

THESIS

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2024



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**SUGGESTIONS FOR STRENGTHENING HORTICULTURE AS A
THERAPEUTIC MEDIUM IN HUNGARY**

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**Budapest
2024**

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1. Introduction and objectives

In this thesis I present and analyze the application of horticulture as a therapeutic medium, as practiced in the United States (U.S.) and in Hungary. Furthermore, I make suggestions for strengthening this field in Hungary based on the more well-established practices in the U.S. and the insights of professionals in both countries.

I have chosen this thesis topic because, as an American who has moved to Hungary, I am interested in both countries, I can readily obtain information regarding both countries, and I hope to contribute to the advancement of horticulture as a therapeutic medium in Hungary. In addition, personal reasons have contributed to my selection of this topic. I have a background in healthcare, horticulture, and agriculture, and combining these fields intrigues me. Furthermore, I have personally experienced benefits of horticulture and believe all should have access to it. However, I have encountered a lack of familiarity with plants in general society and specifically a lack of awareness of their therapeutic applications, despite scientific evidence to support their importance.

This thesis aims to answer the following questions:

- What is the history and current status of horticulture as a therapeutic medium in the U.S. and in Hungary?
- What aspects of horticulture as a therapeutic medium in the U.S. could be implemented in Hungary?
- What suggestions could be made, based on the experience and insights of American and Hungarian professionals, for the strengthening of the field of horticulture as a therapeutic medium in Hungary?

1.1. Definitions

The term “horticulture as a therapeutic medium” is used in this thesis to encompass therapeutic horticulture (TH), horticultural therapy (HT), therapeutic gardens (TG), care farms, and any modality using plants directly or indirectly to promote or improve physical, mental, emotional, and/or spiritual wellbeing. The word “therapeutic” is used according to the second definition of the Merriam-Webster dictionary: *“having a beneficial effect on the body or mind”* (Merriam-Webster).

The following definitions for specific applications of horticulture as a therapeutic medium will be used throughout this thesis. It should be noted that these terms are not yet well defined

and differentiated in Hungary. The definitions specific to Hungary used in this thesis are not officially recognized and are designed to aid in clearly describing the current status of horticulture as a therapeutic medium in Hungary.

1.1.1. Therapeutic horticulture (TH)

The AHTA defines TH as the following: *“Therapeutic horticulture is the participation in horticultural activities facilitated by a registered horticultural therapist or other professionals with training in the use of horticulture as a therapeutic modality to support program goals. Therapeutic horticulture is the process through which participants enhance their well-being through active or passive involvement in plant and plant-related activities.”* (American Horticultural Therapy Association)

In this thesis, when referring to TH performed in Hungary, the above-mentioned facilitator is never a registered horticultural therapist, as none are known to exist in Hungary. Due to the fact that training such as that mentioned in the definition is very new in Hungary, *“other professionals with training in the use of horticulture as a therapeutic modality to support program goals”* (American Horticultural Therapy Association) will be assumed to include all individuals involved in the development of the Hortus Medicus course, all students who completed the pilot course during the summer of 2024, and any individuals using *“plant and plant-related activities”* (American Horticultural Therapy Association) to enhance the well-being of others.

In short, the AHTA definition will be used when referring to TH performed in the US. However, a more concise definition, as mentioned by Jeanne Carbone during our interview on May 28, 2024, will be used when referring to TH performed in Hungary: *“The practice of improving a person’s wellbeing by deepening their connection with nature.”*

The Hungarian translation of therapeutic horticulture is *“terápiás kertművelés”* (Jancsovszka, et al. 2024, 5).

1.1.2. Horticultural therapy (HT)

The AHTA defines HT as the following: *“Horticultural therapy is the participation in horticultural activities facilitated by a registered horticultural therapist 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.” (American Horticultural Therapy Association)

In this thesis, the AHTA definition will be used when referring to HT performed in the US. However, when referring to HT performed in Hungary, any professional who has been involved in the development of, or been a student in, the Hortus Medicus pilot course and who uses horticulture in the manner described in the AHTA definition will be considered to be practicing HT.

The Hungarian translation of horticultural therapy is “*kertterápia*” (Jancsovszka, et al. 2024, 5).

1.1.3. Therapeutic garden (TG)

The AHTA defines “therapeutic garden” as the following: *“A therapeutic garden is designed for use as a component of a treatment, rehabilitation, or vocational program. A garden can be described as being therapeutic in nature when it has been designed to meet the needs of a specific user or population. It is designed to accommodate participant’s goals and to facilitate people-plant interactions.”* (American Horticultural Therapy Association)

1.1.4. Care farms

The Care Farm Network explains “care farming” as the following: *“Care farming serves a diverse range of individuals, offering therapeutic interventions, social support, skill development, and engagement with nature and agriculture. These programs typically occur on working farms, utilizing resources like plants, animals, and outdoor spaces to provide therapy, job skills training, and social inclusion.”* (Care Farm Network)

2. Literature review

Horticulture is mentioned in scientific literature as having applications in rehabilitation and treatment of a wide range of physical, mental, and emotional ailments. It has been used, for example, in cases of stroke, dementia, anxiety, depression (Kamiokaa, et al. 2014, 94), depression in high school students (Lee, Lee and Ro 2008), depression and low self-esteem in battered women (Lee, Kim and Suh 2008), suicidality (Meore, et al. 2021), anorexia nervosa (Curzio, et al. 2022), schizophrenia (Wu, et al. 2008), psychological and emotional issues associated with asthma (Kamata 2008), post-traumatic stress disorder in postpartum women (Wang 2021), post-traumatic stress disorder in veterans (Mottershead and Ghisoni 2021), acquired brain injury (Vibholm, Christensen and Pallesen 2020), and autism (Dennis, et al. 2024). It has also been used to promote the wellbeing of a variety of populations, including prisoners (A.-Y. Lee, et al. 2021), cancer survivors (Kim, et al. 2008), patients receiving palliative care (Pilgrem 2023), elementary school-aged children (Shao, Elsadek and Liu 2020), university students (Qiu, et al. 2023), and caregivers (Kim, et al. 2020) (Chen, Chen and Wu 2020).

The concept of biophilia may provide a background for the beneficial results observed from the application of horticulture as a therapeutic medium (Meore, et al. 2021). Edward Wilson defines biophilia as *“the innate tendency to focus on life and lifelike processes,”* (Wilson 1984, 1). A historical explanation for biophilia can be found in the first and second chapters of the Bible, where the first environment of humans is recorded as a garden and their first occupation as horticulture. A close connection with all other life forms is also mentioned. In addition, Genesis chapter 2 verse 8 states that *“God planted a garden,”* while chapter 1 verse 27 records that God created humankind with characteristics like His own, which could include an innate, instinctive attraction to horticulture. (Bible 1769). Horticulture used as therapy, therefore, has the potential to improve wellbeing by restoring harmony with a basic human instinct.

2.1. History

The histories of horticulture as a therapeutic medium in the U.S. and in Hungary differ in both length and nature. Its history in the U.S. is more thoroughly documented and appears longer. Following are some historical highlights from both countries. Current developments in Hungary are also included, due to scantiness of historical data and the newness of the profession.

2.1.1. United States

The recognition and use of horticulture as a therapeutic medium in the U.S. dates back to the turn of the 19th century. In 1798 Doctor Benjamin Rush, known as “*the father of modern psychiatry and occupational therapy*” (Relf 2008), took the position that working in a farm setting could promote recovery from mental illness. His insights helped catalyze further research and use of horticulture in treatment of the mentally ill, both in the U.S. and in Europe. In 1817, the US’s first private psychiatric institute, Friends Hospital, opened and incorporated horticulture into patient treatment in the form of fruit and vegetable production. However, they took it a step farther: they also designed their landscape to be therapeutic in and of itself. Thus, they provided therapy through horticulture in both active (i.e. gardening) and passive (i.e. spending time in a peaceful natural environment) forms. In 1879, they added a greenhouse specifically for use in therapy. (Straus and Simson 1998)

Throughout the 1800’s, therapeutic applications of horticulture focused primarily on the treatment of those suffering from mental and behavioral disturbances. It was implemented in settings such as farm-based programs for youth facing behavioral challenges, including Berkshire Farm Center and Services for Youth, and psychiatric hospitals, including Friends Asylum for the Insane. In addition, it held a place in the education of those with special needs, stress reduction of the poor living in cities, and the well-being and betterment of prisoners. For example, flowers were given to individuals with low-income status, the ill, and the incarcerated for them to nurture and enjoy. (Relf 2008)

In the early 1900’s, horticulture’s role expanded to the treatment of physical ailments as well. During World War I, although horticultural activities were provided for wounded soldiers, they were only used to occupy patients rather than applied specifically for their treatment. However, during World War II horticulture became recognized and used as a treatment modality for physical ailments. Volunteers (Straus and Simson 1998) The influx of patients generated by the war led to a need for help from non-medical professionals and a shift to volunteers providing a large portion of the horticulture activities during this time period. (Relf 2008)

Although the roll of horticulture in the treatment of physical ailments in American hospitals became prominent during World War II, the concept predates the turn of the 20th century. Prolific American author and cofounder of the Seventh-Day Adventist Church (General Conference of Seventh-day Adventists), Ellen White, wrote repeatedly from the mid 1800’s to

the early 1900's of the important role of nature and specifically horticulture in physical, mental, emotional, and spiritual wellbeing. She recommended it in the treatment of any sick individuals, tailored to their individual physical abilities. For example, she recommended passive therapy for bedridden patients and active therapy for those physically able to participate in horticultural activities, including those with tuberculosis. In addition, unlike others who only applied horticulture in the education of those with physical, behavioral, or social disadvantages, she recommended it for all students. Furthermore, she promoted horticulture for both prevention and treatment of burnout in individuals with mentally taxing occupations, such as pastors. (White 2016)

In the early 1900's, horticulture found its way into books on occupational therapy (OT), being mentioned in most of them from 1920 to 1940. In 1942, Milwaukee Downer College, which holds the distinction of being the first college in the U.S. to offer an OT degree, taught the first horticulture class within an OT program. (Relf 2008) Nine years later, in 1951, the range of therapeutic applications of horticulture expanded yet again to include geriatric patients when a horticulture program was initiated at Michigan State Hospital. The following year marked the beginning of horticultural therapy workshops at Michigan State University. Only three years later, in 1955, the same university awarded the first master's degree in Horticultural Therapy. (Straus and Simson 1998)

The first textbook on horticulture as a therapeutic medium, *Therapy Through Horticulture*, was written by Donald Watson and Alice Burlingame and published in 1960. In 1962, the National Council of State Garden Clubs published a handbook specifically for volunteers, titled *The Handbook of Horticultural Therapy*. (Straus and Simson 1998)

In 1973, the National Council for Therapy and Rehabilitation Through Horticulture (NCTRH) was established with the purpose of creating a nation-wide professional organization to more firmly establish and further the profession within the US. In 1988, it simplified its name to the currently used name of American Horticultural Therapy Association (AHTA). (Straus and Simson 1998)

2.1.2. Hungary

The history of horticulture as a therapeutic medium is not as extensively documented in Hungary as in the US. A few examples of how horticulture and agriculture have been used to promote human wellbeing in Hungary during the 20th and 21st centuries are listed below.

According to interviewee István Sepsik, horticulture and agriculture have been taking place in some correctional institutions in Hungary for many years, but their role has been primarily vocational rather than therapeutic. The Nagyfa unit of the Szeged Penitentiary and Prison is of particular note. It was purchased by the State in 1920 and used for agricultural activities. During the first decades under state ownership, the primary crop was hemp, from which inmates created ropes and bags. Animal husbandry also took place until 1960. Educational programming was held during the winter to equip inmates with the knowledge needed for the agricultural activities during the spring, summer, and fall. (Megyeri 2017) In 2003, Nagyfa-Alföld Mezőgazdasági és Vegyesipari LLC began managing agricultural activities on the nearly 700 hectares at Nagyfa, a large portion of which is used for seed production. Examples of crops include barley, wheat, rapeseed, and soy. (Nagyfa-Alföld Mezőgazdasági és Vegyesipari Kft.)

Neurologist Gábor Kapócs, former director of the Szentgotthárd Psychiatric Home from 2011 to 2016, introduced horticulture as a therapeutic medium to promote patient wellbeing. Initially, medicinal herbs were planted next to walkways to provide patients with access to edible plants in response to observations of patients consuming flowers and leaves used in landscaping on the facilities approximately 1.5 hectares between buildings and sidewalks. Less than a year later, he regained access to the 2-hectare garden and greenhouse that had previously been used to produce vegetables for the facility and began using it for patient horticultural activities. A positive impact upon the patients over time was clearly visible to Kapócs. In the spring of 2018, he began utilizing horticulture with patients at the Szent János Hospital in Budapest. During the first year, patients and staff cultivated tomatoes along a sidewalk. Later, an approximately 50 m², organic, raised bed garden was designed and created in collaboration with the patients, ages 18- to 79-years-old, where vegetables are grown, cooked, and consumed together. The goal of the garden is not food production but it's therapeutic benefits. (Kapócs, Bieliczky and Szigetvári 2020) (Kapocs 2022)

In 2019, the natural and healing garden design and construction team of the Respect Advisory Community began designing a garden for the Care Center and Institution for Patients with Dementia in Szamossályi. The garden has since been constructed and is used by both residents and staff and is designed to activate the memory of residents. Fragrant and visually distinct plant species were selected that they may have encountered as young adults, such as rosemary, geranium, lavender, and hydrangea. A "therapeutic kitchen garden" was included particularly for those residents who have previous gardening experience. (Szilvácsku 2024)

In 2021, Hortus Medicus, a 3-year-long project funded by Erasmus+, was launched through the collaboration of 5 organizations from Hungary, Romania, Austria, and Italy: the Diversity Foundation, the University College for Agrarian and Environmental Pedagogy Vienna, the Hungarian University of Agriculture and Life Sciences, The Foundation for Quality of Life – Transylvania, and DISAA – Department of Agricultural and Environmental Sciences. The goal of Hortus Medicus is the development of a 120-hour TH course for Hungary and Romania, and the improvement of current TH training in Italy and Austria. The course is intended for professionals from the fields of horticulture, agriculture, healthcare, and social work. An initial, 128-hour pilot course was conducted from April 19 until September 27, 2024. Instructors included professors from the Hungarian University of Agriculture and Life Sciences and the Eötvös Loránd University Bárczi Gusztáv Faculty of Special Needs Education and professional staff of the Diversity Foundation. 19 Hungarian students participated, several of which have begun actively using their acquired knowledge since completion of the course¹. (Hortus Medicus project) (Hortus Medicus – Terápiás kertművelés)

From 2022 until 2026, a garden is being designed and constructed, through the COEVOLVERS scientific project, for therapeutic purposes at the Boldog Gellért Rehabilitation Hospital. The project is funded by the EU Horizon Europe program and carried out in collaboration with the Magház Association and the ESSRG Nonprofit LLC. The goal of the project is to integrate the hospital's garden with its therapeutic work, while taking into consideration the needs of the patients, staff, and wildlife. (Lazányi, et al. 2024)

On March 30, 2023, horticultural programing was started with 10 inmates in the Békés County Correctional Institution, under the supervision of a reintegration officer. The goal of the program is to make life in prison more bearable by strengthening community and interpersonal connections, as well as providing positive personal experiences. Two sessions were held per week, during which participants learned about a variety of plant types and took part in horticultural activities in the facility's inner courtyard. When the weather did not allow for outdoor activities, craft activities were held indoors in the dining room. (Kertészeti és kézműves szakkör indult a Békés Vármegyei Büntetés-végrehajtási Intézetben 2023)

¹ See "Hungarian Case Studies" for interviews with course participants.

3. Materials and methodology

To better understand the current status of horticulture as a therapeutic medium in both the U.S. and in Hungary, I interviewed 6 American (Cindy Berlovitz, Jeanne Carbone, Alicia Green, Teresia Hazen, Hilda Krus, and Matthew Wichrowski) and 5 Hungarian (Rózsa Bengyák, Anita Fodor, Theodora Jordanidisz, István Sepsik, Szemőke Verbó) professionals. I held some of the interviews online and some in person. The goals of the interviews included ascertaining the individuals background in horticulture as a therapeutic medium, the history of horticulture as a therapeutic medium in their region and/or workplace, the nature and setting of the therapy, and the target populations they and any colleagues serve. In addition, some interviewees shared insights into the profession as a whole, its status in the given country (the U.S. or Hungary), and its future.

First, I introduce the interviewees individually and provide an overview of their work and background in the form of case studies. Following are insights they shared, organized according to topic. Next, I present the gathered information graphically: the interviewees' use of horticulture as a therapeutic medium is standardized in a tabular form, the relationship between the interviewees' insights is represented in map form for increased clarity, and the frequency of interviewee propositions is presented in a column graph for added perspective. Finally, based on the presented information, I propose suggestions for strengthening horticulture as a therapeutic medium in Hungary.

4. Results

4.1. American case studies

4.1.1. Matthew Wichrowski —NYU Langone Health (New York)

Matthew Wichrowski has worked as a Horticultural Therapist-Registered (HTR) at Rusk Rehabilitation of NYU Langone Health for over 30 years. He has a background in psychology, a master's degree in social work, and is the Editor-In-Chief of the AHTA Journal of Therapeutic Horticulture. He has conducted research in the field of horticulture as a therapeutic medium and his works have been published in several journals and books, including the *Journal of Cardiopulmonary Rehabilitation and Prevention*; *Primary psychiatry*; *HERD: Health Environments Research and Design Journal*; *Healthcare*; *The Profession and Practice of Horticultural Therapy*; *Horticulture as Therapy*; and *Acta Horticulturae*.

Rusk opened in 1948 and the Glass Garden, a greenhouse staffed by horticulturalists, was built in 1958. In the 1970's, occupational therapists working at the hospital observed that 1) gardening was a very popular hobby and 2) gardening utilized skills that are important in OT, such as fine motor skills, range of motion, strength, and endurance. As a result, some of the OT staff began conducting therapy in the Glass Garden. After the formation of the NCTRH in 1973 (renamed the AHTA in 1988), NYU hired horticultural therapists to staff the Glass Garden from the early 1980's until it was destroyed by a hurricane in 2012. Since then, TH and HT have continued indoors at NYU. There are currently about 4 or 5 HTRs on staff.

Wichrowski's model of horticultural therapy has 3 components: 1) "therapeutic use of self" (i.e. the therapeutic effect of the therapist themselves); 2) the therapeutic, biophilic nature of the environment; and 3) an activity that meets the needs of the patient. When one of these, for example the biophilic environment, is limited, the importance of the others, for example therapeutic use of self, is increased. Thus, the ratio of these 3 components differed before and after the closure of the Glass Garden.

Therapy in the Glass Garden took place in a mixed group setting of both adults and children. The excellent, therapeutic environment included plants, birds, fish, and a cat and was completely unlike the environment of the hospital and surrounding city. Activities included not only transplanting but also propagation, as the greenhouse provided adequate space, and

patients hospitalized for longer periods of time could be assisted through the entire propagation process.

Since the closure of the Glass garden in 2012, Wichrowski and his team use carts to transport plants and other supplies to the patients for therapeutic activities, such as transplanting. Plants are stored and propagated by HT staff in an artificially lit closet in the basement of the hospital. In-house propagation reduces the costs involved in providing TH and HT. A wide selection of plants is offered for patients to transplant and take home. These include sensory oriented plants, easy to care for plants, and harder to care for plants with special cultural interest, such as coffee. Wichrowski aims to help patients select a plant that is of interest to them and suitable to the environment they will be able to provide after leaving the hospital. For example, a shade tolerant plant, such as a Philodendron, would be suitable for patients living in an apartment in New York City; whereas a light demanding species, such as tomato, might be preferred by patients living in suburbs or the country and having outdoor growing spaces. Medical benefits include range of motion, fine motor (e.g. writing a label for their plant), cognitive (e.g. sequencing), and stress reduction. Stress reduction is particularly key, as stress can be a contributing or exacerbating factor for many pathologies and accompanies severe illnesses, such as cancer.

Due to the hospital setting, knowledge of medical conditions is needed by HTRs working at NYU. Therapy is currently provided in 3 departments of the hospital: medically complex physical rehabilitation, neurology, and psychology. Reasons for hospitalization are widely varied, including anxiety, depression, epilepsy, multiple sclerosis, acute inflammatory demyelinating polyneuropathy, Parkinson's disease, cancer, organ transplant, and infection. HT is performed on the medically complex physical rehabilitation floor. Specific goals are designed to complement and reinforce the goals of the treatment team and progress is charted until patient discharge. Each session is documented in a detailed, multi-page form in the hospital's digital record-keeping system. A common goal is increasing standing tolerance, as an initial component of restoring and improving walking ability and independence. To incorporate this goal into an HT session, an activity, such as transplanting, would take place in a standing position. The distraction of working with a plant can contribute to patients standing for a longer period of time than if they had nothing to focus on except the standing itself. The patient's medical condition may limit the type of activity used. For example, only soilless activities are permitted with patients who have undergone an organ transplant or who have

an infection. For these patients, plant-based crafts are used, including crafts utilizing tillandsias, lotions incorporating essential oils, and cards with pressed flowers.

TH is performed on the neurology and psychiatric floors. Patient stays in these departments tend to be shorter; therefore, long-term goals are not set and charted. Only whether or not a patient participated is recorded. If the session is exceptionally bad or good, that may be documented as well. Wichrowski visits the psychiatric floor three times weekly and the neurology floor once weekly. On the psychiatric floor, TH takes place in group sessions. A high ratio of the patients is university-aged and suffering from anxiety and/or depression. Due to an increased interest in horticulture among young people, TH is very popular on this floor and patients respond well. On the neurology floor, TH is performed one-on-one. The HTR first checks the patients' schedules and then approaches available patients in their rooms. After a brief orientation and explanation of the benefits of TH, patients decide whether or not they would like to have a therapy session. If they consent, the session proceeds with setting up a tray on their table. Patients are provided with cultural and horticultural information about the available plants and assisted in selecting one that is of interest to them and practical for them to care for after discharge. Finally, they transplant their chosen plant and later take it home with them. Successfully growing the plant at home can impact patients long-term. For example, a patient at NYU showed Wichrowski a picture of a still-living plant she had transplanted 20 years previous while hospitalized due to epilepsy.

TH was also provided to maternity patients, starting the beginning of 2020 and ending that March due to COVID-19. Benefits specific to maternity patients included anxiety reduction while waiting for labor to begin, and horticultural skill development in postpartum woman desiring to learn gardening and teach it to their child(ren).

During the fall of 2021, Wichrowski, in collaboration with an international team, held a 1-week training program in Iraq for psychotherapists working with refugees, particularly Yazidi refugees. The setting was a community clinic with an existing garden, already being utilized by the gardener for therapy for patients and their families.

An internship program has attracted students and professors from both the U.S. and around the world, including from Sweden, Finland, Germany, and Singapore. Internships may be short- or long-term, depending on the needs of the intern. Students from the TH program at the New York Botanical Garden, other U.S. programs, and from abroad have obtained AHTA horticultural therapist registration subsequent to interning at NYU. In addition, the HT

program at NYU is of special interest to research professors, as few other HT programs are as highly developed clinically. For example, Anna-María Pálsdóttir of the Swedish University of Agricultural Sciences spent time studying at NYU.

4.1.2. Teresia Hazen — Legacy Health (Oregon)

Teresia Hazen worked for the Legacy Health network in Oregon as a registered horticultural therapist from 1991 until 2021, when she retired and transitioned to the role of volunteer consultant. She joined AHTA in 1990, became an HTR in 1993, and was the first president of the Northwest chapter of AHTA. She was a member of the AHTA Board of Directors from 1995 until 1999. She has extensive background in HT and TH work and education, both in the U.S. and other countries, and has been involved in education and health work in some form for over 50 years.

The Legacy Health network has a TG at each of its locations and offers a variety of programming to its patients, their families, visitors, and staff. It has had a total of 14 therapeutic gardens since 1991. Only one is no longer in operation, a TG established in 1991 at Bishop Morris Care Center, a Legacy Health nursing home. In the mid-90's Legacy transitioned away from long-term care services to focus on hospital services only. As a result, the garden was closed in 1996. The other 13 are still in operation today. In 1997, 2 gardens were established: Legacy Good Samaritan Medical Center Stenzel Healing Garden and Children's Garden at Legacy Emanuel. The following year 2 more gardens were established: Legacy Good Samaritan Kern Critical Care Unit Garden and Green Gables Garden at Legacy Cancer Services. In 2002, Portland Memory Garden was established in partnership with Portland Parks and Recreation. In 2004, Oregon Burn Center Garden was established at Legacy Emanuel Medical Center. Legacy Mount Hood Medical Center Healing Garden was established in 2009, Legacy Meridian Park Lewis and Floetta Ide Healing Garden in 2010, Randall Children's Hospital Terrace Garden in 2012, and the Terrace Garden at Legacy Emanuel Medical Center in 2014. In 2017, 2 gardens were established: Legacy Salmon Creek Medical Center Healing Garden and Legacy Good Samaritan Park at NW 21st and Lovejoy. The newest Legacy Health TG, Unity Center for Behavioral Health Healing Garden, was established in 2018.

The gardens are open to patients, their families, visitors, and staff alike. They are designed, using AHTA Therapeutic Garden characteristics, to engage individuals via layout, signage, and plant species selection and placement. An accessible design enables all, regardless of physical

ability, to benefit from the gardens. Additional design features, such as inclined surfaces, support various kinds of therapy that take place in the garden, for example physical, occupational, speech, horticultural, and recreational therapies. Gardens have both secluded, quiet areas and less private, busier areas, allowing patients, visitors, and staff to choose an area most suited to their needs for non-facilitated connection with nature. Plants are selected to provide sensory stimulation and connection with nature year-round. Both annuals and perennials are incorporated in the design, including deciduous and evergreen trees, shrubs, and vines.

Resistant cultivars and varieties are preferred, and chemical control of diseases and pests is avoided with the promotion of organic practices education for all. Shaded areas are provided by pavilions, umbrellas, and trees.

HT is provided at the Rehabilitation Institute of Oregon, located within the Legacy Good Samaritan Medical Center. Group sessions are held twice weekly in the Stenzel Healing Garden or the indoor garden, depending on weather and patient needs, in addition to individualized, 30-minute one-on-one sessions.

Figure 1: Teresia and rehabilitation
(Source: Legacy Health)



Figure 2: Pediatric programming
(Source: Legacy Health)



Horticultural therapists assess patients and work together with treatment teams to achieve specific goals. They monitor, document, and collaborate.

TH programming is provided for patients, visitors, and staff at all 13 Legacy Health locations. For example, indoor and/or outdoor nature stations are

Figure 3: “Midnight in the Garden”
(Source: Legacy Health)



provided year-round at Legacy Randall Children's Hospital. The stations are open weekly for 1 and a half hour sessions and facilitate plant-based projects for patients, their families, visitors, and staff. Another example is a program called “Midnight in the Garden.” It is designed specifically for the night staff in Legacy’s Level 1 trauma center, hospital staff, and emergency personnel, including ambulance staff and law enforcement. The program is from 11pm to 1am and aims to provide a healthy, supportive, relaxing environment in a garden setting to nurture the wellbeing of emergency responders and emergency room staff. It includes healthy snacks, infused water, free 3- to 5-minute massages, relaxing music, a beanbag toss, and a raffle with various prizes, including Portland Nursery gift certificates.

The HTR staff of Legacy Health conducted research on the impact of therapeutic gardens in 3 specific population groups: women giving birth and their partners, family members of cardiovascular intensive care unit patients, and nurses. The Terrace Garden at Legacy Emanuel Medical Center provided the context for these studies, as the garden is in close proximity both to the obstetric and to the cardiovascular intensive care units.

4.1.3. Cindy Berlovitz — Minnesota Landscape Arboretum, Allina Mental Health, Growing Connections LLC (Minnesota)

Cindy Berlovitz has over 25 years of experience working with horticulture as a therapeutic medium in a variety of settings, including the Allina Mental Health psychiatric hospital, senior

care facilities, the Minnesota Landscape Arboretum, an adolescent day treatment center, and care farms in the U.S. and in Europe. Her journey with horticulture as a therapeutic medium started in the late 1990's through an acquaintance who taught classes at the Arboretum. She completed the necessary coursework and obtained AHTA HT registration over 5 years while raising her children.

Berlovitz started an indoor garden at Allina Mental Health in 1999. In 2005 she converted an old smoking shelter at the hospital into a garden shed where she held therapeutic programs until 2017. One of the features of the garden was a mailbox containing journals where patients could write their experiences in the garden. From 2017 until her retirement in 2024, she relied on a cart for transporting plants to therapy sessions and a solarium where patients can tend plants and relax.

Berlovitz provides TH therapy sessions in the Minnesota Landscape Arboretum to a variety of groups, including individuals with Parkinson's disease, teenagers with substance use disorders, individuals with severe and persistent mental illness (SPMI), and intellectually disabled adults. She also organized a trip to the Boundary Waters for the teenagers with substance use disorders. Her best long-term program, lasting 7 years, was for individuals with SPMI. It was operated in collaboration with Touchstone Mental Health, serving individuals suffering from conditions such as reckless behavior, paranoia, and suicidality. The biggest challenge with this population was motivation. As a result, "virtual gardening" was used as needed, involving participants being present in a garden space while others, such as Berlovitz and volunteers, performed horticultural activities.

Immediately prior to interviewing Berlovitz in person at the Arboretum, I observed a TH session with intellectually disabled adults. The Arboretum has a pavilion specifically for TH, located within the Sensory Garden. After meeting the group there, we walked to the lilac collection. A horticulturalist met us there and gave a tour of the collection, showing cultivars that were in bloom at the time and telling us about them and their history, including Hungarian cultivars. He picked lilac flowers for interested participants. After the tour, we walked back to the pavilion, where I assisted participants with tying their flowers into bouquets. Lemonade with lilac flowers was served.

Another population that she has served is from a day treatment center for adolescents with diagnoses such as depression, anxiety, trauma, emotional regulation issues, and physical aggression. They are emotionally intelligent and well versed in self-care, self-love, resilience,

and other emotional skills. Berlovitz stated that they were “really refreshing to work with.” Therapy involved growing plants in two large pots in a parking lot behind a strip mall, by dumpsters and semitrucks.

Volunteers assisted in therapy sessions and garden maintenance at the arboretum, particularly before COVID-19. They were acquired through the Arboretum’s volunteer program or social connections. Berlovitz has trained HT interns, including one from Taiwan.

4.1.4. Jeanne Carbone — Missouri Botanical Garden (Missouri)

Jeanne Carbone is the supervisor of TH at the Missouri Botanic Garden. She has been a member of their TH department for about 13 years. Their current team consists of 2 full-time therapists, 1 part-time therapist, and a manager.

TH started at the Missouri Botanical Garden as programming specifically for seniors, supported by a physician in St. Louis. Over the last 20 years, the program has grown to include more target populations and facilities. Through a strong relationship with the Washington University Barnes-Jewish Hospital System, TH programming is now being held in 6 prominent cancer centers in the St. Louis area. In addition, TH is provided to young ladies who were victims of sex trafficking, pediatric oncology patients, and seniors. The latter is facilitated primarily by volunteers, while the TH team focusses on the medical community. Outreach efforts to engage an even wider segment of society include adult education classes and “therapeutic horticulture at large.”

TH is provided at each cancer center twice a month for approximately 2 hours. Therapy is administered one-on-one to the patients undergoing chemotherapy infusion. Session length is approximately 10 to 15 minutes. During a session, therapists discuss nature and provide a plant-based activity, which participants take home upon completion. The focus of the session is on the therapeutic interaction between humans and nature.

During the majority of Carbone’s time employed at the Missouri Botanical Garden, the TH program was only available to adult cancer patients. However, a recent grant has funded programming specifically for pediatric oncology patients as well. The St. Louis Children’s Hospital, also a part of the Washington University Barnes Jewish Hospital system, has a healing garden and had a full-time horticultural therapist until he retired approximately 3 to 4 years ago. He had not been replaced as of the time of the interview. The garden continues to exist but is maintained by a landscaping company.

Groups and organizations may contract with the garden for one-hour on- or offsite TH programs. A variety of available programs are listed under “Therapeutic Horticulture Menu of Services” on the Missouri Botanical Garden’s website. (Missouri Botanical Garden) Examples of programs include flower arranging, exploring herbs and creating personalized tea blends, exploring various plant materials and creating sachets, and nature printing by pressing natural material onto an ink pad and using it to create an art piece. Programming for children may not always incorporate plant material but will involve nature in some form. Examples of projects used with children include clay impressions, seed mosaics, and learning about and touching worms.

The vast majority of therapeutic programming offered by the Missouri botanical garden is TH. However, HT is provided to young female victims of sex trafficking, as horticulture is used to address specific treatment goals. The therapist is a young woman, which is key to developing rapport with and gaining the trust of the participants. Although she is not involved in counseling, the sex trafficking victims open up to her, enhancing the therapeutic impact of HT. Sessions are held at a safe and confidential rural residential facility and take place in a group setting. There were 8 residents when the program started and approximately 3 at the time of the interview. Initially, 8 raised beds were installed and used for therapeutic activities. However, due to the fact that sessions take place only twice a month, the raised bed garden required additional maintenance outside of sessions. This would need significant involvement from the facility staff, which in recent years has been inadequate for the maintenance of the raised bed garden. Therefore, container gardening was used instead at the time of the interview.

Volunteers provide programming at senior residential facilities. A variety of services are offered, flower arranging being the most commonly requested. Other programs include power point presentations coupled with hands-on sensory engagement, and other hands-on activities involving plants or plant materials, such as transplanting succulents, creating tea blends, and exploring the colors of nature through creating corsages. Session length is approximately 45 to 60 minutes and group size is generally 10 to 15 participants. (Missouri Botanical Garden)

In addition to the above mentioned, primarily offsite therapeutic programs, several onsite programs are offered, with the goal of providing TH not only to specialized populations but also to the general public. A selection of educational classes is offered for adults, with groups

generally ranging in size from approximately 8 to 12 participants. Another onsite program is called Therapeutic Horticulture at Large. The staff aim to hold it at least once a week year-round, and twice a week during the summer when there are more visitors and more plant growth. Sessions are generally held for two hours on Wednesdays, as admission to the Missouri Botanical Garden is free on that day. This means that Therapeutic Horticulture at Large will impact not only Botanical Garden members who receive the Garden's newsletter containing articles about TH, but also non-members who may be completely unaware of TH. It involves staff and signage to initiate interaction with visitors. Staff utilizes conversation and a project, such as a collective art piece, to help garden visitors connect with nature. For example, a loom may be stationed in the garden where guests can add to a weaving, incorporating the colors found in nature during the given season. Another example the garden has utilized is nature mandalas, where garden visitors added natural, provided materials to a mandala as they passed by. On average, approximately 50 guests participate in Therapeutic Horticulture at Large during a 2-hour period.

The TH staff at the Missouri Botanical Garden provides a program for first-year medical students during their orientation week at the beginning of the school year. The program involves a garden tour, an activity, walking with awareness of nature, a presentation, and potting up a houseplant that students take home with them. During the presentation, the students are encouraged to remember later, as practicing physicians, their experience that day and what it was like to spend time in nature with intention, and to use nature with their patients.

4.1.5. Alicia Green — Chicago Botanic Garden (Illinois)

Alicia Green is the coordinator for the Buehler Enabling Garden, located in the Chicago Botanic Garden. She has a background in biology and a master's in counseling. After completing the HT certificate program and internship at the Chicago Botanic Garden, she became an HTR. She has been working at the garden for about 15 years.

The Chicago Botanic Garden has been involved in therapy in some form ever since it opened in the mid-1970's and has been formally conducting TH for about 30 years. In its earlier years, the Learning Garden for the Disabled provided a space for therapy until the Buehler Enabling garden was built in 2000. Various institutions conducted therapy in the Learning Garden for the Disabled, such as the rehab institute of Chicago. The garden had similar features as the

Buehler Enabling Garden, such as raised beds at wheelchair height. It was constructed from used materials, such as railroad ties and smoke stacks. The Buehler Enabling Garden was designed by landscape architects; is constructed from higher-quality, more expensive materials; and is larger, being 11,000 square feet. Its accessible design includes raised beds, paved walkways, and baskets on a pulley system.

The Buehler Enabling Garden is home to mostly annual plants. Green creates three designs each year: one each for spring, summer, and fall. She focusses on sensory plants, such as flowering species (e.g. zinnias and scented geraniums), grasses, lemon thyme and other herbs, and any species that are scented or have other sensory properties. She also includes species that attract butterflies and hummingbirds (e.g. salvia). In the past, plants have been selected specifically for use in therapeutic activities, such as flowers for bouquets, drying, or pressing, and plants for human consumption, such as vegetables and herbs.

Both onsite and offsite therapeutic programs are offered, Green being the coordinator of the onsite programming. All programming takes place in a group setting; there are no one-on-one sessions.

Onsite therapeutic programs are available to any interested groups, regardless of age or type of disability or need. Examples include adults with intellectual disabilities, children from special education classrooms (e.g. wheelchair users), seniors from assisted living or memory care units, visually impaired adults, veterans, and families. Since COVID-19, participants have mainly included disabled adults.

There are two types of programs: life enrichment groups and retreats. Life enrichment groups are one-time sessions, whereas retreats are ongoing, with, for example, monthly sessions. Regardless of the program type, all groups are limited to 15 projects. For life enrichment groups and retreats, this means a limit 15 participants (i.e. one project per participant), although the average group size is 10 to 12. However, in the family programs, several people may work on one project and therefore the group size may exceed 15 participants. Projects usually are performed at 3 tables with about 4 participants per table. This gives opportunity for interpersonal interaction and comradery, providing visible social and emotional benefits. Life enrichment group sessions last are held mid- to late morning, are 45 to 60 minutes in length, and include first a project and then an activity. The project is often creation of a 6-inch terracotta dish garden, which participants take home with them upon completion. Dish garden plants may include, for example, succulents, herbs, or sensory plants. Depending on the group,

a session may begin with passing around sensory plants and discussing experiencing the garden through our senses. The project follows and is performed in a slow, step-by-step manner. First the substrate, a soilless mix, is transferred by the participants from a large bucket to smaller buckets that can be placed on the tables and from which it is easy to scoop the substrate into the container in which the plants will be grown. Next, the plants are planted one-by-one. When finished, the participants of some groups take turns showing their work to the rest of their group. The session finishes with an approximately 15-minute tour in the Enabling Garden or, occasionally, in the adjacent sensory garden. Participants are encouraged to plants, flowers, and hummingbirds. After the tour, the session is complete, but participants are welcome enjoy their lunch or the rest of their afternoon in the botanic garden.

For the last 11 years, Green has been and continues to hold monthly retreats for veterans, focusing on mental health and wellness. The retreats include a greater variety of projects and tours than the life enrichment groups. Examples of projects include planting of amaryllis bulbs, flower arranging, planting of terrariums, bonsai classes, cooking classes, harvest workshops, and harvesting in other gardens (e.g. the children's garden). Unlike the Life Enrichment Groups, tours are not limited to the Enabling Garden and the Sensory garden but may take place in any other garden space as well.

In addition, Green organizes a custom retreat in collaboration with an agency for low income status families. They are 90 minutes in length and contain both an activity, such as a garden tour, and a project, such as planting a section of the garden. Although some fathers participate, the ratio of mothers is higher.

Offsite programing takes place in a variety of locations, including assisted living facilities and community centers for seniors, community gardens, a children's hospital, and a special needs school for children with physical disabilities. Group size is limited to participants. The facility contracts with the botanic garden for a therapeutic program of a specific length, for example 12 weeks. TH staff will provide a given number of sessions, then will provide supplies for a session held by facility staff without the supervision of TH staff.

Sessions involve an activity suitable to the location and season. Activities must fit 2 criteria: 1) a plant or plant material must be utilized in some way and 2) the activity must be adaptable to any physical ability level, whether much or little assistance is required. Examples of activities include planting terrariums, arranging flowers or greenery, using pressed flowers in crafts, making potpourri, planting amaryllis bulbs, and creating magnets from resin.

4.1.6. Hilda Krus — Rikers Island (New York)

Hilda Krus is the Director of Horticultural Therapy for the Horticultural Society of New York (The Hort). She traveled from Germany to the U.S. to study horticultural therapy. She interned at 3 locations, the first two of which were rehabilitation hospitals where she worked with traumatic brain injury patients. Her third internship was in 2003 with The Hort and located at the Rikers Island correctional facility. Shortly thereafter she began working on Rikers Island as an HTR.

In 1986, a vocational horticulture program was established on Rikers Island by The Hort, the New York City (NYC) mayor's office, and the Department of Correction. At the time, having a criminal record posed an even greater barrier to employment than it does today. Because the field of horticulture is accessible to those with criminal records and often does not require a degree, the program founders proposed that vocational training in horticulture could help reduce recidivism rates. After closing briefly due to low funding, the program reopened in 1996. In addition, a reentry program was provided for those wanting to continue working in horticulture when transitioning back into the community.

In response to recognition that only a small ratio of program participants would actually choose horticulture as a career, the program took on a more therapeutic role around the time Krus began interning and working on Rikers Island. Instead of focusing solely on job skills and production, it adopted a broader perspective in promoting the wellbeing of the participants. It endeavored to support inmates and their needs, creating an understanding that they could recover. For example, the program was designed to help participants develop coping skills and resolve issues that led to their incarceration and could lead to reincarceration.

Initially, the TH program on Rikers Island was open only to those who were already sentenced, generally for 1 year or less. The ratio of detainees was much larger and in 2008 the program expanded to include them as well. This change shifted the focus of the program away from reentry to supporting participants in their current situations. Younger individuals, ages 16 to 18, were included for the first time as well. Due to budget cuts during the summer of 2023, the program was temporarily closed on Rikers Island. At the time of my interview with Krus (2024/10/11), reopening of the program was scheduled for the end of October 2024.

TH on Rikers Island was open to any wishing to join. Participants remained in the program until they either reentered society, moved to another facility, or chose to leave the program. This could range anywhere from 2 weeks to 3 years. Session length was typically at least 2 to 2.5

hours or longer, with sessions 3 to 5 days a week. 3 sessions were held per week with adolescents from a high school on Rikers Island, one session of which was 6 hours in length. Available land provided area for an exceptionally wide variety of horticultural spaces, including ornamental gardens, rose gardens, many raised beds with edible plants, 2 ponds with fish and aquatic plants, a native woodland, and fruit trees. TH programming was built around the seasons, the needs of the gardens, and the mental and emotional condition of the participants. To start the season, participants looked through seed catalogs, studied botany, and made informed decisions regarding which varieties to order. They then started their seeds, transplanted them outside, and continued with the natural flow of the gardening season. Depending on the weather and participant and garden needs, indoor activities were also included, such as creating plant-based self-care products, tea, and cooking. Holidays and milestones, such as when a participant reached 100 hours of TH or left the facility were celebrated. Birthdays were not celebrated, as not all participants were on Rikers Island long enough to have a birthday there.

In addition to the TH program on Rikers Island, The Hort conducted TH programs at supportive housing and older adult centers. During COVID-19, these programs expanded greatly to include approximately 61 facilities today. TH programs are also held at 2 locked juvenile facilities operated by the Administration for Children's Services. Many of these facilities have a small outdoor space, allowing for both indoor and outdoor programming. Some have rooftop gardens. Others, however, do not have outdoor space or have requested it not be used. Sessions are shorter and less frequent than those on Rikers Island, being only approximately 1 to 3 hours in length and once per week; and participants may or may not be present for multiple sessions. This has necessitated more strategic session planning than that on Rikers Island, to optimize the short period of time with participants. Activities are utilized that can be completed during one session, taking the session length into consideration. Printed handouts are provided, enabling participants to repeat the activity at a later time if desired.

A session begins with discussing how everyone is doing. Next the activity is explained and, if possible, a finished sample is shown. Activities may include indoor or outdoor work with plants or plant products. Examples of activities include plant propagation, seed planting, plant observation, flower arranging, and creation of lotion, soap, sachets, tinctures, tea, and hand scrubs. Krus aims to utilize all plant categories, as particular plants may resonate more with some participants than with others. To optimize team building and interpersonal connections,

all participants should have access to exactly the same supplies. At the end of each session, time is allotted to enjoy the completed work and give each other credit and positive affirmation.

Krus and her team complete a documentation form, recording the total number of participants, the number of returning participants, the activities performed, and any particularly notable happenings during a given day. Documenting the progress of individuals is not maintainable, due to the large volume of participants. Despite not holding therapeutic sessions on a daily basis, Krus meets about 60 to 70 participants weekly. Others on her team hold sessions daily and therefore meet even more participants.

4.2. Hungarian case studies

4.2.1. István Sepsik — Pető Institute, Semmelweis University Rehabilitation Clinic, Tündérhegy
Psychology student István Sepsik has extensive background in horticulture and landscape maintenance and has been working as the gardener at the Pető Institute since March of 2023. He assisted in the 2024 spring TH program conducted at the Pető Institute. During the summer of 2024, he completed the Hortus Medicus pilot course. Since then, he has initiated and directed TH programming at 3 locations: the Pető Institute, the Semmelweis University Rehabilitation Clinic, and the Tündérhegy Psychosomatic and Psychotherapeutic Rehabilitation Unit. All 3 are institutions of Semmelweis University, the renowned medical university of Hungary.

Starting with the beginning of the 2024/2025 school year, horticultural sessions are a part the schedule at the Pető Institute. The sessions are once a week with a session length of one and a half hours. The group of 13 young people ages 15 to 22 perform any horticultural activities suited for their physical abilities, with assistance as needed. Activities include digging, raking, sweeping, planting, birdhouse making, and bush and hedge pruning and trimming.

The Semmelweis University Rehabilitation Clinic provides services to those with spinal injuries. A 10-session program started at the end of September 2024. The sessions are once a week with a session length of one and a half hours. They are open to any patients who wish to participate, although there is a high ratio of females. Generally, 4 to 6 patients participate, and one nurse assists with the session. A session includes both discussion and horticultural activities, such as bush pruning, planting, watering, and weeding raised beds.

Tündérhegy is an inpatient psychosomatic and psychotherapeutic rehabilitation facility, treating patients with conditions such as schizophrenia, depression, bipolar, and borderline personality disorder. As at the Rehabilitation Clinic, a 10-session TH program is being conducted, with weekly sessions lasting one and a half hours. Aspects of the sessions are strictly regulated by the facility, such as session length, who participates, and cellphone use. The group consists of 8 participants and one nurse assists. Sessions begin with an approximately 20-minute task. An example of such an activity is participants individually creating garden plans, drawing them, then mixing everyone's plans together and then guessing who created which plan. Following the task, participants perform strenuous outdoor work, weather permitting, such as digging, raking, pruning, and hoeing. They may select their preferred activity if they so choose. Less strenuous options may also be included in a session, such as planting. When weather is not conducive to outdoor horticultural work, sessions are held indoors and consist of activities such as transplanting houseplants. After the horticultural activity, participants discuss the session and how they feel. Some express feeling sorry for the plants, for example when plants were pruned. Sepsik documents how the patients feel and what they express.

4.2.2. Szemőke Verbó — Csillagház

Szemőke Verbó has been working at the Csillagház special education school as an augmentative and alternative communication instructor since 2007. During the summer of 2024, she completed the Hortus Medicus pilot course and has begun utilizing HT in her work at Csillagház.

The Csillagház is a school for children with severe physical and mild to moderate mental disabilities. Some students have little or no ability to communicate verbally and rely on pictorial communication aids. Ever since its opening in 1973 (Csillagház), horticulture has been integrated into the education of the school. For example, general subjects, such as biology and math, have been taught in the garden using plants as an educational medium. During the construction of the new building in 1997, importance was placed on the development and design of the yard and garden. About 15 years ago, a large raised bed was added.

Until the fall of 2024, horticultural activities have had an educational rather than therapeutic focus. In September, a carefully planned, 10-session HT program was started in Csillagház, with a specific, measurable goal: to improve the self-care skills of participants by improving serial

memory. Each of the 4 participants has an adult assistant, who provides sufficient help to enable successful completion of the activities while challenging and improving their abilities. Sessions are 1.5 hours in length and designed to stimulate each of the senses. A session starts with listening to a recording of a birdsong, learning about the bird, and participants sharing what the experience was like for them. Next, the remaining content of the session is explained. Several herbs are introduced for participants to smell and touch. From these, tea is made which they drink at the end of the session. In the meantime, a horticultural activity is performed. For example, lettuce was planted during the first of the 10 sessions. First, participants interacted with the soil (e.g. crumbling it) and shared about their experience. Next, the sequential steps of creating a row, sprinkling lettuce seeds into the row, and covering the seeds were explained. Participants then performed the steps as independently as possible and chose between covering the seeds by hand or using a tool. After completion of the horticultural activity, a discussion is held during which participants list the sequential steps of the activity and share how they felt and what they enjoyed. Simultaneously they sample the teas that have been steeping during the horticultural activity and select those flavors that they prefer.

Verbó plans to continue HT after the completion of the 10 sessions. She would like to measure the impact of the therapy, even if more than 10 sessions are required to create measurable differences in the specific therapeutic goals they have chosen.

4.2.3. Rózsa Bengyák — Somogyvár Special Education Institute

Rózsa Bengyák is a special education teacher and animal husbandry engineer. She is the founder and director of the school garden at Somogyvár Special Education Institute. Although Somogyvár has a small population, the school provides on-site education to approximately 130 to 140 students. In addition, staff travels to many other schools throughout the countryside to provide special educational services.

Horticulture has been an important feature of the school ever since it was founded around the end of World War II. The initial purpose of the school was to care for and educate the orphans resulting from the war. Horticulture was taught as a vocation at an offsite garden of almost 3,000 m². Over time, the institution transitioned to special education for mentally disabled and/or autistic 3- to 24-year-olds, some of which have physical disabilities as well. Although the original, offsite garden is still in existence, it is cared for primarily by horticultural

workers, due to the fact that the majority of students today would not be able secure work in horticulture due to their disabilities. Instead, horticultural activities involving the students have transitioned to being onsite and the role of gardening is seen more as recreational and therapeutic rather than vocational.

The school building is a mansion situated within a 30-hectare park that was originally developed by the nobility who once owned the estate. The park contains many features, including a forest, a fish pond, a stream, a meadow, a lavender garden, and an orchard, providing students with the opportunity to experience a variety of habitats and landscapes.

In 2020, the desire for horticulture to fill not only a vocational but also relaxational and recreational role led to the creation of the Bűbáj Garden on the property. A path leads from its open, wooden gateway to raised beds, arranged in a square. The beds are of differing heights, allowing participants of differing ages and physical abilities to use them. Surrounding the garden are park trees and areas to rest, such as hammocks. A therapeutic nature trail was added on the property in 2023, terminating in the Bűbáj Garden.

Each class (5 to 10, maximum 15 students) is assigned a small section (e.g. 1 m²) in the raised beds and independently decides when and how to use their space. They may incorporate it into their class schedule and generally plant edible plants, such as vegetables and herbs, that can be consumed during the school year in the spring and fall (e.g. tomatoes, chives, radishes, mint). Flowers are cultivated in a separate bed to distinguish them from the edible plants. A berry patch contains currants and gooseberries. Fruit and nuts are collected from the remains of the orchard planted by the former owners of the mansion. New trees are added to the orchard each year and the students participate in their planting and care. According to their ability level, students also take part in the maintenance of the park, which is open to the public. For example, they assist in collecting litter.

Individual students may be taken to the garden if they become overstimulated by the noise and crowdedness of the indoor school environment, and one-on-one psychology sessions are held in the garden. The relaxation areas surrounding the garden are available to all students and are particularly important for those not wishing to participate in direct horticulture during group activities.

When weather conditions are not conducive to outdoor activity, a variety of indoor activities are utilized to promote connection with nature, such as essential oil diffusion, crumbling or

grinding of dried plant materials (e.g. lavender), creation of salves and creams, and house plant care and propagation. Wild birds are fed every winter.

Bengyák holds 1.5-hour sessions with a group of four 16- to 18-year-old vocational students with IQ's of approximately 50. The first hour of the session is spent walking around the park, analyzing what is the same and what has changed, and gathering medicinal herbs. The last half hour is spent indoors, steeping and drinking tea from the collected herbs. Bengyák observes a visible increase in the students' relaxation during the sessions.

4.2.4. Anita Fodor — independent landscape design

As a rehabilitation engineer, Anita Fodor designs outdoor spaces dedicated to disabled individuals. Although landscaping and design is not the primary focus of this thesis, accessibly designed garden spaces can be an important adjunct to maximize the beneficial effects of horticulture as a therapeutic medium for disabled individuals. Anita has a special interest in horticulture as a therapeutic medium and supporting it through accessibly designed gardens. From 2014 to 2020 she worked at Royalkert LLC, a company that builds community spaces, such as sports areas and playgrounds. During her employment there, they began designing playgrounds specifically to be accessible to disabled children, creating a therapeutic effect by enabling disabled on non-disabled children to play together. She currently works as an independent landscape designer and places emphasis on creating accessible outdoor spaces in an environmentally-friendly way. Due to her background with and interest in those with disabilities, she took the Hortus Medicus pilot course during the summer of 2024.

Fodor designed an accessible garden for therapeutic purposes for the Csalogány school in Budapest, which plans to implement the design in 2025. Students range in age from 3- to 24-years-old and have moderate to severe physical and mental disabilities. Some students have hearing or visual impairments. Fodor designed the garden plan to allow participation in horticultural activities by students of all ages and physical abilities. She included an area for compost and an area for storing garden tools. A table with benches will allow education to take place in the garden, as well as the processing of garden produce. There will be a water faucet in addition to a rainwater collection system.

Fodor noted that although there are gardens in Hungary for relaxation and rejuvenation, very few exists specifically for therapeutic purposes.

4.2.5. Theodora Jordanidisz — NILD Hungary, Csillagház

After graduating in 2010 with an MSc in biochemistry, Theodora Jordanidisz worked for 10 years for educational and cultural non-governmental organizations. She is now the program coordinator of NILD Hungary, which is the official Hungarian affiliate of the National Institute for Learning Development, an American organization for educational therapy.

While living rurally in England in 2016 and 2018, she became interested in horticulture. After returning to Hungary, she learned of the Diversity Foundation and the Hortus Medicus project. After successfully completing the Hortus Medicus pilot course during the summer of 2024, Jordanidisz assisted in planning and facilitating an HT program at Csillagház, in collaboration with Verbó and other professionals¹. She plans to be involved in future programs, the next of which will be held at a hospice facility.

4.2.6. Own experience — Pető Institute

The Pető Institute is a school in Budapest for children and young adults with cerebral palsy. It was established by Hungarian physician András Pető, who developed the Conductive Education system in the 1940's. The Pető institute was the first location to implement his system.

During the spring of 2024, a 10-session TH program was held at the Pető Institute through collaboration with the Diversity Foundation and the Hungarian University of Agriculture and Life Sciences. I had the opportunity to observe and assist during some of the sessions, which were held once weekly and were 1,5 hours in length. There were 8 participants in the program, ranging in age from 17 to 21.

The first sessions started with introductions and ice-breaking, horticulture-related activities, such as sharing what kind of flower each would be if they were a flower, and why. Next, a bird species was introduced at the beginning of each session, including pictures, its song, and information about the species. Following was a horticultural activity, such as planting flowers or vegetables in raised beds, planting raspberries directly in the ground, or starting seedlings (e.g. tomatoes) to be transplanted out during a later session. At the end of each session, tea was made from medicinal herbs or flowers, either brought by the program facilitator(s) or

¹ See "Szemőke Verbó — Csillagház" for description of HT program at Csillagház.

harvested by the participants. Participants completed surveys before and after each session, assessing the impact of the session upon their wellbeing.

4.3. Insights of interviewees

4.3.1. Challenges and proposed solutions

4.3.1.1. Awareness

According to multiple interviewees, there is a major lack of awareness of horticulture as a therapeutic medium in the U.S. among medical professionals, horticulture and agricultural professionals, and the general public. In Hungary, awareness is almost non-existent. Interviewees suggested several strategies to increase awareness, irrespective of geographical location.

Wichrowski, Berlovitz, and Green mentioned that research could be key to increasing awareness. Green stated that increasing awareness among medical professionals can pose particular challenges due to horticulture not being as evidence based as many medical professionals are accustomed to. Wichrowski mentioned that research demonstrating the benefits of horticulture as a therapeutic medium in various settings, for various target groups, could help unify and strengthen the field.

To help increase awareness among medical professionals, Carbone coordinates a one-session TH program for first year medical students. Berlovitz suggested that strengthening horticultural programming in elementary and/or high schools could instill in children an appreciation for horticulture long before they begin medical school. If the experience is positive, it might later increase their interest, as medical professionals, in horticulture as a therapeutic medium. She proposed that the efficacy of this strategy could be increased if disabled and non-disabled children performed horticultural activities together.

Carbone noted that the awareness of Missouri Botanical Garden staff is not adequate. She suggested that TH programming specifically for the staff could aid in increasing awareness and knowledge.

Several methods were suggested to increase awareness in the general public. A variety of digital platforms could be utilized to disseminate information about horticulture as a therapeutic medium. Carbone suggested that television spots could increase awareness. Green mentioned the role that social media could play and the importance of generating

discussion and awareness. In addition, Berlovitz suggested that federal government funding and grants could aid in increasing public awareness. Currently, Carbone oversees free TH programming that is open to the general public (“therapeutic horticulture at large”) as a method of increasing awareness.

4.3.1.2. Coalescence

Wichrowski stated that a contributing factor to the slow establishment of horticulture as a therapeutic medium is lack of coalescence within the profession. Research is being published regarding use of horticulture in greatly differing settings and target populations, such as students, patients, the disabled, and veterans. Individuals from a wide variety of professions are interested in the field. He stated that, due to their broad range of backgrounds, it could take some time for their efforts to coalesce into a well-defined therapy. He proposed that research and the formation of organizations and groups could promote coalescence and consolidation.

4.3.1.3. Financial resources

Berlovitz and Sepsik mentioned lack of financial resources may be impeding the field of horticulture as a therapeutic medium. Berlovitz suggested federal government funding and grants could aid in strengthening the field. She commented that mental healthcare in general is poorly funded, which could impact horticulture used as therapy for mental health purposes. Although Wichrowski did not mention financial concerns, he stated that his propagation of plants on site for later use in therapy reduces the cost of operating the horticultural program at NYU Langone Health.

4.3.1.4. Human resources

Sepsik and Green shared that they have experienced a lack of human resources to provide therapy using horticulture as a medium. Sepsik has received requests from more facilities than he is able to take on and Green stated that low staffing is one of the challenges faced by the TH team of the Chicago Botanic Garden. Jordanidisz mentioned that low staff limits the number of residents provided with horticultural programming at a nursing home in Gödöllő. Furthermore, Carbone shared that the TH team of the Missouri Botanical Garden would like to provide TH to everyone but cannot, due to a lack of time.

Sepsik proposed that adequate financial compensation for therapeutic services could aid in increasing human resources.

4.3.2. Addition propositions

4.3.2.1. *Organization*

Wichrowski, Green, and Jordanidisz stated that forming an organization is an important part of strengthening the field of horticulture as a therapeutic medium in a given region. Wichrowski and Green mentioned that an initial step in this direction could be forming a group to promote networking and collaboration between interested individuals. Wichrowski suggested that individuals or groups could join the AHTA, which would provide access to informational resources, such as lectures and the Journal of Therapeutic Horticulture.

According to Wichrowski and Green, an organization could play a key role in increasing awareness and recognition of the profession. Green mentioned that articles and social media posts associated with an official organization could have more influence and impact than those of individual therapists.

Formation of a regional or national organization could standardize horticulture as a therapeutic medium in its region. Jordanidisz commented that it could provide therapist certification, and Wichrowski mentioned that creation of a licensure exam could be important. Green noted that having a clearly defined, standardized registration process could promote growth by making the registration process a positive and successful experience for qualifying applicants.

Jordanidisz stated that an organization could fill an important role in communication and collaboration with organizations in other countries. Furthermore, she proposed that a future organization in Hungary should be officially recognized and endorsed by an already existent, well-recognized foreign (e.g. American) organization.

4.3.2.2. *University-level education*

Jordanidisz proposed that master's degree level training in horticulture as a therapeutic medium could be key to strengthening the profession in Hungary. At a minimum, she would like to see some courses incorporated into other master's degrees; but ideally, she envisions an entire master's degree dedicated to the field.

5. Discussion

Table 1 summarizes and compares some of the features of horticultural programming mentioned by interviewees. Only TH and HT programming from the case studies is presented here. The data is divided by interviewee and subdivided according to the type of institution where therapy is performed and by the target population group. The remaining columns provide details regarding the nature of therapy sessions and associated practices. To aid in visualizing the common factors between various therapeutic programs described by the same interviewees, cells are merged if the data is duplicated within a given interviewee's section of the table.

Table 1: Standardized Summary of TH and HT Programming from Case Studies
(Source: own work, 2024)

Interviewee	Type of institution setting	Target population groups	Indoor or outdoor setting	Number of participants per session*	Therapy type (TH, HT)	Session length (minutes, unless otherwise noted)	Live plants/plant-based materials	Plant categories	Documentation	Participant feedback (yes, none)
Matthew Wichrowski	Hospital	Psychiatric patients	Indoor	8-10	TH	60	Both	Annuals, houseplants, sensory plants, easy to care for plants, specialty plants	Minimal	None
		Neurologic patients		1	HT	Generally 20-30 (according to interest and endurance)			Medical charting requirements	
		Medically complex physical rehabilitation								
Teresia Hazen	Hospital	Physical rehabilitation patients	Both	1	HT	15-30	Both	Annuals, perennials, sensory plants, deciduous and evergreen trees, deciduous and evergreen shrubs, vines, herbs, houseplants	Medical charting requirements	None
		Pediatric patient family, visitors		2-6*	TH	30, 60			None	
				2		2-10				
				Unlimited		120				
				Other patients, family, visitors						
Hospital personnel										
Cindy Berlovitz	Hospital	Psychiatric patients	Indoor	5-10*	HT	45	Both	Herbs, houseplants	Extensive	None
	Senior care facility	Seniors		12*	TH	60		Flowers, veggies, herbs		
	Arboretum	Addicted teenagers	Outdoor	24*				Herbs, flowers, veggies, houseplants	None	
		Individuals with Parkinson's disease		8-12*						
		Intellectually disabled adults		12*						
		SPMI**		5-10*						

	Adult day treatment center	Adults with mental health diagnoses		8*		60		Herbs, flowers			
Jeanne Carbone	Botanical garden	General public	Both	Unlimited (≈50/2hours)	TH	120	both	House plants, herbs, harvested seasonal flowers, purchased seasonal flowers, moss, nature collections (e.g. pinecones, acorn, seeds), winter greenery, branches, herbal tea ingredients (e.g. spices, dried flowers)	Statistical, anecdotal	None	
				8-12*		60					
		Any special population		8-15*							
		Medical students	Outdoor	100*		3 hours					
	Cancer center	Oncology patients	Indoor	1		10-15					
	Pediatric hospital	Pediatric oncology									
	Senior care facility	Seniors				45-60					
	Facilities of other agencies	Disabled individual	Both	5-15*		60					
	Residential facility for survivors of sex trafficking	Teenaged female sex trafficking survivors		3-8*	HT	120					
Alicia Green	Botanical garden	Anyone with disability or need	Outdoor	10-15*	TH	45-60	both	herbs, sensory plants, wildlife attracting annuals, succulents, amaryllis, cut flowers, terrarium plants, bonsais	None	None	
		Intellectually disabled adults									
		Physically disabled children									
		Seniors									
		Veterans									
		Visually impaired adults									
		Low income families		Up to 15 projects*		90					
	Senior care facility	Seniors	Indoor	N/A	N/A						
	Community center										
	Community garden	N/A	Outdoor								
	Pediatric hospital	Pediatric patients	Indoor								
	Special education school	Physical disabled children	N/A								
Hilda Krus	Correctional institution	Individuals with mental health challenges	Both	>1	TH	2-6 hours	Both	Annual and perennial ornamentals, cut flowers, vegetables, herbs, fruits, aquatic plants	Statistical, other***	Yes	
		Individuals with substance use disorder									
		Survivors of trauma and abuse									
		Individuals from low-income backgrounds									
	Supportive housing	Individuals with mental health challenges									
		Individuals with substance use disorder									
		Survivors of trauma and abuse									

		Individuals from low-income backgrounds								
		Individuals with criminal records								
	Older adult center	Seniors								
István Sepsik	Special education school	15- to 22-year-olds with cerebral palsy	Both	13*	TH	90	Both	Ornamentals, trees, bushes, vegetables, house plants	None	None
	Physical rehabilitation clinic	Adults with spinal injury		4-6			Live plants			
	Psychiatric rehabilitation facility	Psychiatric patients		8*					Minimal	
Szemőke Verő	Special education school	Physically and mentally disabled 14- to 16-year-olds	Both	4*	HT	90	Both	Vegetables, medicinal herbs, flowers, ornamentals	Yes	Yes
Rózsa Bengyák	Special education school	Physically and mentally disabled 3- to 24-year-olds	Both	1	TH	Varying	Both	Vegetables, fruits, nuts, medicinal and culinary herbs, flowers	None	None
		5-15*								
		Mentally disabled (IQ≈50) 16- to 18-year-old vocational students		4*		90				

Closed groups marked with “”: a closed group session is restricted to previously registered/selected participants; any individuals can choose to join or leave an open group session at any time.

**SPMI: sever and persistent mental illness.

***See “Hilda Krus — Rikers Island” for details.

Figure 1 summarizes key insights mentioned by interviewees, illustrating the connection between strategies and their potential effects. This map presents only propositions that involved: 1) specific issues inhibiting the advancement of horticulture as a therapeutic medium, and 2) specific methods to address these issues. The outermost units of the map list the strategies, leading to the issue they could address, and terminating with the goal in the middle: strengthening horticulture as a therapeutic medium.

Figure 4: Interrelationship of interviewee insights

(Source: own work)

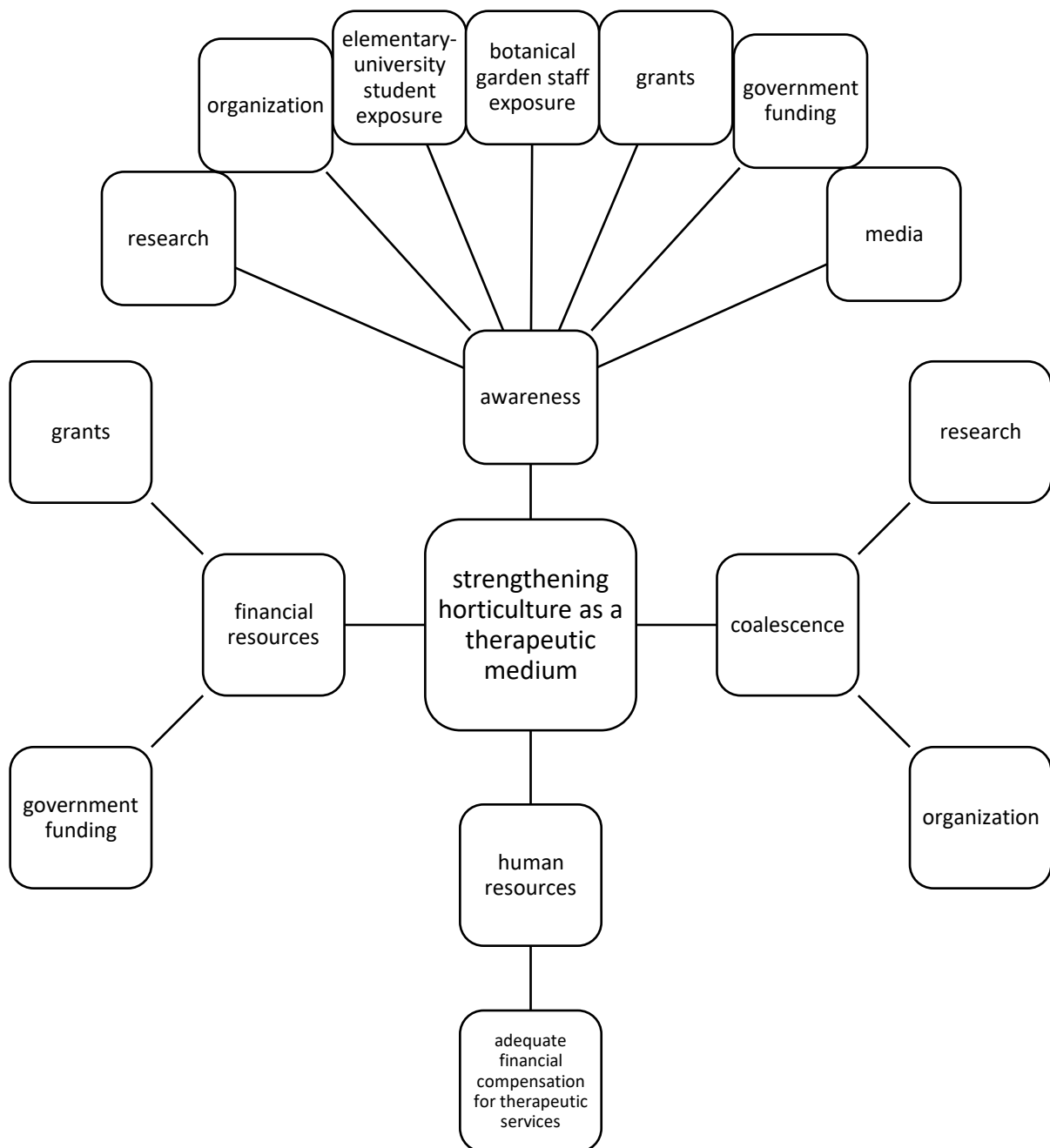
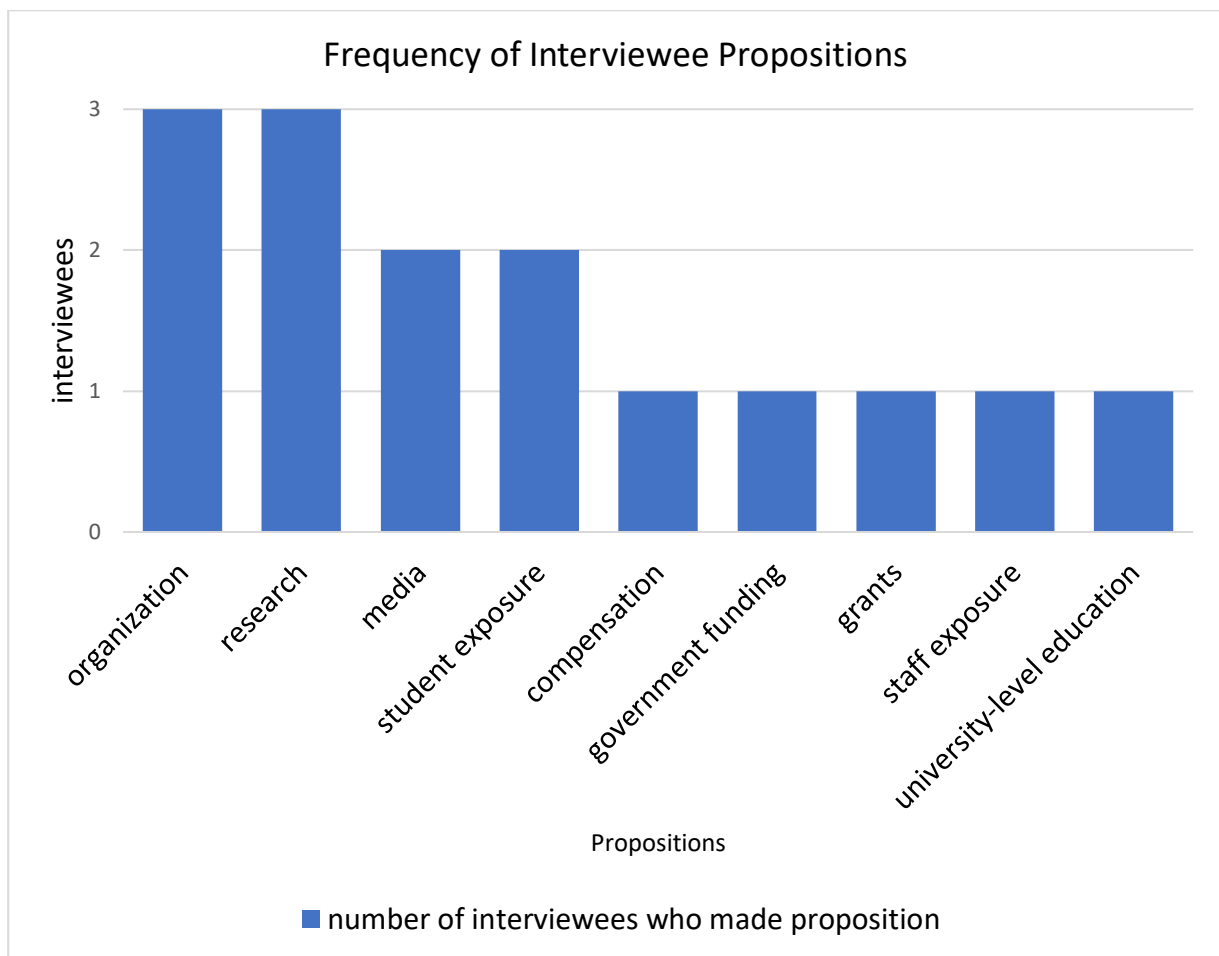


Figure 2 presents the frequency of propositions among interviewees. Specific propositions are listed, and the number of interviewees that mentioned them is represented in the columns of the graph. In addition to the propositions from Figure 1, Figure 2 includes “education.” It was proposed by an interviewee as an important factor in the advancement of horticulture as a therapeutic medium, but it was not mentioned as a solution to a more specific issue.

Figure 5: The number of interviewees who made given propositions
(Source: own work)



6. Conclusions and proposals

Building on the presented history of horticulture as a therapeutic medium in the U.S. and in Hungary and the information gathered during interviews with both American and Hungarian professionals, I would like to make the following proposals for the strengthening of horticulture as a therapeutic medium in Hungary:

- The development of a strong network of interested Hungarian professionals from differing fields, such as education, healthcare, the correctional system, horticulture, agriculture, and social work.
- The formation of a Hungarian organization to represent and promote horticulture as a therapeutic modality within Hungary and collaborate with international organizations.
- The development and implementation by the above-mentioned organization of a certification and registration process, by which practitioners can be verified to meet specific qualifications, clarifying and standardizing the practice of horticulture as a therapeutic medium within Hungary.
- The launching of courses in horticulture as a therapeutic medium for horticultural, agricultural, social work, and medical university students.
- The utilization of social media and advertising and the exposure of students to horticulture as a therapeutic medium to increase public and professional awareness.
- The conduction of research regarding the beneficial effects of horticulture and the dissemination of the results in both the Hungarian and English languages to increase awareness of medical professionals, the government, and the general public.

In response to observations made during the process of writing this thesis, but not discussed therein, I would like to suggest further research to address the following questions:

- What effect could patient surveys and feedback have on the therapeutic effect of horticulture? Interviewee Jeanne Carbone commented that measuring participant responses could interrupt the natural process of the therapy and detract from the experience. Interviewees Matthew Wichrowski, Cindy Berlovitz, and Alicia Green proposed that research could aid in increasing awareness of horticulture as an affective therapeutic medium. However, the only interviewees collecting patient feedback at the time of the interview were Hilda Krus and Szemőke Verbó. Further research could clarify what data collection methods have a positive, neutral, or negative impact on

participants and how to mitigate any negative effects, while collecting adequate data to increase awareness of the profession.

- Could a low ratio of males to females among practitioners and participants be contributing to the relatively slow establishment of horticulture as a therapeutic medium and profession? István Sepsik and Alicia Green noted a low number of male participants in some of their TH programs. 2 of the 11 interviewees for this thesis were male. Upon sharing these observations with Matthew Wichrowski via email and asking if he has observed similar phenomena, he stated that he has in middle aged and older participants and practitioners, but less in young adults. Further research could address two interconnected issues: 1) identifying causes of this low ratio and proposing methods to promote equality toward men in the field of horticulture as a therapeutic medium, and 2) assessing the impact of the male to female ratio on strengthening horticulture as a therapeutic medium.

7. Summary

Horticulture can positively impact physical, mental, and spiritual wellbeing and can therefore be used as a therapeutic medium. However, I have observed a lack of familiarity with plants and their therapeutic applications, despite scientific evidence supporting the significance of such therapy. In this thesis, I have introduced the history of horticulture as a therapeutic medium in the U.S. and in Hungary through the review of literature, explored its current status in both countries through information collected in interviews with 6 American and 5 Hungarian professionals, presented the interviewees' insights, and proposed suggestions for strengthening horticulture as a therapeutic modality in Hungary based on the above information.

In the form of case studies, I have introduced each interviewee, their background and qualifications, the setting in which they utilize horticulture as a therapeutic medium, the population groups they serve, and the type and nature of the therapy they provide. Therapy was described in both indoor and outdoor settings, utilizing a variety of live plants and plant-based materials. Insights provided by interviewees regarding the profession of horticulture as a therapeutic medium, its current status in the U.S. and Hungary, and its future have been organized according to challenges faced by the profession and proposed strategies to strengthen it. Notable challenges included lack of awareness of horticulture as a therapeutic medium, lack of coalescences within the profession, and lack of financial and human resources. Proposed strategies included establishing organizations, conducting and publishing research, exposing students of all ages to horticulture, exposing botanical garden staff to therapeutic programming utilizing horticulture, disseminating information and generating discussion via digital media, obtaining grants and government funding, ensuring the adequacy of financial compensation for therapeutic services utilizing horticulture, and establishing university-level education in horticulture as a therapeutic medium.

To increase clarity and facilitate assessment of the collected information, it was presented in a standardized, graphical form. Details regarding the types and nature of reported therapeutic activities were organized into a table according to interviewee, the type of institutional setting, and the target population served. Key interviewee insights were represented with a map, visualizing the connection between proposed strategies and the issues they could address. The hypothetical resolution of 4 notable issues was presented: awareness of horticulture as a

therapeutic medium, coalescence within the profession, adequate financial resources, and adequate human resources. 8 strategies were recommended to aid in achieving these goals. Research and organization were suggested for achieving both awareness and coalescence, and government funding and grants for both awareness and financial resources. Adequate financial compensation for therapeutic services was suggested for promoting adequate human resources. Additionally, exposure of students and botanical garden staff to horticulture as a therapeutic modality and dissemination of information and generation of discussion via media platforms were proposed as strategies for increasing awareness.

The following proposals were formulated and presented for the strengthening of horticulture as a therapeutic medium in Hungary:

- The development of a strong network among professionals interested in horticulture as a therapeutic medium.
- The formation of an organization.
- The development and implementation of a certification and registration process.
- The launching of university-level courses.
- The utilization of social media and advertising and the exposure of students to horticulture as a therapeutic medium.
- The conduction of research and dissemination of its results.

Finally, further research topics were suggested.

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DECLARATION

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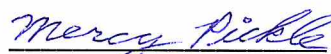
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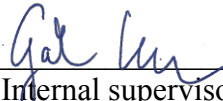
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