grow the AHTA membership. Study participants also recognize a need for quality internship experiences. One study participant stated “I know the internship is supposed to be the hands-on component of HT education. But the internship also needs to get standardized a little bit more than what it looks like now.”

Study participants discussed the need for **more educational opportunities**. Creation of more educational opportunities can help expanding the profession. “I think that maybe more universities need to add horticultural therapy to their social services

classes.” When discussing ways to create more educational opportunities, one study participant stated, “They [universities] want to launch programs that provide students with direct routes to careers and that path is not clear for HT’s.” This illustrates that a college or university is hesitant to add new courses or majors that do not lead to graduates finding employment opportunities in a field of study.

Study participants discussed their **vision** for the future growth of the profession through implementation of a credentialing program, development of licensure, increased education programs and improved consistency with training programs for horticultural therapists. “I hope by then [2030] we do have licensure and a credentialing exam and that there are more jobs and we are recognized in hospitals as a therapist that can bill for services. I can see us being in schools as well, as a licensed professional.”

Funding/Job Opportunities

Funding/Job Opportunities emerged as a main theme with six subthemes: **lack of funding opportunities, insurance, lack of funding for AHTA, lack of job opportunities, self-starter**, and **vision**. Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

Funding for horticultural therapy programs was discussed by 25 study participants for a total of 133 mentions. Without funding, the profession cannot grow. Study participants discussed the **lack of funding opportunities** for HT. One study participant stated, “There is never any money to pay us.” Another participant stated, “It is still not quite recognized, of course, as much as we like to be in terms of reimbursement and working more regularly with healthcare staff and facilities.” The challenge of finding funding for programs was discussed by one participant, “Where do you find the funding

to develop those [HT] programs? I think that is one of the challenges that makes it difficult to practice horticultural therapy.” One study participant discussed their frustration with funding, “I find most frustrating is that people don't want to pay for it. I don't know if that is because so many people do garden and so many people have access to nature. Nature's free and maybe that's part of the expectation.” Participants discussed the need to find new ways for horticultural therapy programs to be funded. Funding was also expressed as being needed for horticultural therapy research, outreach, public awareness and to support professional organizations representing horticultural therapy.

Participants discussed how horticultural therapy is currently not reimbursable by **insurance**. The lack of **insurance** or third-party reimbursement is a challenge of the profession. One study participant stated, “You cannot apply any kind of health insurance payment for horticultural therapy services and that is probably a big hurdle in getting people to recognize it as a valuable part of their therapy.” Having HT recognized by insurance is an important step in the profession, “We need to get horticultural therapy established with Medicare/Medicaid so that it is recognized, and practitioners can be reimbursed.” Another study participant acknowledged the importance of insurance reimbursement to pay for OT, PT, and speech therapy. This study participant stated insurance reimbursement “Keeps OT's and PT's big time employed, and we [horticultural therapists] are not a part of that. We don't even get a slice of that piece of the pie.” This study participant went on to discuss how rehab hospitals in the area have greenhouses that are used by OTs and PTs as part of their therapy programs. The greenhouse work and gardening “is counted as OT and PT and therefore insurance reimbursable. The big elephant in the room is the insurance reimbursable deal that we are not a part of.”

Study participants discussed how **lack of funding for AHTA** has hindered our progress as a profession. “I would also say the American Horticultural Therapy Association is consistently on a very tight budget and they have not been able to obtain a lot of backing through lobbying or through some of the other ways to obtain funding and publication or acknowledgment about what we offer.” Study participants feel people do not want to pay for HT programs. The expense of running HT programs offer limiting factors for the growth of the profession. Study participants discussed the need for new and innovative funding strategies for the profession. “I think they really need to focus heavily on getting a grant, getting money to pay to get the credentialing to move forward because we’re just losing ground all the time.”

Participants discussed the current lack of **job opportunities**. Participants expressed some HTs get their certificate or professional registration and end up not working as a horticultural therapist because of the lack of paid jobs. One study participant stated concerns related to jobs. “The lack of jobs and lack of accreditation or recognition, nobody has ever heard of horticultural therapy that I have run into.” Another study participant stated some horticultural therapists are working under different job titles. “Every place that we went in my training to talk to horticultural therapists, they’re working under other [job] titles.” One educator in the study mentioned discussions with their students, “When students ask me, am I going to get a job? I have to be honest and tell them there is not a lot of jobs out there. They do come up. Do not get discouraged.”

Without adequate funding, organizations cannot hire and employ horticultural therapists as part of their treatment program. Participants felt **job opportunities** for HT are not clear. “Sometimes a lack of job opportunities, which can also be very

discouraging,” and pay for horticultural therapist is low. One study participant stated, “I would like to be able to make a living wage from it.” There are currently no published studies on salaries for horticultural therapists. This is challenging due to the lack of job classification from the US Bureau of Labor Statistics mentioned above in Chapter 2 of this study. There is no way to track who uses horticulture as therapy besides AHTA membership and members of regional HT groups. Participants felt the future of the profession rests on being able to create a market for HT positions and sustainable job growth.

Ten study participants discussed the concept of being a “**self-starter**” for a total of 40 mentions. Participants discussed that many successful HTs are often ones that have been able to create their own business or position within an organization and market themselves well. For a profession to grow, participants expressed the need to move from this form of program growth to more sustainable job growth. Not every person is skilled at starting a new business, but they may be skilled in implementing established HT programs. One study participant stated, “If you want to pursue this you can make a living at it, but you are going to have to work very hard to get the jobs, to retain the jobs, to run your own business or talk yourself into jobs.” Another study participant stated, “You are likely maybe to make it more on your own if you are a self-starter and you want to begin a business.” A third study participant, who is an educator, stated, “I say well you could have your own business, you could do great having your own business and go around to different places and make a good living that way. and not everyone is equipped to have their own business.”

Study participants were asked about their **vision** for the future of the profession. Within the funding/job opportunities theme, study participants felt that as recognition grows, more HT programs will be offered, and more HT jobs will be created. One study participant stated they would like to see the profession “be a bona fide career with pay that is equivalent to other people in the various sectors of employment.”

One opportunity that could help grow the profession of HT is to move towards programs that are self-sufficient. One study participant stated, “I could see a lot more horticultural therapy tying in the approach of self-sustainability within gardening communities.” This would include participants growing plants and creating products to support the HT programs. These HT programs would be offered as year-round horticulture programs. Another study participant stated programs in the past were self-sufficient and that, “I would love to see is programming that ongoing year-round that sustains itself and the food what's growing in the garden feeds the rest of them and or get sold and that's how it sustains itself.”

Public Awareness/Networking

Public Awareness/Networking emerged as a main theme with four subthemes: **great idea, regional groups, allied health professionals, and vision**. Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

Study participants felt the lack of public awareness of HT within the healthcare industry and general public is a challenge for the profession. Twelve study participants referenced 22 times that the idea of HT is a “**great idea**.” The public and other healthcare professionals are receptive and interested in the concept of HT when they are made aware of the profession. One study participant stated, “I have never had

anyone, family, friends and employers say well I don't think this is anything we want to do, or it sounds stupid to me. Everybody is like 'What a great idea'." Another study participant mentioned, "Everybody thinks it is a fabulous idea when they hear it and it makes so much sense, but it's not really recognized for whatever the reason." They felt if people, funding agencies, and the community do not know about HT and what it is, they are not able to access it.

Study participants mentioned the need for both national and **regional groups** representing profession of HT to work together and create more marketing and public awareness for HT. One study participant stated the importance of marketing, "I think marketing is really big, I think we are not as a HT community doing a very good job of marketing the practice [of HT]." Another study participant stated AHTA "Can be really instrumental in promoting, moving horticultural therapists and horticultural therapy along. They are continuing to have the conference and have horticultural therapists involved in planning these conferences to people outside of the HT community."

The importance and value of **regional groups** was recognized by study participants as a way to network and promote the profession of HT. Regional groups were discussed by ten study participants for a total of twenty-eight mentions. **Regional groups** "Are actually the workhorses, they [regional groups] are the people I feel that are getting HT out into the public eye." Another study participant stated, "I think they [regional groups] can bring a lot of resources to the table regionally and can also maybe work together to help our national organization be more responsive across the country." Some regions have their own conferences, and these conferences can be more accessible to AHTA members. **Regional groups** promote public awareness for the

profession of HT at the local/regional level. There are some **regional groups** that have formed their own non-profit with their own separate membership. Other **regional groups** are a more loosely formed network. The **regional groups** were not included in this study. In fact, most of the surveys on the profession of HT have only focused on AHTA members. It is unknown how many members of the **regional groups** are also members of AHTA.

Networking with **allied health professionals** was discussed by 25 study participants with 115 mentions as a way to help advance HT and increase public awareness. Allied health fields include OT, PT, RT, AT, and MT. These professions are much more developed than HT in that many of these have a certification exam and or licensure and some have ability to bill insurance for payment of services. One study participant stated that “I would really like to see us on par with art therapy and music therapy, there is such a big gap between us and I believe we provide the same amount of therapeutic value that they do.”

Networking strengthens the profession by allowing others to learn from and support each other. One researcher participant stated that supporting each other is important to grow the profession, “I think that it's so important to keep supporting each other in this field and you know keep expanding the vision to help this field grow because there's so much you can do with it.” Another study participant suggested how practicing professionals could help network with new professionals just entering the profession, “I can only think of maybe the alumni, and an alumni organization that helps you know, graduate students’ network and establish their career by connecting them to people that are currently practicing.” There was also discussion about the importance of

not only AHTA being involved with networking, but how professionals have a responsibility to grow the profession through networking. “If they want this profession to grow, which we all do, then we the community, we have got to come up with a strategy.” One study participant mentioned the need for “Having a stronger network of horticultural therapy programs around the country.” Increasing networking among horticultural therapy practitioners and programs can provide opportunities to learn how programs are being successful that can improve overall HT practice. Study participants suggested having more local and regional events for networking also may help the profession grow and help therapists who do not have funds to travel to the national conference, “More things like horticultural therapy workshops, smaller, local [events]. We don't have a budget to send me to the conference very often.”

Study participants were asked about their **vision** for the future of the profession. Within the public awareness/networking theme, study participants discussed the need for increased recognition of HT in the future. One study participant stated, “I would like it to be recognized as it is a legitimate, billable activities therapy.” Participants felt increased recognition of the profession including acknowledgment by the healthcare community, doctors prescribing HT, and healthcare facilities incorporating gardens and offering HT programming is important for the future growth of HT. One study participant expressed a vision for the future where the value of gardens was recognized, “I hope that in 2030, most healthcare facilities will have a garden for patients and staff, and those gardens will be used and a regular part of the budget and regular part of the design of the space.” Another aspect of increased recognition identified by participants was having HT and its benefits acknowledged by the general public. Another study

participant stated, “In 10 years I would imagine it [HT] being much more widely known in the general population. That it [HT] is much more visible to people as a complementary or alternative therapy.” Participants felt the majority of the general public is not aware of what HT is nor its medical use and benefits and applications in different settings.

Study participants expressed a desire to see the profession of HT continue to grow with more organizations, schools, and facilities using it as a beneficial practice. They expressed a desire to see HT recognized on the same level of other allied health professions such as OT, PT, AT, MT and RT. One study participant stated, “I would love to see that a horticultural therapist was a much more commonly recognized professional in the healthcare arena.” Another study participant mentioned they would like to see HT be “more widespread and that we would, horticultural therapy could be sought after much like physical therapy is or acupuncture or it would be considered a good adjunct of treatment for people under stress or whatever their issues may be.” Finding ways to connect HT education opportunities may be another way to help increase public awareness and move the profession forward. One study participant stated the profession needs to work towards “educating people who are currently credentialed in other healthcare professions... We can have OTs, Rec therapists, PTs, and social workers add to their own credentials, experience, and competency in HT. I think that's our inroad.”

Research Opportunities

Research Opportunities emerged as a main theme with six subthemes: **randomized controlled trials, publishing, vision, evidence-based practice, clinical**

practice guidelines, and **collaborating**. Each of these subthemes will be discussed below and the subthemes will be listed in bold text.

The need for more research on the effectiveness of HT was discussed by 14 study participants for a total of 49 mentions. One study participant stated, “I think proper representation of current programs and conducting research is very, very important in order for the field to continue to grow and for more people to invest in programs.” One study participant also suggested other disciplines are conducting research related to horticulture and therapy, “I think that we need more research on that [HT] and we need HTR’s doing that work [research] or helping with researchers and HTR’s doing that [research] rather than different disciplines.”

We also need larger **randomized controlled studies** to show the impact of HT programs and measure outcomes that can be generalized to the broader population. One study participant expressed the need for more research by stating, “I think perhaps the best chance of us getting that research done is over a national research study that multiple HTs participate in because there really isn’t, I guess I don’t really see any one person having the resources to do the kind of research.” The need for stronger research programs were also discussed by another study participant, “Well I think we need to figure out how to do more sophisticated research, randomized controlled trials. We need to be developing and evaluating research methods that we know are adequate for the research that we’re doing.”

More **evidence-based practice** of HT would help people see the importance of HT and the need to fund HT programs. One study participant stated **publishing** more research on HT would “Help secure more funding. I think that would, in my mind help

secure more grant opportunities and could secure donors and money.” Study participants did acknowledge some HTs may not be experienced researchers. One study participant suggested **collaborating** with researchers to help increase research. “I know that everyone in the field isn’t a researcher, so maybe finding ways to connect people that would be interested in doing the research with the practitioners that have a really long history of working with specific populations.”

Study participants were asked about their **vision** for the future of the profession. Within the research opportunities theme, study participants discussed a desire to see growth in the body of research literature on HT and **evidence-based practice** were also identified as key elements for the vision of HT by study participants. One study participant stated, “I want to see it continue, but I do hope we can just get more evidence-based research on how horticultural therapy helps different populations.” More research on the use and impact of HT will help increase overall standardization of the profession. Healthcare professions need to have more **clinical practice guidelines** to help increase standardization and ensure patient safety. One study participant stated:

The field needs to have a lot more standardization in terms of treatment manuals, AHTA has their definition of what horticultural therapy and therapeutic horticulture are, but I think those are terms often used intertwined and if you said you did horticultural therapy that can look a lot different than what I do as horticultural therapist. There is not a general understanding of what basic practices that everyone else does across the field.

Standardization will help to increase **evidence-based practice** and improve professionals over time. Another study participant stated, “I would like to see other

templates of models that are already in place that we can look at.” Another study participant discussed the need for **clinical practice guidelines** for HT, “There needs to be consistency across different disciplines.” This participant went on to say there needs to be “Certain metrics that every horticultural therapist incorporates into the work that they do.” Utilizing metrics would give HT practitioners the ability to “Call up a colleague who also does mental health or vocational rehab or works in a hospital and know we’re going to have certain standards in place that we are all meeting consistently.” It is also understood that programs designed for different populations may look different. “Doing horticultural therapy in the mental health field looks completely different than in a hospital or at a university or at a community garden. There needs to be specific subparts of that standardization for the different disciplines.”

The profession of HT needs to have researchers seek out and be awarded research grants through **collaborating** with other horticultural therapists. Study participants discussed the need for “Big picture grants, grant or funding sources that will help us do more research and perhaps even do more work to help define the profession at this stage in the game.” One study participant suggested application for “some seed grants” to build a solid research base. This study participant went on to suggest a need to develop “building some sort of consortium to further, you know somebody does that initial work, having somebody else come through and if they’re not going to be continuing it, have somebody else continue it so it doesn’t just die.”

CHAPTER 5

DISCUSSION

Interpretation of Results by Main Themes

This section will interpret the main themes of this study. A set of recommendations will be presented in Chapter 6 of this dissertation.

Current State of the Profession

Study participants mentioned reasons why they **like** being part of the profession of HT. These included being able to spend time working with plants, time in **nature**, and seeing the connections people make when working with plants. The therapeutic benefits of being around **nature** and working with plants were the key elements of what makes HT an important therapy.

Horticulture is closely connected with **nature** because it involves the use of living plants. Study participants expressed concern that nature therapy and other **nature** movements might reduce the attention to HT. However, as a profession, HT needs to embrace the connection to nature through horticulture. As interest is growing in the therapeutic benefits of **nature**, gardening, and growing vegetables, the profession of HT should use those trends to advance the benefits of HT to the medical community and broader public.

Study participants also expressed a desire to see HT programs developed that are more self-sustaining. This could also help with the funding issue. Having programs that serve individuals and also bring revenue through sales of products or services could capture new revenue streams. It would be important to use the revenue to pay participants who are growing plants or making horticultural products for sale. This

concept has been tested and used successfully by HT programs. One well-known example of a business model is Melwood in Maryland. Melwood developed and published a manual about their program and process in 1980 (Copas). This example could serve as a community-based model for new HT programs. There is a need to research current HT programs that are using business models to be self-sustaining.

The **uniqueness** of the profession was seen as a valuable element by study participants. Just as the US has different climate zones, some program elements for HT may work better in different climate zones. Depending on location, certain plants grow better in some parts of the US than others. The diversity of populations that can benefit from HT also add a unique element to the program offerings. Finding a balance between standardization and the uniqueness of the profession will help enhance and sustain the profession.

The lack of **diversity** was mentioned as a concern. Increasing diversity of practitioners and participants also will further expand the profession. It is also important to ensure all individuals interested in HT feel valued and part of the profession. This also includes valuing professionals who may or may not have the HTR designation. Looking to provide programming to **diverse** audiences and program settings will further expand the profession. Finding a balance between both the clinical and wellness models of HT will also expand opportunities to take the benefits of HT to larger and more diverse audiences.

AHTA Operations and Structure

The national professional association for HT, AHTA, was discussed by study participants. The main concerns dealt with **frustrations**, including the lack of growth of

the **membership** over time, lack of commenting on coursework, and issues with **inclusion**. A professional organization must have a strong membership program and show membership growth over time to ensure a strong financial position.

It is important to note that the **board of directors** is made up of volunteers and their efforts are limited by time and other professional obligations. The AHTA currently utilizes an association management company to manage daily operations. One of the roles an association management company can take on is to help manage and grow **membership** (American Society of Association Executives, 2018). The **membership** of AHTA has declined from 850 members in 2009 (Larson, 2009) to 489 in 2019 (AHTA, 2019a). Membership growth is a key priority for AHTA as listed in AHTA's 2019-2022 Strategic Plan (AHTA, 2019b). More research is needed to determine how association management companies help allied health professional associations operate.

Member retention will also be critical for moving forward as a profession and this can be done through providing perceived value to members. Professional organizations are showing trends in decreased membership numbers (Agarwal & Islam, 2016). Although professional organizations often struggle with member retention, looking for new benefits, such as access to webinars, could help with improving member retention and grow member numbers.

Study participants discussed their frustration on AHTA's lack of comment on coursework needed for professional registration. Helping to solve this frustration could help improve membership retention. Students who get denied may not remain members, but they may still practice HT. Recommendation 7 in Chapter 6 will discuss a recommended pre-approval process for professional registration coursework.

Inclusion was also mentioned by study participants. One study participant mentioned the profession was mostly “white women.” This comment is supported through Larson’s (2009) study of AHTA members which reported 89.7% of the survey responders were white, and 83.3% of the survey responders were women. It is important for AHTA and the profession to make efforts to increase diversity and address inclusion concerns by members. **Inclusion** also deals with the feeling members have related to professional registration. Not all members are professionally registered. Study participants felt non-registered members have been made to feel “less valuable” in the past. That has negatively impacted membership retention. In order for a profession to grow, the professional organization needs to also grow membership. Finding ways to recruit and increase diverse members can help to enhance the future of the profession and reach more diverse populations through horticultural therapy practice.

Study participants also discussed the challenge of the **clinical model versus wellness model** of HT. By reviewing and closely examining these two models, AHTA can provide leadership and a way forward to advance HT. After analyzing the interviews and results of this study, a new model of HT needs to be developed. This model needs to look at all delivery settings that a horticultural therapist may work in and understand the different roles and value of a professionally trained horticultural therapist in those different settings. A proposed Horticultural Therapy Practice Model will be discussed in Chapter 6.

Education/Credentialing Opportunities

Educational programs to support horticultural therapy professional development and registration have gone through periods of growth and decline throughout the history

of the profession. Study participants discussed the **frustration in finding coursework** required to become a HTR. Participants mentioned the frustration of having to “piecemeal” the educational requirements together from different colleges and programs. One way to make it easier for people to take the needed coursework is to develop more HT majors or concentrations at colleges or universities. As mentioned in this study’s literature review, there has been a decline in the number of colleges offering options in HT education in recent years (see Table 2.7) (AHTA, n.d.c). There is need to work with colleges and universities to add HT courses to their curriculum. The AHTA has identified working with colleges and universities to offer HT courses as an element of AHTA’s 2019-2022 Strategic Plan (2019b).

Innovative ways to add courses are needed, including using modes such as distance education and accelerated programs. Past studies have also shown that horticultural therapists are often older (Larson, 2009; Stober & Mattson, 1993). The profession of HT needs to develop more online and accelerated programs to accommodate nontraditional students (Allen & Seaman, 2016; Bozkurt et al., 2015). This could increase the number of students taking HT courses and grow the profession. As mentioned in this study’s literature review, more flexible learning opportunities, and online courses are ways to help accommodate adult learners (Ross-Gordon, 2011). The potential of online learning has been illustrated using technology, such as Zoom. This could provide low cost networking and educational opportunities for the profession.

Another frustration expressed by study participants is the fact that at this time AHTA does not have a **pre-approval** process on courses related to professional registration. This is detrimental to the profession as people may take courses that are later not accepted by the professional registration review board. It would be helpful and

productive for the professional association to develop a pre-approval process so students interested in any courses required for professional registration, including plant science courses and human science courses, can be reviewed and approved prior to taking the course. As an example, other professions, such as recreational therapy, have pre-approval processes for CEUs and coursework. The National Council for Therapeutic Recreation Certification does have a pre-approval coursework review process for people applying for certification (NCTRC, n.d.c).

The creation of a **CEU** system for horticultural therapist is also needed. The AHTA is currently working on developing a **CEU** system. A **CEU** system will not only further develop the profession and improve professional components, it is a potential revenue stream for AHTA. Having online webinars and tying them to required CEUs for horticultural therapy is important. As mentioned above, connecting CEU requirements of allied health professions will also further develop networks and increase marketing of AHTA and the profession of HT.

Tracking HT professionals in the workplace has continued to be challenging for the AHTA. Currently, the US Bureau of Labor Statistics does not list or track occupational data of horticultural therapist due to the inability of collecting and tracking that data. The lack of job data makes it a challenge for new HT educational programs to be created at colleges or universities. The rationale for starting a new education program at a university is often based on future job demand. One new advance in the ability to track the profession of horticultural therapy is the adoption of a new Classification of Instructional Programs (CIP) Code by the US Department of Education's National Center for Education Statistics (NCES). These CIP codes are used to track fields of study and numbers of student completing degrees or courses in a specific field of study.

In 1980, NCES developed the CIP Code system and it has been revised five times since then. The most recent update to the CIP Codes was released in 2020 (NCES, 2020). The new CIP code is 51.2316, Horticulture Therapy/Therapist and is defined as:

A program that focuses on plant science and horticulture techniques to achieve measurable physical and mental health outcomes for individuals with physical or mental challenges. Includes instruction in abnormal psychology, adult development and aging, botany, facilities design, horticultural therapy, plant pathology, people-plant relationships, and psychology. (National Center for Education Statistics, 2020)

The horticulture therapy CIP Code is listed under Rehabilitation and Therapeutic Professions along with other allied health professions, such as RT, OT, PT, MT, and AT (National Center for Education Statistics, 2020). The significance of this new code will give a way for the profession to begin to better track the number of students taking courses or completing programs focused on horticultural therapy at colleges and universities. It will also allow for a better understanding of the level of interest in the HT field and look at the growth potential for the profession.

The **future of educators** was mentioned as a concern by study participants. As previously stated by one study participant, “If I were to leave, I have no clue who they could hire to come and teach.” It is vital the profession and AHTA begin to encourage horticultural therapists to work toward becoming professional educators. Some ways for this to happen is to encourage young professionals to seek out graduate programs in Plant Sciences. At this time, there are no graduate programs for HT in the US. There is a

need to develop graduate level horticultural therapy programs that focus on training researchers and college level educators.

Credentialing is an important goal for AHTA and is the first strategic core value listed in the 2019-2022 strategic plan (ATHA, 2019b). The AHTA has a goal to help move the profession in the direction of developing a credentialing exam. This would need to be done by creating a separate credentialing organization to develop a horticultural therapy credentialing exam. Some study participants are concerned the profession may not ever reach that goal: “But, I don't know really if that is ever going to happen. I have been hearing about it for a very long time.” A study conducted of the profession of HT in 1993 found that members of AHTA wanted the profession to become credentialed (Strober & Mattson, 1993).

Study participants discussed the possibility that a credentialing exam could potentially exclude more people from the profession. There are differences in opinion of whether HT should be following a clinical model or a wellness model. The clinical model would necessitate a credentialing system to move towards broader recognition in the healthcare industry and insurance reimbursement. More study participants discussed pros of credentialing (78 mentions) versus cons of credentialing (38 mentions). The “divide” from the clinical side and wellness side of HT has continued to cause frustration and disagreement on the future direction of the profession. A new model to look at the value of both delivery models is discussed below (see Horticultural Therapy Practice Model in Chapter 6).

The AHTA has been working towards professional credentialing for years. There is a Credentialing Work Team made up of board members and other members of AHTA. The AHTA should develop a document outlining a clear timeline and steps needed for

professional credentialing, which could help members see what is needed and how AHTA is planning on making progress on professional credentialing. One major constraint to credentialing is the estimated cost of developing a credentialing exam. An anonymous donation was made to AHTA in 2020 that provided the necessary funding to move forward with a third job task analysis and development of the credentialing exam (AHTA, 2020a).

Internships were also discussed by study participants. Finding professionals willing and able to be an **internship** supervisor is challenging. With some HTRs not practicing and others in different areas of the country, there are few internship options. More HTRs need to be willing to take on the role of being an intern supervisor. Supervising interns takes a considerable amount of effort by **internship** supervisors. In Chapter 4, it was noted the internship is “the hands-on component of HT education.” Internships are an important critical bridge between learning and practice. Internships gives students the ability to practice clinical skills while being closely supervised by a practicing therapist. The AHTA has offered an internship supervisor training conferences in the past in increase the number of HTRs offering internships for students. The internship supervisor training is a one-day training program that gives information to potential internship supervisors on how to run a successful HT internship program.

Funding/Job Opportunities

Funding is and will continue to be a major challenge for the profession. Without **insurance** reimbursement, practitioners have few options to provide revenue for the organizations of which they work. When organizations have budget shortfalls, they typically reduce staff who are not directly reimbursed through insurance first and this

offers a risk to HT practitioners. Research funding is needed to create randomized controlled trials to measure the benefits of HT programs.

Without increased funding and compensation, the profession will not be able to grow. Although health insurance reimbursement is a mainstay of most healthcare, new ways for funding HT programming must be sought. One avenue could be through grants if HT programs were offered through non-profits. One study participant discussed why they changed careers to HT,

I came to horticultural therapy at the end of a long career in occupational therapy, where I had really become terribly burned out with the system of medical care in the US. I was totally frustrated with regulations playing games with insurance companies, very, very frustrated.

The use of HT as a complimentary health strategy and new payment models needs to be explored. Creation of payment models for out-of-pocket medical expenses will provide new revenue streams for horticultural therapists. With over 30% of adults and 12% of children using complementary and alternative health options, there is a potential for increasing HT programs and services (NCCIH, 2018). A nation-wide marketing campaign is needed to increase public awareness of HT. Market research will be needed to help develop new payment models for HT programs. These efforts could help reduce the need to pursue insurance reimbursement. With over \$30 billion spent on out-of-pocket complementary health approaches every year, there is a substantial revenue source for horticultural therapists available (NCCIH, 2016).

The **lack of funding for AHTA** does hamper the ability of the organization to grow and market the profession. As mentioned in Chapter 4, AHTA “Is consistently on a very tight budget.” Developing paid programs, such as webinars and other online CEU

opportunities, is one way to create value for members and increase revenue. This type of project could be implemented relatively quickly.

The profession cannot exist without adequate **jobs**. It is also important to have adequate pay for the jobs to keep practitioners working in the profession. Study participants acknowledge some of the successes of the profession are people who are self-starters and either create their own business or create a job within an organization where they are currently working. Entrepreneurship can be an important way for professions to develop new and innovative programs. However, long-term growth and survival of a profession needs to focus on ways to increase the demand for horticultural therapists. One study participant acknowledged, "Not everyone is equipped to have their own business." Educational programs in horticultural therapy could offer sections on business development and running a private practice, which could also be offered as an online course by AHTA. Practitioners who do not want to start a business on their own may consider partnering with other horticultural therapists to create a business, which would allow for shared responsibility in starting and running a business.

Public Awareness/Networking

Public awareness of HT is low and there needs to be efforts to increase public awareness to help promote the growth of the profession. One study participant said, "I really wish horticultural therapy had more public recognition than it does." The profession is still considered in the emerging stage even though the beginning of the profession started nearly 70 years ago. One study participant discussed the dislike of:

The lack of progress. I just don't know why we are where we are at, I have ideas, just this idea that this is an emerging profession, well it emerged after World War

II and the 1950s, along with other allied therapies, which are no longer emerging.

They're established. Why haven't we become established?

Study participants mentioned HT is often said to be a "**great idea**" when the participants discussed the concept of HT with others. Given that many people are receptive to the concepts of HT, it is vital AHTA and those in the profession continue to market and promote HT. This must be done on an individual, local, regional, and national level. There currently is a week in March for National Horticultural Therapy Week. This event is one way to promote the profession. It may also be important for AHTA to partner with other organizations, such as the American Public Garden Association and American Horticultural Society to promote National Horticultural Therapy week and other events in public gardens.

Networking was considered a critical element among study participants in advancing the profession of HT. It was the most mentioned element by study participants. Networking among HT professionals should be a priority for the AHTA and should continue to evolve as the profession advances. Study participants discussed the need for AHTA to find new ways and opportunities to continue to provide more networking opportunities. One study participant stated that networking helps horticultural therapists stay "Connected with others in the field and reaching out to local organizations and schools and retirement homes to offer our skills as horticultural therapists, to those who are not familiar [with HT]." The connections made through networking can help promote the profession of HT to new audiences.

Networking with **allied health professions** was also discussed by study participants. "I think that is our inroad" stated one study participant. Networking with allied health professions will increase awareness of the profession and promote HT to

other healthcare professionals that may be interested in obtaining training and becoming a HTR. Including horticultural therapy in allied health education would meet three of the six elements for reforming health professional education as described by Thibault (2016): 1). interprofessional education, 2). new content to complement the biological sciences, and 3). new models for clinical education. Finding doctors, nurses, allied therapy professionals, and social workers who are using gardening or are interested in incorporating gardening into their practice will also increase credibility of HT interventions and continue to increase public awareness of HT.

Regional groups were discussed by many of the study participants. This emphasizes the importance and value of **regional groups** to the profession. Participants referred to the regional networking groups as the “work horses” of the profession and they help to promote the profession at a more local level. It is clear AHTA and the regional groups should develop and maintain positive working relationships to ensure a more coordinated effort of marketing, networking and promoting the growth of the profession happens. The AHTA and regional groups will be able to coordinate marketing and public relations efforts on the benefits of HT to the general community and healthcare professions. The profession cannot rely on the resources of only one organization to promote the profession. This must be done through a coordinated effort regionally and nationally. Practitioners must increase efforts to share the benefits of HT. Several study participants stated how receptive people are to HT. One study participant stated it well when they said, “Almost one-hundred percent of the people that you speak to and explain what horticultural therapy is, are in agreement that working with plants, the people plant connection is very important. They see the benefits of gardening or working with natural material.” Including the promotion of the profession of HT in

educational programs and internships, similar to how NCTRC views the promotion of the RT profession, could help provide training and encourage more professionals to increase awareness on a local level (NCTRC, 2014).

Research Opportunities

Research is critical for the profession. As mentioned in the results chapter the profession needs “More sophisticated research, randomized controlled trials” and professionals need to be “developing evaluations and research methods” that will be able to measure horticultural therapy outcomes successfully. Current research being published on the benefits of gardens or gardening often does not have an HTR involved on the research team. For example, two publications on gardening and mental health did not have one HTR on the research teams (Clatworthy et al., 2013; Pieters et al., 2019). Unless the profession of HT conducts more research that further validates the **evidence-based practice**, funding and recognition of the importance of the profession will be lost. Developing strong **collaborations** of healthcare professionals will provide future research partnerships and increase the likelihood research for HT programs will be funded by government and private foundations.

Healthcare professions need to have **clinical practice guidelines** to ensure patient safety and ensure the outcomes of interventions can be measured and documented. Research will provide the evidence for the profession of HT to create **clinical practice guidelines**, improve professional practice, and active treatment over time. The profession of HT needs more standardization, which includes increased standardization of education programs, protocols for working with specific populations, standardized assessments and evaluations, and research. There are currently few

standardized assessments or evaluations used in the profession of HT. The profession of HT needs to work towards developing HT specific assessments that are valid and reliable.

Study participants discussed the concern as the profession becomes more standardized it will lose some its **unique** elements. For a profession to advance, standardization is needed, but it is important to find ways to allow for the creative and unique elements of various HT programs that can be offered. **Evidence-based practices** need to be used when developing HT programs to ensure their effectiveness at meeting the goals and objectives for program participants.

Limitations of Study

This study only looked at current and former members of AHTA. In 2019, there were 498 members of AHTA (2019a). There are students who have taken HT courses, who have possibly graduated from a college program or horticultural therapy certificate program that were not part of this study sample. There are possibly other professionals who are practicing that may be members of the local regional groups and other professionals who are not members of any professional organization or networking group. The lack of understanding of the number of people using horticulture as therapy in the US is a limitation to this study. There is currently no clear way to track the total number of HT professionals practicing in the US.

The data collection for this study was completed between November 2019 and January 2020, which was before the World Health Organization (2020) declared COVID-19 a pandemic. The challenges and opportunities discussed by study participants does not reflect the current challenges faced by the COVID-19 pandemic. The asymptomatic

spread (Bai et al., 2020) and the 14-day incubation period for COVID-19 (Lauer et al., 2020) has made controlling the spread of the virus difficult. These challenges have caused new healthcare protocols to be developed to manage the spread of COVID-19. The protocols developed by the Centers for Disease Control and Prevention include maintaining physical distance of six feet or more, use of face masks, and limiting access healthcare facilities essential workers (2020). Another response to manage the spread of COVID-19 was the implementation of “Stay at Home” orders throughout the US (Gostin, 2020). The measures to manage the spread of the COVID-19 have added new challenges to allied health professionals including HT professionals. Independent HT contractors were not allowed to enter healthcare facilities and implement in-person HT sessions.

The use of telehealth increased to allow for the lack of physical in-person sessions (Smith et al., 2020). The shift of college courses to online or virtual learning also has changed how higher education is being delivered (Crafword et al., 2020). The shift to online learning and telehealth do offer challenges that were not realized during the data collection phase of this study. These changes may also provide additional opportunities for the growth of horticultural therapy in the future. The results of this study reflect challenges and opportunities related to the profession of HT pre-COVID-19 pandemic. How the profession of HT adapts to the current healthcare climate was not included as part of this current study.

Implications of Study

Understanding the current state of the profession of HT in the US is important in developing a plan to move forward. The current numbers of AHTA members and HTRs

is not sustainable. It is important to note that the future of the profession of HT must include membership growth for the national organization, AHTA, who represents the profession. As society's interest in nature grows, the profession of HT needs to capitalize upon this and recruit, train, and advocate for HT jobs with adequate pay and insurance reimbursement for HT services.

It is concerning that several study participants mentioned the fact the profession is not progressing. While not included in the study findings, it is interesting to note that one pilot reviewer also stated in their comments, "Nothing has changed" about the profession. The results of this study are similar to issues mentioned in Strober & Mattson's (1993) study. It is important for a profession to understand its history and challenges so it can make changes to improve the profession for the future. This can only be done if more horticultural therapy practitioners take an active role in the growing the profession. Practitioners must be able to see other practitioners' viewpoints and work out disagreement between each other to move forward. It will be vital to develop strong networks with engaged professionals who are using horticulture or gardening in their practice and encourage them to be active in the development of the profession of HT. The professional organizations including AHTA and regional networks, individual practitioners, and other allied professionals who understand the value of HT must find ways to work together to create positive outcomes for the future of the profession.

CHAPTER 6

RECOMMENDATIONS & CONCLUSION

This chapter will present a novel Horticultural Therapy Practice Model and list recommendations for moving the profession of HT forward. These recommendations will address both steps that AHTA, regional groups, and individual professionals are currently taking or may need to take to help grow the profession and move it past the emerging stage. Each recommendation will include the status (see Table 6.1), as well as their connection to AHTA's (2019b) current strategic plan and who/which group may be responsible for each recommendation.

Advancing a Horticultural Therapy Practice Model

Growing the profession of HT is critical for its survival. It will be important to work out differences between clinical and wellness models of HT. Practitioners must come together and work out these differences of options to make the profession stronger. Recreational therapy has dealt with similar varying viewpoints in the past (Wozencroft & Griffiths, 2012), yet they have been more successful in growing the profession. Developing a balance and understanding between clinical and wellness models of HT will be key in moving forward. It will also be important for horticultural therapists to understand the importance of having qualified, and trained therapists as mentioned by Relf in this study's literature review (2016). Horticultural therapists must be careful not to "broaden the profession of HT by claims that it encompasses all positive benefits of human-plant interaction" (Relf, 2006, p. 3). This section will propose a Horticultural Therapy Practice Model to help the profession move forward. The Horticultural Therapy Practice Model was developed utilizing the Leisure Ability Model (Stumbo & Peterson,

Table 6.1. Status of Recommendations for the Profession of HT

Status	Description
Pending	This recommendation has not started. It will begin at a future date.
Ongoing	This recommendation has been started.
Completed	This recommendation has been completed.

1998) from the recreational therapy profession and the Therapeutic Use of Horticulture Spectrum Model (Kennedy & Haller, 2019).

In order for the profession to move forward, a clear understanding of the concept of therapeutic and therapy needs to be understood. Often, the public will offer comments like “fishing is my therapy” or “running is my therapy.” This is a common misuse of the term therapy. Therapy is a process that must be led by a trained and qualified therapist. Therapy is a type of “active treatment” as defined by the Centers for Medicare and Medicaid Services. What the general public gets therapy confused with is the idea that activities can be therapeutic or have a therapeutic benefit. Relf clarifies this confusion in stating that people may claim “all physical activity is therapeutic; therefore, if anyone runs/walks/swims, it is physical therapy” (2006, p.3), because all physical activity is not “therapy.” All gardening may be therapeutic; however, gardening is not therapy unless there are clinically defined goals and objectives as included part of an individual’s active treatment.

One way for the profession to begin to move forward and away from the idea that anyone can provide horticultural therapy or all gardening is horticultural therapy is to look at the Leisure Ability Model of RT (see Figure 6.1) (Anderson, 2020; Stumbo & Peterson, 1998). This model illustrates the varying levels of an individual’s need when related to recreational therapy. On one end of the continuum, a person with a medical injury or condition is depending completely on a therapist to help them learn or relearn skills. On the other end, a person is able to have complete participation in recreation without the need of a therapist. A recreational therapist can work in various settings and with individuals who are at different stages on the Leisure Ability Model (see Figure 6.1).

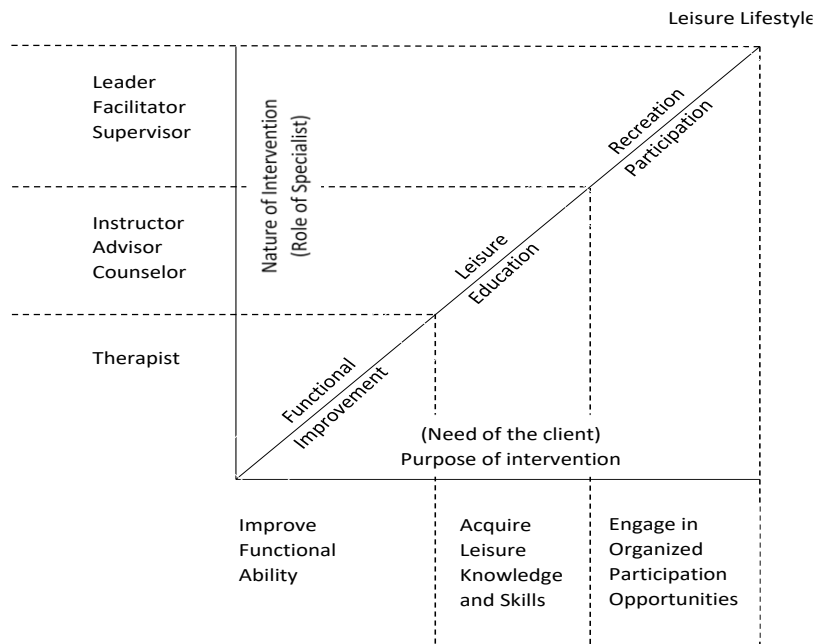


Figure 6.1. Leisure Ability Model

Note: Stumbo, N. J., & Peterson, C. A. (1998). The leisure ability model. *Therapeutic Recreation Journal*, 32(2), p. 82.

One therapist may work in a rehabilitation facility providing active treatment. Another therapist may work in a community parks and recreation setting providing community interventions to assist individuals with disabilities in participating in community recreation settings.

Kennedy and Haller's (2019) Therapeutic Use of Horticulture Spectrum Model looks at the profession from the lens of the differences between horticultural therapy and therapeutic horticulture. Both the concepts from the Leisure Ability Model (Stumbo & Peterson, 1998) and Therapeutic Uses of Horticulture Spectrum Model (Kennedy & Haller, 2019) were used to further clarify the differences between the clinical and wellness models of HT and may be solved by looking at this new model proposed by Stowell (2020 [dissertation in preparation]) called the Horticultural Therapy Practice Model (see Figure 6.2). This model can help illustrate the various settings in which a horticultural therapist may work and the types of activities that a horticultural therapist may facilitate in those settings. It is important to understand the value of the therapist in any of these settings. It is also equally important to understand the importance of a having a trained therapist in those settings.

The Horticultural Therapy Practice Model (Figure 6.2) illustrates the two main models used by horticultural therapists. These models can include different delivery settings or program types such as a vocational setting, hospital setting, school setting or community setting. The main goal of any healthcare profession is to help individuals or clients heal and or improve functioning. A horticultural therapist may work in a variety of program settings.

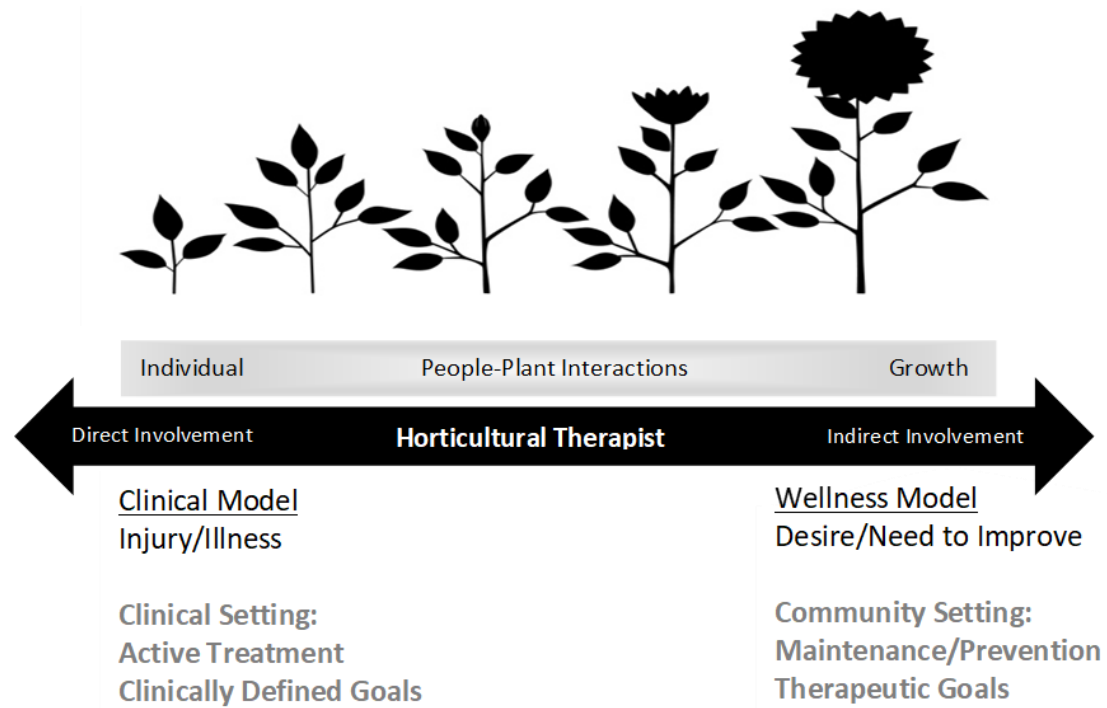


Figure 6.2. Horticultural Therapy Practice Model

Goals for horticultural therapy intervention may be clinically defined and part of active treatment, or they may be therapeutic based on an individual's overall wellness/health goals. The desire to maintain health or prevent future illness is a key element in healthcare today and it is important to help reduce healthcare costs. A horticultural therapist may decide to work in a community setting and set program goals related to improving health and or reducing chronic health conditions. Horticultural therapy interventions in this setting may focus on physical activity related to gardening, growing and utilizing fruits and vegetable to improve nutrition and health, and using people-plant connections to improve mood and mental health. Horticultural therapy interventions in a clinical setting would be used to help a client meet clinical goals set up by the client's treatment team. The main goals would be to restore functioning. As you move toward more a clinical model, the horticultural therapist takes on an increasing direct involvement in an individual's experience. Direct involvement is when a therapist provides specific activities and directions for individuals during HT programs. As one moves towards the wellness model, a horticultural therapist takes on in increasing indirect involvement in an individual's experience. Indirect involvement is when a therapist would provide guidance and give an individual more autonomy for horticulture tasks, activities and choices. This HT Practice Model represents a continuum and all settings where a horticultural therapist may work are important for the profession of HT. Additional research is needed to determine how the different settings of HT interact with each other and determine which interventions or techniques may be more effective in specific settings.

Recommendations for Moving Forward as a Profession

Recommendation 1: Disseminate results of this study

The main researcher will develop presentations on the results of this study and work with his graduate committee to write and publish manuscripts on the results of this study.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building; Division 2: Information and Education.

Presentation of results to AHTA Executive Committee – 10/10/2020

Presentation of results to AHTA Board of Directors – 10/17/2020

Presentation of results to Mid-Atlantic Horticultural Therapy Network – 10/24/2020

Development of manuscripts for peer-reviewed publication – in preparation

Responsible person/organization: Derrick Stowell in collaboration with his dissertation committee and Dr. PJ Snodgrass

Status - Ongoing

Recommendation 2: Increase Public Awareness

Connecting with local organizations and schools could be one way to network and promote HT. This could be done through the development of more community-based programs that have a wellness focus. Working with public schools and nonprofits who work with underserved populations may not only increase a network for HT, but it may also lead to other opportunities or research and grant funding. Horticultural therapists would need to have the ability to develop collaborations and programs to meet needs identified in local communities to increase networking opportunities like this.

It is recommended AHTA further develop networking opportunities on a national level. The annual conference and current efforts by AHTA are good as stated by one study participant, “You have the conference once a year, which is great.” Another study participant stated the conference helped professionals to learn, “Who was doing very similar things that I was doing, that within itself was a very strong way to all come together.” The national conference is important, but it is also important to have other regional events and programs to help in developing, “A stronger network of horticultural therapy programs around the country.” The regional groups who host regional conferences and educational opportunities should work with AHTA to offer CEUs need for healthcare professionals. Another study participant also suggested taking horticultural therapy knowledge to other professionals and “Have horticultural therapists involved in planning these conferences to people outside of the HT community.”

Due to the 2020 COVID-19 pandemic, many organizations are creating new ways to connect with members. AHTA has begun to offer Zoom meetings to connect professionals and share what changes to their practice have resulted from new precautions and processes related to COVID-19 and healthcare delivery. New and innovative networking opportunities will need to be developed and implemented to provide increased networking among horticultural therapists and other healthcare professionals.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building; Division 2: Information and Education; Division 3: Membership, Division 4: Professional Standards

Responsible person/organization: AHTA, regional groups, and HT educators.

Status - Ongoing

Recommendation 3: Continue Working with Regional Groups

In 2020, AHTA hosted a web meeting with 20 regional HT group representatives (Jarslow, 2020). This initial meeting was a step in the right direction for the profession and collaboration among AHTA and regional networks. Future meetings and collaborations between AHTA and the regional networks can further strengthen public awareness and networking. It may be helpful to look at how regional network groups run their conferences and use best practices when creating new regional events. Partnering with regional groups would also help provide additional opportunities for obtaining CEUs.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building, Division 2: Information and Education; Division 3: Membership; Division 4: Professional Standards

Responsible person/organization: AHTA, and regional groups

Status - Ongoing

Recommendation 4: Address issues of Inclusion and Diversity

It is important to find ways to ensure non-registered members feel valued and included within the organization. All members of AHTA may not become professionally registered. As a profession, it will be important to increase the number of professionally registered members. However, it will be as important to value all members and other health professionals that may use gardening in their practice.

If diversity of practitioners, programs and clients is an important value for the profession of HT, it will also be important for members of AHTA and regional networks to meet to discuss how to increase diversity. This could be through the creation of scholarships for minorities to study HT, intentional recruitment of current members who

are minorities to join the board of directors, and studies of current HT programs throughout the nation to understand the types of programs and clients currently being served. Once a study of current HT programs has been completed, researchers could look for new opportunities for programs to serve more diverse clients.

Connection to AHTA Strategic Plan (2019b) – Division 3: Membership

Responsible person/organization: AHTA, regional groups, and HT educators

Status - Pending

Recommendation 5: Convene HT Coursework Task Force

The AHTA should collaborate with universities and create of a task force to discuss the creation of additional graduate level HT coursework. This task force would fit into AHTA's current Strategic Plan (2019b). This task force would help to develop future educators. The task force could also look at ways to create courses or programs to enhance other healthcare education. Collaboration with other health educators to add HT as a component to their coursework or electives can also increase the number of students exposed to HT. Adding more educational opportunities will make it easier for those interested in pursuing a career in HT to get the needed training to become a horticultural therapist.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building; Division 2: Information and Education; Division 3: Membership; Division 4: Professional Standards

Responsible person/organization: AHTA, and HT educators.

Status - Pending

Recommendation 6: Develop Interactive Coursework List

Another way to improve access to education program information is to create an interactive and up-to-date list of coursework that meets AHTA professional registration guidelines to assist educators and interested practitioners in finding appropriate coursework. This list could be added to AHTA's education section of their website. This list could include online course options and non-HT coursework required for registration including plant science courses and human science courses. The course lists should also include links and enrollment information for each course listed. The AHTA would need to be responsible for keeping this information updated on their website.

Connection to AHTA Strategic Plan (2019b) – Division 2: Information and Education

Responsible person/organization: AHTA

Status - Pending

Recommendation 7: Develop Pre-approval Process for Coursework

It is recommended AHTA, consider developing a pre-approval process for coursework needed for professional registration. The pre-approval process would review courses outside of the AHTA Accredited Horticultural Therapy Certificate Programs. This could provide a revenue stream for AHTA and also help reduce frustrations for those interested in becoming a HTR.

Connections to AHTA Strategic Plan (2019b) –Division 2: Information and Education;

4: Professional Standards

Responsible person/organization: AHTA, Derrick Stowell

Status - Pending

Recommendation 8: Continue Developing Credentialing

The AHTA is currently working on the steps needed for developing a credentialing exam (2019b). It would be helpful for AHTA to survey other allied health professions who have credentialing exams to see how they developed their job analysis, how they developed their credentialing exam, and what the costs are for administering a credentialing exam.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building; Division 2: Information and Education; Division 3: Membership; Division 4: Professional Standards

Responsible person/organization: AHTA

Status - Ongoing

Recommendation 9: Create Webinars and online-learning

During 2020, the COVID-19 pandemic has helped AHTA and regional groups to develop online virtual workshops or sessions. It is important to keep building upon these developing programs to create more formal webinar series on HT and applying for CEU approval from ATRA. Receiving approval from ATRA for CEUs would provide an audience of recreational therapists to take the HT webinar series from AHTA. This will also help to bring in additional revenue, promote the profession of HT to a broader audience, and begin to develop collaborations with other allied health professions.

One webinar topic to consider is the creation of course for horticultural therapists to learn how to work with the media. This could be a paid course with a discount for AHTA members. Content to be covered should include writing press releases, how to interview with the media, and how to create talking points for practitioners. An interactive

course would also give opportunities for attendees to practice these skills. Another webinar topic could include how to develop a HT business and business plan.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building; Division 2: Information and Education; Division 3: Membership; Division 4: Professional Standards

Responsible person/organization: AHTA, regional groups, and HT educators.

Status - Ongoing

Recommendation 10: Develop and Implement CEU Program

It is recommended the profession and AHTA work to create educational programs/elements for allied health professions. Working with allied health professions to create collaborations was identified in AHTA's current Strategic Plan (2019b). These programs could be in the form of special modules that could be incorporated into other healthcare education programs. They also could be in the form of CEU programs that AHTA develops to meet the specific requirements of other healthcare profession's CEU programs. An example would be the creation of CEU programs that satisfy recreational therapists needs. A successful model of incorporating other professional CEUs into horticultural therapy education is the Michigan Model (Fleming et al., 2017). In this model, the Michigan Horticultural Therapy Association obtained CEU approval from the American Therapeutic Recreation Association for their conference. This form of networking can eventually lead to more medical professionals understanding HT and may lead to prescribing HT in the future. It will also build networks of possible collaborators who may also advocate for the profession and possibly partner in HT research.

Connections to AHTA Strategic Plan (2019b) – Division 1: Capacity Building, Division 2: Information and Education; Division 4: Professional Standards

Responsible person/organization: AHTA

Status - Ongoing

Recommendation 11: Create More Internship Opportunities

The AHTA needs to work with HT practitioners to encourage practitioners to offer internships for students. The AHTA needs to offer their internship supervisor training as an online training. Another way to encourage more HTRs to supervise interns is to offer an incentive, such as a discount for membership or conference registration for internship supervisors. It would be helpful for a task force to be created of current internship supervisors to discuss ways to encourage more HTRs to supervise interns. The AHTA (2020c) sets guidelines for internship and internship supervisors in the Horticultural Therapy Internship Handbook.

Connections to AHTA Strategic Plan (2019b) –Division 2: Information and Education; Division 4: Professional Standards

Responsible person/organization: AHTA, and HT educators.

Status - Pending

Recommendation 12: Create the Center for Horticultural Therapy

One recommendation that has developed from this study is the creation the Center for Horticultural Therapy (see Figure 6.3). This center will focus on creating a consortium that focuses on enhancing evidence-based practices of HT. The Center for Horticultural will consist of a group of HT researchers and HT professionals who agree to collaborate on research projects, HT program development and HT education

opportunities. Consortium members will include the University of Tennessee Department of Plant Sciences and the University of Tennessee Gardens. Additional consortium members may include other universities and colleges, other organizations providing HT, AHTA, and regional networking groups.

Research consortiums have been successful in bringing together diverse groups to increase quantity and quality of research related to a common research goal (Anderson, 2017; López Turnley & Stevens, 2015). A horticultural therapy research consortium will also allow researchers the opportunity to work together on finding research grant proposals, developing grant proposals, implementing research projects, and publishing results. See Suggestions for Future Research Projects section below for an initial list of future HT related research projects.

Action steps needed to develop the Center for Horticultural Therapy will include the following: developing consortium partners, determining strategic direction of HT research, determining strategic direction of HT education, determining strategic direction of HT program development, developing HT research proposals, developing additional funding strategies for HT research, conducting research, and publishing HT research results.

Connections to AHTA Strategic Plan (2019b) –2: Information and Education; Division 4: Professional Standards

Responsible person/organization: Derrick Stowell and HT educators and researchers HT educators.

Status – Pending

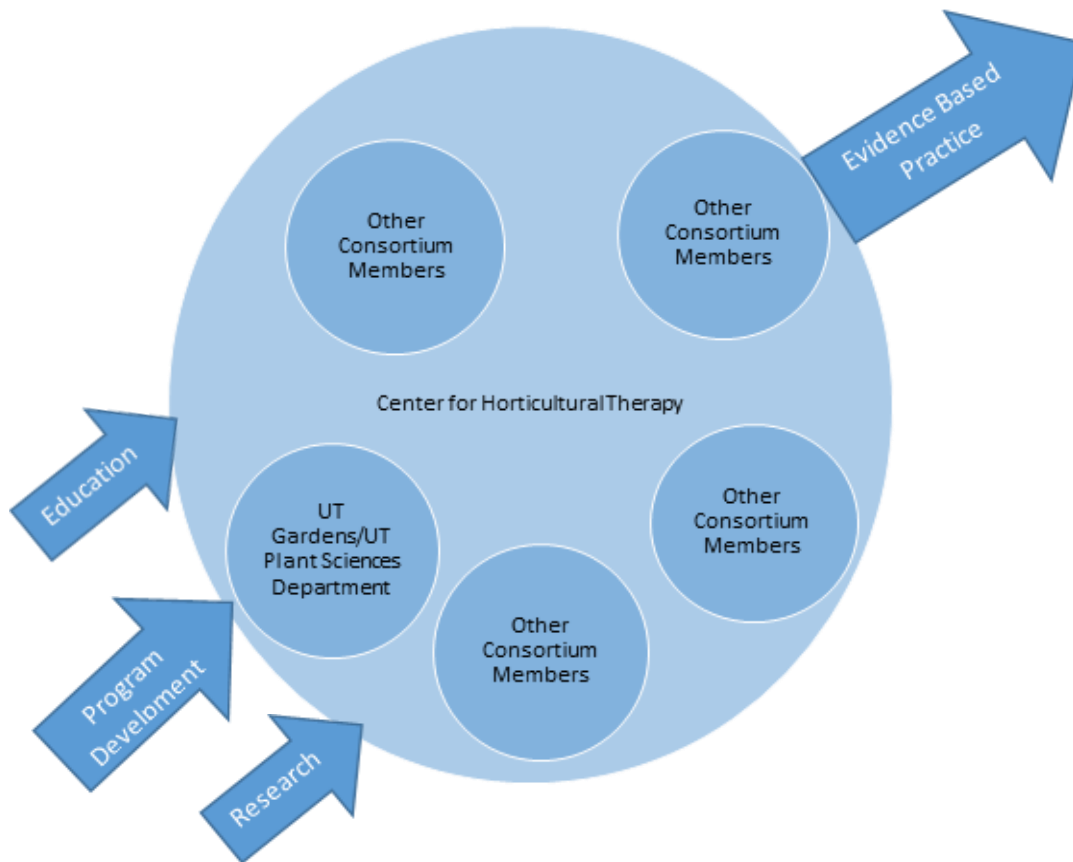


Figure 6.3. Center for Horticultural Therapy

Suggestions for Future Research Projects

There is a need to have a better understanding of who is currently using horticulture as therapy in the US. A survey of professionals using horticulture as therapy would need to include several different groups of individuals. The first study population would be students who have completed HT courses at colleges and universities or through AHTA Accredited Certificate Programs. A second study population would be other allied health professionals who use horticulture in their practice. A third study population would be State Extension staff and Master Gardeners. A fourth study population would be members of regional networking groups. This study on the use of horticulture as therapy in the US would provide additional insight into the potential for growth of the profession of HT. This research idea was suggested by Relf in 2006. To this date, no national study has been conducted.

A study of horticultural therapy in Tennessee was published in 2009 (Pfeffer et al.). This study surveyed hospitals, assisted living facilities, botanical gardens, and master gardeners on the subject of horticultural therapy. Results from Pfeffer et al.'s (2009) study found an overall lack of knowledge of horticultural therapy within the survey population in Tennessee. Twelve out of 202 of the survey participants reported they had a horticultural therapy program at their facility and 31 survey participants reported having a therapeutic horticulture program at their facility (Pfeffer et al., 2009). The methodology and framework of Pfeffer et al.'s (2009) study can be used to develop a similar broad nation-wide study of horticultural therapy and therapeutic horticulture in healthcare.

Currently, HT is not reimbursable through insurance. One alternative to relying on insurance reimbursement is to develop a fee structure for HT services. Reports show

Individuals in the US are willing to pay out-of-pocket for complimentary health services (NCCIH, 2018). A study on what types of HT programs are currently offered and how clients pay for the programs will provide data for professionals to set up more out-of-pocket payment structures for HT programming.

Due to the disruptions of the COVID-19 pandemic of 2020, more studies are needed to determine how new infection-control protocols and current management of the spread of COVID-19 affects allied health professions. Future studies need to be developed to seek insight to changes that will need to take place related to the development and delivery of HT programs, educational programs for HT, and internship programs for HT.

It may be helpful for AHTA and other professional associations to understand the impact association management companies have on an organization's bottom line. A future study on healthcare professional associations and their management structure may provide better insight into how association management companies help grow organization membership, increase the financial stability of the organization and help organizations fulfill their mission or not. It will also be important to look at other management structures for healthcare professional trade organizations including having full-time paid staff.

Conclusion

The profession of HT has a long history within the US. There have been many significant accomplishments in the profession that has led to improved health and wellness outcomes for a variety of populations. Despite these accomplishments, the profession has struggled to move beyond the emerging stage of a profession. This study

explored the current challenges and opportunities for the profession of HT. The results from this study found horticultural therapists enjoy their work despite the challenges discussed in the results, discussion and recommendations sections of this study. A list of 12 recommendations were presented to assist the profession in moving forward. Some of these recommendations align closely with AHTA's 2019-2022 Strategic Plan (2019b). Other recommendations have already begun through efforts by AHTA and regional groups. It is important to note the profession cannot grow without involvement of professional organizations and individual practitioners. With the continued dedication and participation of horticultural therapists, the profession of HT can move beyond the emerging stage and continue to impact the future of healthcare and wellness in the US.

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APPENDIX

Appendix 1: Pilot Introductory Email

Dear {Name},

My name is Derrick Stowell and I am currently pursuing my PhD in Plant, Soil, and Environmental Science at the University of Tennessee. I am currently conducting a study on horticultural therapy and horticultural therapy education in the United States. I am contacting you to ask if you would be willing to take part in this study by being a pilot reviewer of the interview I will be conducting and review my preliminary results in increase validity? The interview will be conducted using video conferencing. The interview will take approximately 30 minutes of your time. If you are interested and able to take part as a pilot reviewer, please respond to this email to let me know if you are willing to take part in this study. I will then send you an email to schedule the interview and attach a copy of the Pilot Reviewer Consent for Participation form. After all interviews have been completed, transcribed and analyzed a preliminary report will be developed and emailed to you for review. This will take approximately 1 hour to review and comment on the results.

If you are interested in taking part in this study as a pilot reviewer, please respond to this email.

Thank you for your time,

Derrick Stowell

Appendix 2: Pilot Reviewer Results Review Email

Dear {Name},

Thank you for taking the time to take part in my study of horticultural therapy and horticultural therapy education in the United States as a pilot reviewer. I have completed analysis of the information gathered through interviews. I have attached a copy of the preliminary results for you to review. I would like to ask you to read through the report and then provide your comments and feedback on my results and interpretation of those results. Your review of the report should take about an hour. Your input is invaluable for my study and the future of the profession of horticultural therapy. Please respond to this email with your feedback and comments within two weeks.

Thank you for your time,

Derrick Stowell

Appendix 3: Introductory Email

Dear {Name},

My name is Derrick Stowell and I am currently pursuing my PhD in Plant, Soil, and Environmental Science at the University of Tennessee. I am currently conducting a study on horticultural therapy and horticultural therapy education in the United States. I am contacting you to ask if you would be willing to take part in this study. The study will consist of an interview conducted using video conferencing. The interview will take approximately 30 minutes of your time. If you are interested and able to take part in this study, please respond to this email to let me know that you are willing to take part in this study. If you are interested in participating in this study, I will email to schedule the interview and attach a copy of the Consent for Participation form and you will be asked to give verbal consent at the start of our interview.

Thank you for your time,

Derrick Stowell

Appendix 4: Follow-up Email

Dear {Name},

My name is Derrick Stowell and I am currently pursuing my PhD in Plant, Soil, and Environmental Science at the University of Tennessee. Last week I contacted you about taking part in a study about horticultural therapy and horticultural therapy education in the United States. I wanted to follow-up to be sure you received the email. I am contacting you to ask if you would be willing to take part in this study? The study will consist of an interview using video conferencing. The interview will take proximally 30 minutes of your time. I have attached a copy of the Consent for Participation form for this study. If you are interested in participating in this study, you will be asked to give verbal consent at the start of our video conference.

Thank you for your time,

Derrick Stowell

Appendix 5: Second/Scheduling Email

Dear {Name},

Thank you for taking the time to take part in my study of horticultural therapy and horticultural therapy in the United States. I have the following dates and times available to conduct this interview: {List out several dates and times}

Please respond with your top three choices for our conversation. Once the meeting is scheduled, I will send an email with instructions how to join the interview.

I have also attached a copy of the consent for participation form for your review. I will be asking to you provide verbal consent before we begin our interview.

Thank you for your time,

Derrick Stowell

Appendix 6: Interview Matrix and Script

Script for semi-structured interview (Adapted from Castillo-Montoya, 2016):

I want to thank you for being willing to participate in this study. The information gathered from this study will help illustrate the challenges and opportunities of horticultural therapy and horticultural therapy education in the United States. I will be asking you about the current challenges and opportunities related to horticultural therapy and horticultural therapy education in the United States.

[Review consent form]

I emailed you a consent form on [date]. Have you reviewed the consent form?

☐ Yes ☐ No

Will you verbally agree to the consent form? ☐ Yes ☐ No

Is it still ok for me to record our conversation today? ☐ Yes ☐ No

If yes: Thank you for allowing me to record our conversation. You can let me know at any time during the interview that you want me to stop the recording or keep something off the record of our interview. If you do not want me to continue recording the conversation, I will take notes for the rest of the interview.

Please let me know if you have any questions before starting the interview. You can also ask any questions as they come up during the interview. Do you have any questions before we begin the interview?

*The questions on the top of the matrix list the main research questions. A x in the matrix beside questions help the researcher understand how the specific questions fit within the main research questions.

	Background Information	What is the current status of HT in the US?	What should the profession of HT look like in the future?	What steps are needed for the profession of HT to advance?	What role does HT education play in the profession of HT?
1 a. If Educator: How long have you been educating/training people in HT?	x	x			x
1 b. If Educator: How many people apply to your program each year? How many are accepted? How many people complete your program each year?	x	x			x
Survey Questions for all interviews					
1. First, tell me what you like most and least about the practice of HT in America right now? (With Prompts: Is it growing, shrinking, etc.)		x			x
2. What challenges do you think HT currently faces? (Prompts: lack of professional recognition, lack of continuing education		x			x

credits, lack of HT degree programs, lack of payment/reimbursement for services).					
3. It is the year 2030. What pleases you the most about the practice of HT in the US? What is your vision for HT in the future?			x	x	
4. What has to happen for us to achieve your vision?			x	x	
5. What are the constraints and barriers to achieving this vision, if any?		x			x
6. What are the supports, opportunities, or resources that could help us achieve this vision, if any?		x	x	x	x
7. What role should HT education have in achieving this vision, if any?					x
8. What role should a professional organization have in achieving this vision, if any?			x	x	
9. Is there anything else you would like to say about the future of HT in America?	x	x	x	x	x

Close of Interview

I wanted to thank you for your time completing this interview today. Do you have any additional questions about the items we discussed today? If you have any additional questions you may email me after our phone call ends.

Appendix 7: Thank You Email

Dear {Name},

Thank you for taking the time to take part in my study of horticultural therapy and horticultural therapy education in the United States. Your input is invaluable for my study and the future of the profession of horticultural therapy.

Thank you for your time,

Derrick Stowell

Appendix 8: Consent Form

Consent for Research Participation

Research Study Title: A Review of Horticultural Therapy and Horticultural Therapy Education in the United States: Addressing Challenges and Opportunities.

Researcher(s):

Derrick R. Stowell, MS, HTR, CTRS, University of Tennessee, Knoxville
Mark Fly, PhD, University of Tennessee
Susan Hamilton, PhD, University of Tennessee Knoxville

We are asking you to be in this research study because you are or were member of the American Horticultural Therapy Association. The information in this consent form is to help you decide if you want to be in this research study. Please take your time reading this form and contact the researcher(s) to ask questions if there is anything you do not understand.

Why is the research being done?

The purpose of the research study is to conduct an interview of members and former members of the American Horticultural Therapy Association to learn about horticultural therapy and horticultural therapy education in the United States. We are interested in learning what challenges and opportunities there are within the profession of horticultural therapy. This study is part of Derrick Stowell's PhD program and will be part of his dissertation.

What is this research study about?

The interview will be administered using online video conferencing software called Zoom. This will give you the opportunity for a face-to-face conversation with the researcher(s) during the interview. The interview can be conducted using computer, or a phone. A qualitative analysis of interview results will be used for this research. Video and audio of your interview with the researcher will be recorded. Once the interview is complete the video recording will be securely deleted. The audio file will be used to transcribe the interview. Once the analysis is completed the audio file of the interview will be securely deleted. This interview will take approximately 30 minutes to complete. Questions will be asked related to your experience with horticultural therapy education and asking your input on the challenges and opportunities related to horticultural therapy practice.

Can I say "No"?

Being in this study is up to you. You can stop any time during the interview or only answer questions that you feel comfortable answering. You can stop participating in this study any time during the conversation with the researcher.

Are there any risks to me?

Risk in participation of this study is minimal. Your name will not be associated with the study results. A unique code will be given to your interview responses during data analysis. This key will be destroyed after analysis is complete. After completing the interview, your name will not be attached to the interview transcription and audio recordings will be deleted.

The data for this study will be encrypted and stored on a University computer. A printed copy of the consent form will be locked in a file cabinet in the researcher's office. The key for participants' names will be stored as a hard copy and locked in a file cabinet in the researcher's office.

Are there any benefits to me?

We do not expect you to directly benefit from being in this study. Your participation may help us to learn more about the challenges and opportunities related to horticultural therapy. We hope the knowledge gained from this study will benefit the profession of horticultural therapy.

What will happen with the information collected for this study?

Your responses to the interview will not be linked to your computer, email address or other electronic identifiers. The audio from your conversation with the researcher will be encrypted and stored on the researcher's computer. Information provided in this interview can only be kept as secure as any other online communication. Results from this study may be published in a peer reviewed journal or presented at a professional conference.

Future Research

We will not keep your information to use for future research or other purposes. Your name and other information that can directly identify you will be deleted from your research data collected as part of the study.

Who can answer my questions about this research study?

If you have questions or concerns about this study, or have experienced a research related problem or injury, contact the researchers, Derrick R. Stowell, dstowell@utk.edu, 865-974-7151, Dr. Mark Fly at markfly@utk.edu, 865-974-7979, or Dr. Susan Hamilton at sueham@utk.edu, 865-974-7972.

For questions or concerns about your rights or to speak with someone other than the research team about the study, please contact:

Institutional Review Board
The University of Tennessee, Knoxville
1534 White Avenue

Blount Hall, Room 408
Knoxville, TN 37996-1529
Phone: 865-974-7697
Email: utkirb@utk.edu

You will be asked to give verbal consent to this study at the beginning of your interview.

Verbal consent: I have received and read a copy of this consent form and the research study has been explained to me. I have been given the chance to ask questions and my questions have been answered. If I have more questions, I have been told who to contact. By verbally consenting, I am agreeing to be in this study.

Name of Adult Participant

Date of verbal consent

Researcher Signature (to be completed at time of informed consent)

I have explained the study to the participant and answered all of his/her questions. I believe that he/she understands the information described in this consent form and freely consents to be in the study. The participant has given verbal consent to be part of this study.

Name of Research Member

Signature of Research Member Date

Appendix 9: Pilot Survey Consent Form

Consent for Research Participation

Research Study Title: A Review of Horticultural Therapy and Horticultural Therapy Education in the United States: Addressing Challenges and Opportunities.

Researcher(s):

Derrick R. Stowell, MS, HTR, CTRS, University of Tennessee, Knoxville
Mark Fly, PhD, University of Tennessee
Susan Hamilton, PhD, University of Tennessee Knoxville

We are asking you to be in this research study because you are or were a member of the American Horticultural Therapy Association. The information in this consent form is to help you decide if you want to be in this research study. Please take your time reading this form and contact the researcher(s) to ask questions if there is anything you do not understand.

Why is the research being done?

The purpose of the research study is to conduct an interview of members and former members of the American Horticultural Therapy Association to learn about horticultural therapy and horticultural therapy education in the United States. We are interested in learning what challenges and opportunities there are within the profession of horticultural therapy. This study is part of Derrick Stowell's PhD program and will be part of his dissertation.

What is this research study about?

The interview will be administered using online video conferencing software called Zoom. This will give you the opportunity for a face-to-face conversation with the researcher(s) during the interview. The interview can be conducted using computer, or a phone. A qualitative analysis of interview results will be used for this research. Video and audio of your interview with the researcher will be recorded. Once the interview is complete the video recording will be securely deleted. The audio file will be used to transcribe the interview. Once the analysis is completed the audio file of the interview will be securely deleted. This interview will take approximately 30 minutes to complete. Questions will be asked related to your experience with horticultural therapy education and asking your input on the challenges and opportunities related to horticultural therapy practice.

As a pilot reviewer, I am asking you to go through the interview and provide answers. This will allow me to make any adjustments needed to the final interview. After I have conducted my study, I will email you a preliminary copy of my results to review. This will assist with validating my qualitative analysis. The review of the report may take an hour

to do. After reviewing the report, you can provide any feedback related to the analysis through email.

Can I say “No”?

Being in this study is up to you. You can stop any time during the interview or only answer questions that you feel comfortable answering. You can stop participating in this study any time during the conversation with the researcher.

Are there any risks to me?

Risk in participation of this study is minimal. Your name will not be associated with the study results. A unique code will be given to your interview responses during data analysis. This key will be destroyed after analysis is complete. After completing the interview, your name will be not be attached to the interview transcription and audio recordings will be deleted.

The data for this study will be encrypted and stored on a University computer. A printed copy of the consent form will be locked in a file cabinet in the researcher’s office. The key for participants’ names will be stored as a hard copy and locked in a file cabinet in the researcher’s office.

Are there any benefits to me?

We do not expect you to directly benefit from being in this study. Your participation may help us to learn more about the challenges and opportunities related to horticultural therapy. We hope the knowledge gained from this study will benefit the profession of horticultural therapy.

What will happen with the information collected for this study?

Your responses to the interview will not be linked to your computer, email address or other electronic identifiers. The audio from your conversation with the researcher will be encrypted and stored on the researcher’s computer. Information provided in this interview can only be kept as secure as any other online communication. Results from this study may be published in a peer reviewed journal or presented at a professional conference.

Future Research

We will not keep your information to use for future research or other purposes. Your name and other information that can directly identify you will be deleted from your research data collected as part of the study.

Who can answer my questions about this research study?

If you have questions or concerns about this study, or have experienced a research related problem or injury, contact the researchers, Derrick R. Stowell, dstowell@utk.edu, 865-974-7151, Dr. Mark Fly at markfly@utk.edu, 865-974-7979, or Dr. Susan Hamilton at sueham@utk.edu, 865-974-7972.

For questions or concerns about your rights or to speak with someone other than the research team about the study, please contact:

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Phone: 865-974-7697
Email: utkirb@utk.edu

You will be asked to give verbal consent to this study at the beginning of your interview.

Verbal consent: I have received and read a copy of this consent form and the research study has been explained to me. I have been given the chance to ask questions and my questions have been answered. If I have more questions, I have been told who to contact. By verbally consenting, I am agreeing to be in this study.

Name of Adult Participant

Date of verbal consent

Researcher Signature (to be completed at time of informed consent)

I have explained the study to the participant and answered all of his/her questions. I believe that he/she understands the information described in this consent form and freely consents to be in the study. The participant has given verbal consent to be part of this study.

Name of Research Member

Signature of Research Member Date

Appendix 10: Data Management Plan

DATA COLLECTION

What data will you collect or create?

Semi-structured interviews of horticultural therapy professionals will be collected.

How will the data be collected or created?

Interviews will be conducted using Zoom. Recordings will be saved in an audio only format(.m4a). Data will be transcribed and saved in a word document format (.docx). A research key of participants will be created in a written paper format only.

DOCUMENTATION AND METADATA

What documentation and metadata will accompany the data?

A written copy of the participant key will be used to manage data collection and proper placement into specific participant categories. A chart of interview length and states where study participants live will be created.

ETHICS AND LEGAL COMPLIANCE

How will you manage any ethical issues?

The research has received IRB approval from the University of Tennessee. Participants will be emailed the consent form for participation. Participants will provide verbal consent at the beginning of their interview. Participants will be given contact information of researchers and the University if any issues arise during the study. Any ethical issues that arise will be reported to the University IRB and researcher's committee chairs.

How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?

Data from the research will be used to write the lead researchers dissertation. Results will be presented at conferences and or published in a peer reviewed journal. The researcher's PhD committee will be consulted on any publications and will assist with any copyright issues that may arise.

STORAGE AND BACKUP

How will the data be stored and backed up during the research?

A removable hard drive will be used to back up research data. This hard drive will have an encrypted folder of research data. This hard drive will be locked in the lead researcher's file cabinet in the researcher's locked office.

Files will be saved to the lead researcher's computer. Files were initially saved to a Zoom folder on the computer hard drive. Files were then moved to an encrypted research project folder. A data key for the encryption is stored in a locked file cabinet in the lead researcher's locked office. After moving research files to the encrypted research folder, researchers utilized the Cipher command line tool in Windows 10 to securely delete contents in the Zoom folder.

A paper copy key for researcher participants was created to document participant names and assign code names to each participant. This reduces the chance that names of participants being known. This paper key is stored in a locked file cabinet located in the researcher's locked office.

How will you manage access and security?

The lead researcher will keep the key to the locked file cabinet. Researchers will have access to data when requested.

SELECTION AND PRESERVATION

Which data are of long-term value and should be retained, shared, and/or preserved?

The data in this research will not be retained or preserved for long-term use outside of the written dissertation and or peer-reviewed publication.

What is the long-term preservation plan for the dataset?

Once data analysis is complete and results are written up, all audio recordings will be securely deleted from the encrypted folder on the researcher's computer using the Cipher command line tool in Windows 10.

Saved electronic and paper data files including transcripts and the participant key will be kept for one year past the lead researcher's defense of his dissertation or one year past publication of a peer-reviewed journal article, whichever comes last. The saved electronic files include .docx files containing text of interviews.

The paper copy of the participant key will be shredded and destroyed.
All email communications with participants will be securely deleted from the researchers Office 365 and Microsoft outlook email account. The deleted email folder will be emptied, and the recoverable email folder will also be emptied.

DATA SHARING

How will you share the data?

The results will be shared with other professionals, but raw data will not be shared.

Are any restrictions on data sharing required?

Not applicable

RESPONSIBILITIES AND RESOURCES

Who will be responsible for data management?

Derrick R. Stowell is the lead researcher and will be responsible for data management.

What resources will you require to deliver your plan?

A University owned computer. A file cabinet that is lockable. Windows 10 to encrypted data and run the Cipher command line tool.

Appendix 11: Codes Ranked by Number of Mentions by Study Participants

Rank	Code	Subcodes	Study Participants*	Mentions
1	Networking		27	214
		Allied Health Fields	25	115
		Non-collaboration	3	6
		Regional groups	10	28
		Strengthens the profession	17	65
2	Education		25	176
		Appropriate	5	16
		CEU	4	11
		Enrollment	12	39
		Future of educators	10	21
		More educational opportunities	22	68
		Pre-approval	3	9
		Untrained	5	12
3	AHTA Operations and Structure		25	169
		BOD	16	41
		Frustration	19	83
		Inclusion	5	26
		Membership numbers	7	19
4	Credentialing		24	156
		Cons of Credentialing	14	38
		Internships	8	20
		Medical or Wellness model	9	20
		Pros of Credentialing	20	78
5	Funding		25	133
		Insurance	16	45
		Lack of funding opportunities	20	88
6	Public Relations/Awareness		24	126
		Great idea	12	22
		Public awareness	23	104
7	Job Opportunities		16	102
		Lack of job opportunities	13	62
		Self-starter	10	40
8	Professional Uniqueness		11	34
9	Professional growth		17	38
		Grow	12	21
		Same	5	9
			3	8
10				49
11	Standardization		13	51
12	What Study Participants Dislike about HT		27	52
13	What Study Participants Like about HT		27	63
14	Nature		15	54
15	Vision		27	82

Appendix 12: Outline for AHTA Executive Committee meeting and AHTA Board of Directors Presentations

AHTA Board of Directors Presentation

10/17/2020

3:00

PM Eastern

- What are the current challenges and opportunities for HT and HT education in the US?
- 1.) What is the current status of HT in the US?
- 2.) What should the profession of HT look like in the future?
- 3.) What role does HT education play in the profession of HT?
- 4.) What steps are needed for the HT profession to advance?
 - Methods:
 - Semi-structures interviews using Zoom
 - Study Sample: AHTA members and past AHTA members

Results

Is the profession growing (12), shrinking (5), or staying the same (3)?

5 Main Themes:

1. AHTA Operations and Structure

- Important for the future of the profession
- Membership numbers (7)
- Frustration (19)
- Inclusion (5)

2. Education/Credentialing

- Need for more education opportunities (22)
- Credentialing or not?
- What model should profession take? Clinical vs. wellness/community (9)
- Future of educators (10)
- CEUs (4)
- Standardization (13)
- Internships (8)

3. Funding/Job Opportunities

- Insurance reimbursement (16)
- AHTA's limited budget
- Lack of jobs (13)
- Self-starter (10)

4. Public Awareness/Networking

- Great idea (12)
- Working with regional groups (10).
- Allied professionals (25)

5. Research Opportunities

Discussion/Recommendations

Suggestions for future research Projects

(n) = number of study participants that mentioned a specific topic.

Appendix 13: Outline for Mid-Atlantic Horticultural Therapy Network Presentation

Title: Sowing Seeds for the Future of HT

Date: October 24, 2020

Brief Description: This session will discuss creative ways to collaborate with allied professionals and the public to create a new movement focusing on connecting nature, plants and people. We will discuss how to move forward creating strategies to increase the public's understanding of horticultural therapy and how it can serve all communities.

Learning Objectives: By the end of the session, participants will be able to:

1. identify current strengths and challenges in creating the future of the horticultural therapy profession.
2. identify opportunities to collaborate with allied professionals and the community to reach more people through horticultural therapy.
3. identify steps that professionals can take to transform the future of the horticultural therapy profession.

Brief Outline –

- I. Introduction – 5 min
- II. Horticultural therapy and its strengths – 5 min
 - Regional Groups and their impact
 - People can identify with living plants
 - Unique perspectives/skills to address current issues
- III. Challenges/weaknesses of current practice – 5 min
 - a. Lack of public awareness about the profession
 - b. Research and need to strengthen evidence-based practice
 - c. State of insurance and funding
- IV. Opportunities for the future – 20 min
 - a. The climate crisis and environmental movement
 - b. From screen time to nature time
 - c. Inclusiveness and uniqueness of programs and people
 - d. Education systems – primary, secondary, higher education
 - e. The wellness movement
- V. Moving forward/growing on – 20 min
 - a. Taking the message to the public
 - b. “Great idea” to great collaborations
 - c. Complimentary health and new funding structures
 - d. Expanding our communities of practice/networking
 - e. HT entrepreneurs creating jobs for the next generation of HTs
- VI. Questions & answers? – 10 min

Appendix 14: Horticultural Therapy Job Task Analysis Results

Note. Tables reprinted from Starling, L. A., Waliczek, T. M., Haller, R., Brown, B. J., Malone, R., & Mitrione, S. (2014). Job task analysis survey for the horticultural therapy profession. *HortTechnology*, 24(6), 645-654

Survey response to therapeutic knowledge.

	Samples (no.)	Mean score (1–5 scale) ^z	SD	Not applicable (%) ^y	Slightly important (%)	Moderately important (%)	Very important (%)	Extremely important (%)
American Horticultural Therapy Association	84	3.88	1.11	2.4	9.6	24.1	25.3	38.6
Code of Ethics								
Human growth and development	83	4.23	0.85	1.2	3.6	8.4	44.6	42.2
Senses and related impairments	85	4.29	0.88	1.2	3.5	10.6	34.1	50.6
Psychological and related impairments	85	4.48	0.74	—	2.4	7.1	31.0	59.5
Cognitive and related impairments	85	4.49	0.77	—	3.5	5.9	28.2	62.4
Anatomy and related impairments	85	3.75	1.05	1.2	11.8	27.1	30.6	29.4
Principles of counseling techniques, behavioral interventions, motivational strategies	85	4.34	0.83	1.2	2.4	8.2	37.6	50.6
Principles of group facilitation, motivation, and leadership	84	4.40	0.71	—	2.4	6.0	40.5	51.2
Medication and side effects	84	3.70	1.11	2.4	14.3	22.6	32.1	28.6
Assessment selection/development based on individual needs and setting	83	4.29	0.99	2.4	3.6	13.3	24.1	56.6
Activity/task analysis	85	4.34	0.83	—	4.7	8.2	35.3	51.8
Adaptation of activities and intervention	83	4.54	0.80	1.2	2.4	4.8	24.1	67.5
Program design relative to population served	84	4.58	0.75	1.2	1.2	4.8	23.8	69.0
Identify and write measurable goals and objectives	85	4.15	1.06	2.4	7.1	14.1	25.9	50.6
Other disciplinary approaches (occupational, physical, art, recreation)	84	3.76	0.90	1.2	6.0	29.8	41.7	21.4
Documentation policy and procedures (assessment, progress, outcomes, discharge)	85	3.93	1.23	7.1	7.1	15.3	27.1	43.5
Budgeting and fiscal responsibility	85	4.02	0.93	—	2.4	20.0	41.2	34.1
Researching effectiveness of program outcomes and best practices	85	3.75	1.14	7.1	4.7	23.5	35.3	29.4
Published research in horticultural therapy	85	3.47	1.24	5.9	17.6	28.2	20.0	28.2
Overall therapeutic knowledge score	85	77.78	10.72					

^zLikert scale responses: 1 = not applicable, 2 = slightly important, 3 = moderately important, 4 = very important, 5 = extremely important.

^yMissing answers were treated as missing data and represented by a dash in table.

Survey response to therapeutic skills and abilities.

	Samples (no.)	Mean score (1–5 scale) ^z	SD	Not applicable (%)	Slightly important (%) ^y	Moderately important (%)	Very important (%)	Extremely important (%)
Review charts/documentation of person served	83	3.55	1.23	9.6	8.4	24.1	32.5	25.3
Conduct and document assessments	83	3.61	1.31	12.0	7.2	18.1	32.5	30.1
Develop and document individualized intervention plan	83	3.59	1.39	15.7	3.6	19.3	28.9	32.5
Review the intervention plan with the person served	83	3.43	1.42	16.9	7.2	21.7	24.1	30.1
Monitor goals and objectives of individual intervention plan	83	3.73	1.28	9.6	7.2	18.1	30.1	34.9
Observe, analyze, evaluate client participation for progress	83	4.13	1.07	6.0	—	14.5	33.7	45.8
Revise/update individualized plan	83	3.67	1.38	13.3	7.2	14.5	28.9	36.1
Document daily/monthly/quarterly review of person served	83	3.77	1.32	10.8	6.0	16.9	27.7	38.6
Monitor and address safety concerns	83	4.40	0.92	2.4	1.2	12.0	22.9	61.4
Document occurrences relating to health and safety	83	3.95	1.18	7.2	3.6	16.9	31.3	41.0
Evaluate program effectiveness for individuals served	82	4.24	1.03	4.9	—	13.4	29.3	52.4
Overall general horticultural skills and abilities score	85	41.06	12.69					

^zLikert scale responses: 1 = not applicable, 2 = slightly important, 3 = moderately important, 4 = very important, 5 = extremely important.

^yMissing answers were treated as missing data and represented by a dash in table.

Survey response to horticulture knowledge.

	Samples (no.)	Mean score (1–5 scale) ^a	SD	Not applicable (%) ^b	Slightly important (%) ^b	Moderately important (%)	Very important (%)	Extremely important (%)
General horticulture content								
Various soil or soilless media for propagating seeds/cuttings	81	4.04	0.81	—	2.5	23.5	42.0	32.1
Soil types and pH ranges for plant growth	81	3.64	0.98	2.5	6.2	38.3	30.9	22.2
Various horticultural approaches (e.g., organic, inorganic, industrial, sustainable)	81	3.75	1.01	3.7	3.7	32.1	34.6	25.9
Raised bed gardening	81	4.14	0.97	1.2	4.9	18.5	29.6	45.7
Toxicity of plant materials	81	4.48	0.73	—	1.2	9.9	28.4	60.5
Selection of specific/appropriate plant materials	81	4.52	0.67	—	—	9.9	28.4	61.7
General horticulture overall score	85	22.91	6.25					
Greenhouse and nursery content								
Various container styles/types	80	3.83	0.85	—	7.5	23.8	47.5	21.3
Nursery operations and management	81	2.62	1.26	23.5	25.9	24.7	17.3	8.6
Nursery plant production	80	2.60	1.24	23.8	23.8	30.0	13.8	8.8
Greenhouse operations and management	81	3.37	1.42	17.3	7.4	24.7	22.2	28.4
Greenhouse plant production	81	3.41	1.43	17.3	8.6	18.5	27.2	28.4
Greenhouse and nursery overall score	85	15.00	5.99					
Landscape design, maintenance, and construction content								
Landscape design principles	81	3.43	1.02	3.7	12.3	37.0	30.9	16.0
Landscape maintenance principles and techniques	81	3.62	1.04	3.7	8.6	32.1	33.3	22.2
Landscape construction	81	3.14	1.15	7.4	23.5	30.9	24.7	13.6
Identification and cultivation of outdoor plant materials	81	4.25	0.75	—	2.5	11.1	45.7	40.7
Landscape design, maintenance, and construction overall score	85	13.75	4.51					
Accessible/adaptable design, structures, tools and equipment								
Therapeutic garden design	81	4.10	0.96	1.2	2.5	25.9	25.9	44.4
Adaptive and/or therapeutic tools and equipment	80	4.18	0.99	1.3	7.5	11.3	32.5	47.5
Accessibility and accessible structures	81	4.31	0.90	1.2	3.7	11.1	30.9	53.1
Accessible/adaptable design, structures, tools and equipment overall score	85	26.19	6.58					
Floral and interior plant content								
Artistic use of plant material (floral, craft, art, decoration)	80	3.94	0.96	—	10.0	18.8	38.8	32.5
Identification and cultivation of indoor plant materials	81	4.26	0.79	—	1.2	17.3	35.8	45.7
Floral and interior plant overall score	85	7.76	2.29					
Pest identification and management content								
Pesticide/insecticide application	81	3.06	1.50	22.2	17.3	16.0	21.0	23.5
Insect identification and management	81	3.93	1.07	3.7	4.9	23.5	30.9	37.0
Plant disease identification and management	79	3.86	1.02	2.5	6.3	25.3	34.2	31.6
Pest identification and management overall score	85	10.25	3.62					

^aLikert scale responses: 1 = not applicable, 2 = slightly important, 3 = moderately important, 4 = very important, 5 = extremely important.

^bMissing answers were treated as missing data and represented by a dash in table.

Survey response to horticultural skills and abilities.

	Samples (no.)	Mean score (1–5 scale) ^a	SD	Not applicable (%) ^b	Slightly important (%)	Moderately important (%)	Very important (%)	Extremely important (%)
General horticulture skills and abilities								
Grow horticultural plants (e.g., for sale, production, installation)	79	3.70	1.25	8.9	6.3	25.3	25.3	34.2
Select and purchase seeds/plants	79	4.14	0.93	1.3	3.8	17.7	34.2	43.0
Use fertilizers and plant nutrients	79	3.78	1.14	5.1	8.9	20.3	34.2	31.6
Propagate plants	79	4.24	0.88	—	6.3	10.1	36.7	46.8
Plant seeds	79	4.25	0.97	1.3	7.6	6.3	34.2	50.6
Plant/pot-up/transplant	79	4.32	0.81	—	5.1	6.3	40.5	48.1
Harvest food or flowers	78	4.27	0.96	1.3	6.4	9.0	30.8	52.6
General horticultural skills and abilities overall score	85	18.69	6.52					
Pest identification and management skills and abilities								
Perform plant pest/disease management	76	3.71	1.21	5.3	13.2	19.7	28.9	32.9
Mix and spray pesticides/insecticides (organic, inorganic, or both)	77	2.74	1.45	28.6	18.2	18.2	20.8	14.3
Pest identification skill and ability overall score	85	5.80	2.88					
Greenhouse and nursery skills and abilities								
Manage greenhouse	78	3.29	1.50	20.5	10.3	17.9	21.8	29.5
Set planting and plant maintenance schedules	79	3.61	1.30	10.1	10.1	19.0	30.4	30.4
Greenhouse and nursery skills and abilities overall score	85	6.38	3.10					
Equipment skills and abilities								
Operate vehicles and/or powered equipment such as mowers, blowers, trimmers	79	2.38	1.30	34.2	24.1	19.0	15.2	7.6
Use hand tools such as shovels, rakes, spading forks	79	3.85	1.18	6.3	8.9	12.7	38.0	34.2
Use hand tools such as trowels, garden shovels, small pruners	78	4.13	0.92	2.6	3.8	14.1	37.2	42.3
Adapt and/or modify tools and equipment	78	3.94	1.00	1.3	7.7	21.8	34.6	34.6
Maintain or repair tools and equipment	79	3.23	1.24	12.7	13.9	26.6	31.6	15.2
Equipment skills and abilities overall score	85	16.19	6.15					
Landscape design, maintenance and construction skills and abilities								
Design gardens and landscapes	78	3.47	1.15	7.7	11.5	24.4	38.5	17.9
Build/construct landscape structures (walls, beds, paths)	79	2.80	1.39	22.8	24.1	19.0	19.0	15.2
Maintain gardens and landscapes	79	3.85	1.21	7.6	6.3	16.5	32.9	36.7
Prune and/or trim trees, shrubs, and/or bushes	79	3.29	1.26	12.7	12.7	25.3	31.6	17.7
Landscape design, maintenance and construction overall skill score	85	9.36	3.99					

^aLikert scale responses: 1 = not applicable, 2 = slightly important, 3 = moderately important, 4 = very important, 5 = extremely important.

^bMissing answers were treated as missing data and represented by a dash in table.

VITA

Derrick is the Education and Horticultural Therapy Program Administrator for the University of Tennessee (UT) Gardens. He is responsible for the creation of UT Gardens' horticultural therapy program. He has 20 years of experience with nonprofit management, therapeutic program development, research and fundraising. Derrick has a master's in Therapeutic Recreation from the University of Tennessee, and a bachelor's in Environmental Studies & Outdoor Recreation from Maryville College. He has been a Certified Therapeutic Recreation Specialist (CTRS) since 2007 and he has been a registered Horticultural Therapist (HTR) since 2015. Derrick served on the board of directors for the American Horticultural Therapy Association from 2015 to 2018. In 2016, Derrick was awarded AHTA's Rhea McCandliss Professional Service Award for his significant contributions to the profession of horticultural therapy. He is sought out by healthcare organizations to consult on the creation of horticultural therapy programs and therapeutic gardens. His research interests focus on garden education and horticultural therapy.