The theoretical model and universal definition of horticultural therapy

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Abstract

Horticultural therapy (HT) has experienced tremendous growth after establishing an academic framework. However, it is yet to be recognized as a professional treatment method by patients and medical circles. Part of the issue is derived from horticultural experts who have not received professional training conducting HT program and the mixing HT with TH (therapeutic horticulture), making it necessary to provide clear definitions of HT concepts and present a scientific and systematic HT model. To this end, this paper provides a new integrative model and definitions including the three elements of HT such as clinically trained professional, diagnosed client in treatment, HT activities with living plants, the three medical/scientific elements such as measurable goal, intended program, scientific assessment, and the three therapeutic mechanisms including biophilia, mutual dynamics, and allostasis, as well as four types of therapeutic benefits such as physical, social, psycho-emotional and cognitive benefits. The proposed theoretical model and HT definition are expected to contribute to HT being accepted as a complementary medicine, and internationally used HT standard by setting clear distinctions between the profession of HT and TH.

Keywords: therapeutic horticulture, therapeutic mechanisms, medical elements, biophilia, allostasis

INTRODUCTION

Horticulture therapy (HT) is a relatively new in academic basis but fast-growing area within the field of socio-horticulture. In Korea, the current number of the Korea Horticultural Therapy and Well-being Association (KHTWA) members stands at over 7,000. Despite its short history as an academic discipline, more than 320 master and doctoral dissertations have been published on the subject of HT in Korea alone. At the moment, there are about 2,400 registered horticultural therapists which is equivalent to HTR under AHTA system in USA employed at more than 2,000 hospitals, schools and welfare centers (KHTWA, 2014).

However, horticultural therapy is yet to be accepted as a professional treatment by patients and medical circles alike (Kim, 2013). The main reason is the confusion arising from the activities inaccurately termed as horticultural therapy, which are in fact horticultural well-being activities performed by horticultural specialists who have not received formal clinical training as HT therapists.

At an earlier stage, fusing HT with therapeutic horticulture may have had a positive effect of broadening the horizon in the field of horticulture (Son et al., 2006; Im, 2010). However, this kind of non-distinctive approach is hindering further advancement and establishment of horticultural therapy as a stand-alone professional treatment, despite its time- and clinically-proven healing power.

Relf (2006) attempted to expand profession of HT through claiming the positive benefits of human-plant interaction. However, this has engendered the perception that HT is not a legitimate profession because anyone can conduct HT as well as receive the benefit of HT.

This stems from the fact that a theoretical HT model and a clear set of definitions that can be universally accepted and recognized throughout the field were largely absent. In fact,

in the early days, in most countries including the US, horticultural therapy was defined mostly on historical and practical basis rather than by scientific or theoretical analysis. Therefore, many of the definitions are inconsistently and vaguely used both in the context of HT and therapeutic horticulture (TH) (Son et al., 2006; Relf, 2008).

Although it may be interpreted from an empirical perspective that any beneficial utility of HT could be included (Relf and Dorn, 1995; Matsuo, 1996; Choi, 2010), or from a socio-horticulture perspective that the relationship between human beings and horticulture evolves depending on the region and culture (Matsuo, 1996), it still has worked to undermine the development of HT as well as the profession of HT. In any discipline, models and definitions revealing the relationship of theoretical concepts not only offer an overall perspective in understanding theoretical concepts, enable resolving the issues from diverse perspectives, make predictions on the direction of research but also are indispensable for accelerating the development of the discipline (Rivett, 1980; Kim, 1997).

This paper examines various theoretical models and definitions that have been in use to date to present an overview of the historic and definitional development of HT.

THREE PERSPECTIVES OF HORTICULTURAL THERAPY MODELS

The HT model could be explained using three perspectives. First, the 'therapeutic benefits perspective' classifies different areas of benefits that can be attained through horticultural therapy. This includes Relf's 1973 and 2004 models and Takaesu's 1988 model.

Secondly, this paper will focus on the 'therapeutic dynamics perspective' which leverages therapeutic dynamics of each element used in the therapy. Relf's 1981 model and 2005 model fall into this category.

The third model includes Mattson's 1982 model, as well as Haller and Kramer's 2006 model and take a 'relative roles perspective' which emphasize the importance of relationships between respective elements as well as the individual roles thereof.

The three perspectives of HT models represent the process of the historical and disciplinary development of HT and at the same provide its future direction. Taking a closer examination of the three perspectives, first of all, the 'therapeutic benefits perspective' stems from Relf's (Hefley, 1973; Relf, 2006) model (Figure 1a) that lists and categorizes the benefits of efficacy in HT. This model groups possible benefits into areas of emotional, social, physical and intellectual benefits. The subcategory of 'emotional' benefit includes self-worth and acceptance, while that of the 'social' benefits consists of sharing and talking. The subcategories of 'physical' benefits are coordination and exercise, while that of the 'intellectual benefits' subcategories list knowledge and skill. However, the model does not show a relationship between each area and the elements.

Dr. Takaesu (1998), a psychiatrist at the Izumi Hotel, in Okinawa, Japan restructured Relf's (Hefley, 1973) model (Figure 1b). He showed the relationship between possible benefits centering on 'Sharing' which is a subcategory of 'Social' benefit, and included other verbal and non-verbal therapies, and detailed the psychiatric patients response to nature (Takaesu, 1998; Relf, 2006). This reflects the results that HT is beneficial for treating psychiatric disabilities as initially HT was proposed by doctors and psychologists (Sempik et al., 2003; Im, 2010). In 2004, Relf made a more in-depth study on the possibility of the model by applying the perspective that plants could provide a decisive impact on endowing mental stability and meaning to individual life (Figure 1c). In addition, Relf changed and modified some terminology in Takaesu's model (1998) replacing 'emotional' with 'psychological' and ' intellectual ' with 'cognitive' (Relf, 2006).

The advantage of Relf's revised model is that HT activity was generalized and a broad category of structure that could be applied to treatment or well-being activities. It also provided a much more detailed description of the impact of HT on humans by enabling more insight into the mutual relationship between humans and nature. However, it was suggested that its two-dimensional expression has limits in presenting various mutual actions (Relf, 2006).

Notwithstanding, it remains today as a model that presents a practical framework that is the basis in explaining the application of treatment activities by linking each benefit with

each respective program tool, and is currently used as a key foundation of research on benefits (Im, 2010).

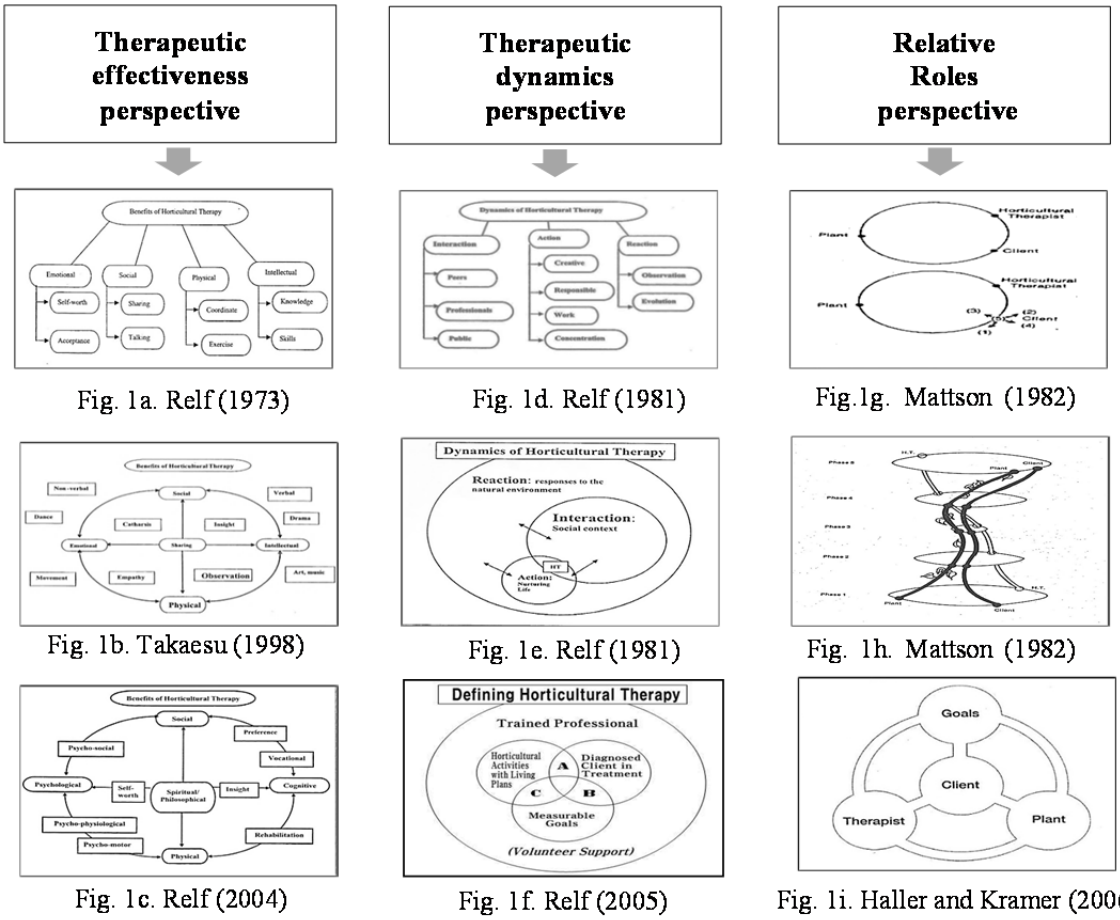

Figure 1. Horticultural therapy models.

The second perspective, 'Therapeutic dynamics' is found in Relf's 1981 (Figure 1d, e) and 2005 model (Figure 1f) and shows a therapeutic dynamic through HT work mechanism. The 1981 model (Figure 1d) visually expressed the three elements of 'interaction', 'reaction', and 'action' therapeutically working, and defined the uniqueness of the HT program as keeping and nurturing living plants, and showed that the actual actions involved in nurturing living plants are beneficial to clients in various ways (Relf, 1981, 2006). Through conducting research on the three elements, the relationship between each element became clearer and it was expressed as a circle model (Figure 1e). In this model, Relf included 'interaction' and 'action' in 'reaction' and explained the work mechanism in the mutual response of nurturing life and social context to the natural environment.

This model was further developed by Relf and was used as a basis in understanding the various dynamics used in HT (Relf, 1981, 2005b, 2006). After which in 2005, Relf proposed a treatment model (Figure 1f) that pursues professionalism through elements such as measureable goal, diagnosed client in treatment, horticultural activities with living plants and through a trained professional in an attempt to describe the treatment side of HT by grouping into the three realms of intersection (A), (B), and (C) (Relf, 2005a, 2006).

The third perspective, 'Relative roles' includes the models proposed by Mattson (1982) and Haller and Kramer (2006). In 1982, Mattson presented a helix model introducing relational concepts in which the plant, client and horticultural therapist change according to

the circumference (Figure 1g, h). The prototype for this model is the same as the seasonal pattern that rotates naturally and shows a dynamic movement according to the bonds between the client, plant, and horticultural therapist (Mattson, 1982). If Relf's 1981 model focused on reaction or action (nurturing life) in the large category of responses to the natural environment, Mattson's model focused on the changing response of clients with the role and relationship (bonding) with plants and the therapist. The key element of this model is the role of the skilled horticultural therapists who has the skills to invigorate the treatment process by using plants (Haller and Kramer, 2006).

The models assume that the therapist is able to perceive the special needs of the client, and has the capacity to change the acceptance and perception of the client regarding plants (Mattson, 1982). Furthermore, Haller and Kramer (2006) proposed a model (Figure 1i) that centers on the client's role within HT interaction.

According to this model, the three elements such as goal, therapist, and plant of the models are connected the client. In general, the client is one who needs therapeutic intervention to improve cognitive, psychological, physical, and social functions.

In addition, the goal is to present therapeutic goals, while the horticultural therapist has to be one trained in using horticulture for means of treatment, rehabilitation and welfare (Haller and Kramer, 2006).

RELF'S MODEL OF HT

Relf, among others, has left an important milestone by developing various models and highlighting the importance of theoretical and systematic models for horticultural therapy. In the Venn diagram model (Figure 1f), the three elements comprising the diagram are 'Horticultural Activities with Living Plants', 'Diagnosed Client in Treatment' and 'Measurable Goals' (Relf, 2005a, 2006, 2008). Also, 'Trained Professionals' is an integral factor in this model (Relf, 2005a, 2006, 2008). At a time when the distinction between the definitions and therapeutic activities of HT and those of TH was not evident, Relf's model had meaningfully focused on professional HT activities.

This model articulates the key points of professional HT activities by using the concept of 'trained professionals'. According to this model, a trained professional sets measurable goals and treats diagnosed clients with horticultural activities using living plants.

Intersection (A), indicates that a 'trained professional' is carrying out horticultural activities with living plants to a 'diagnosed client'. However, in the absence of measurable goals, this kind of activities still cannot be called HT. In other words, horticultural activities, which are not performed to meet certain measurable goals, do not constitute HT.

Likewise, intersection (B) shows a 'trained professional' conducting treatment activities with a view to achieving 'Measurable Goals' to a 'Diagnosed Client'. However, in the absence of horticultural activities with living plants, such activity cannot be deemed HT. Any activity that does not include horticultural activities dealing with living plants is not HT.

Intersection (C) is the case where a 'trained professional' seeks to meet 'measurable goals' through horticultural activities with living plants. Yet such activities are not HT if the client has not been diagnosed prior to such treatment. Therefore, (A), (B), and (C) must all be satisfied for an activity to be qualified as HT.

Although this is a great model, I would like to point out a few limitations. First, as the model emphasizes HT over therapeutic horticulture, I believe that the each element in the three circles could be more appropriately represented in relation to one another. I think that plants, trained professional and the client need to be given equal standing.

If this model is accepted as is, then this question arises: are only measurable goals required for HT to be established as a professional alternative medicine in medical circles from the perspective of scientific methodology?

Practically speaking, in order for HT results to be assessed and accepted from a medical perspective, more than measurable goals are needed. In other words, the entire process of horticultural therapy needs to be conducted on a theoretically proven basis. Above all, whether or not the measurable goals have been met must be scientifically assessed and analyzed. Seen from this point of view, it follows that measurable goals are

more appropriately assigned as one of the factors in the treatment process, not as a separate circle in the diagram.

On the basis of this overview, I would like to propose a new model that refines Relf's model. This proposed model reflects all of the three perspectives mentioned going further, I strived to provide a more systematic, medical, and scientific basis. The new model also integrates the elements that are inherently unique to HT.

A NEW MODEL PROPOSED BY DR. SON

Three elements of horticultural therapy

In this model, the three elements put in circles are borrowed from Relf's model – namely, 'Horticultural Activities with Living Plants', 'Diagnosed Client in Treatment' and 'Clinically Trained Professional' (Figure 2). As mentioned previously, clinically trained professional was included as one of three elements of HT while measurable goal was assigned into one of three medical/scientific elements.

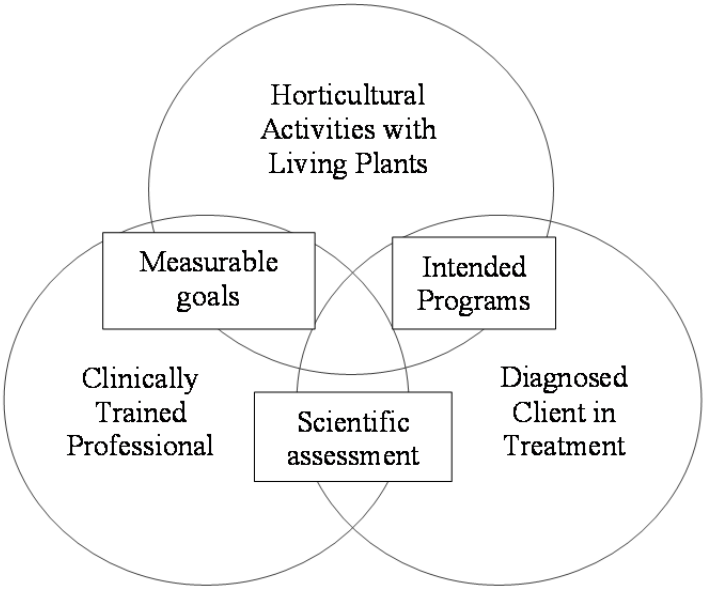

Figure 2. Three elements HT and medical/scientific evaluation.

Three factors of medical/scientific evaluation

To this basic diagram, 'Intended programs', 'Scientific assessment' and 'Measured goals' are added to integrate a more medical and scientific approach to HT, differentiating HT from TH (Figure 2).

I agree with Relf that an activity falling under the intersecting area between plants and diagnosed clients by itself does not constitute HT unless such treatment is performed by a clinically trained professional. Yet this is often the most overlooked point. As a part of HT treatment, the professionally trained horticultural therapist must provide the patients with intended programs using plants. Otherwise, patients will merely engage in horticultural activities for TH or horticultural well-being. An intended program may specify activity time, intervals between treatments, frequency of treatments, and sequence of activities required.

Even if a clinically trained professional conducts horticultural therapy using living plants, such activity will not be considered HT if the client is not accurately diagnosed in advance of treatment. This is because the underlying assumption for HT is that it is designed of treatment rather than simple well-being of the client. Even when intended programs are carried out as a part of HT, it is obvious that measurable goals cannot be defined in the absence of a diagnosed client in treatment. On the other hand, even if a clinically trained

professional carries out activities with a client in a treatment, such activities cannot be regarded as HT unless they involve horticultural activities using living plants.

This is what sets apart horticultural therapy from other complementary/alternative medicines. Effective healing under HT treatment occurs as a result of mutual dynamics between living organisms based on mutual love. Also, a treatment will not be recognized as HT if the horticultural therapist conducting the treatment cannot scientifically access the efficacy of the treatment carried out on a client by using the standard of evaluation.

To summarize, HT can be systematically and scientifically defined by the overlapping area among the three elements of plants, trained professional and client. This area must also intersect with the three medical elements of the intended programs, scientific assessment and measurable goals.

Three dynamics of therapeutic mechanism

The unique action mechanisms sets apart HT from other kinds of complementary/alternative medicine. These action mechanisms play a key role in accurately defining HT. Then what exactly are these therapeutic mechanisms unique to HT? (Figure 3).

Based on my personal clinical experiences and theoretical study over a long period, I have come to the conclusion that the most prominent action mechanism of HT is 'biophilia'. This concept was also mentioned in "A Model for Healthy Aging with Horticulture" by Shoemaker and Lin (2008). This model is rooted in humanism and takes a holistic perspective to mankind (Austin, 1998; Shoemaker and Lin, 2008). According to this model, functions of a human being are based on dynamic mutual relationships among the environment, humans and interactive impacts (Ulrich, 1983; Kaplan and Kaplan, 1989; Kellert and Wilson, 1993; Son et al., 1997; Relf, 2006). Further, Dr. Shoemaker's remark about biophilia underscores the beneficial relationship between humans and plants (which represents nature and environment) and promotes horticultural activity as an effective tool in aging well (Shoemaker and Lin, 2008).

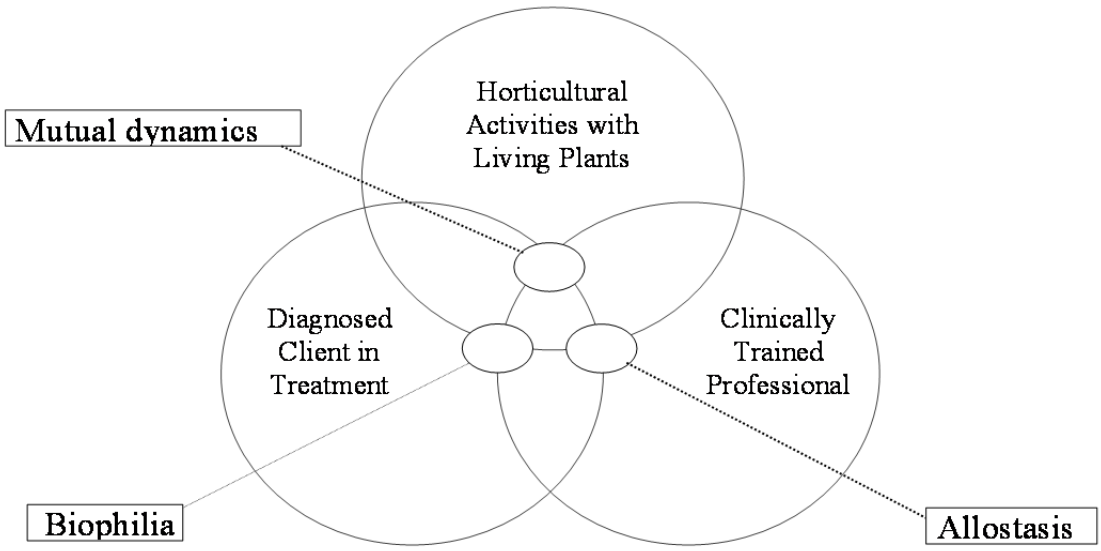

Figure 3. Three elements HT and three factors therapeutic mechanism.

As evidenced by the biophilia model, superior effectiveness of HT as a complementary treatment stems from its unique foundation – love for all living things. This is prerequisite for any HT activity. Love for all living things is the precondition for an intimate and joyful bond, fellowship and activity (Mattson, 1982). In my opinion it would be no exaggeration to say that all healing and recovery is based on love for living things. In this light, I feel that a client who does not feel love for living plants should seek other forms of treatment.

This love for all living things is a human instinct that can be explained from historical,

socio-cultural and relational perspectives. The relationship between humans and plant is manifest across diverse aspects of human life, including food consumption, aesthetics, hobby, environment, and culture (Matsuo, 1996; Son et al., 2006). All human beings have an innate and instinctive longing for the color green (Son et al., 2006). In addition, green is the color of healing and activities involving plants affect us significantly, both physically and psychologically (William et al., 2006; Yoon, 2013).

When we look at the relationship between plants and humans, it is easy to see we share similar life development cycles as living organisms. For instance, we all go through infancy, youth, maturity, and old age. Also, all living organisms grow and develop while maintaining a dynamic equilibrium with their surroundings.

By forming bonds and caring for another living organism such as plants, humans are able to project emotions, feel empathy and experience catharsis relating to life and death, growth and aging or joy and grief. At the same time, by undertaking activities of the mind and the body, human beings are able to develop different sensory, cognitive, emotional and linguistic senses (Söderback et al., 2004; Son et al., 2006; Park et al., 2009, 2012). In some cases, through such relationships, HT clients gain new perspectives on life itself.

Next, we turn to 'mutual dynamics'. This concept could be explained through the chain of interaction, reaction, and action as defined by Relf (1981). In this process, clients are able to experience a sense of bonding, solidarity, compassion and intimacy, as well as cooperation, revitalization, destructive recreation, substitution and catharsis, internal balance, self-care, joy, sense of achievement, confidence, restoration, passion, and well-being of the mind and the body (Son et al., 2006; Im, 2010).

The final element in the diagram is 'allostasis'. According to the allostasis theory, all diseases are mere symptoms and diseases appear when the dynamic equilibrium of soul, body and various physiological systems is disturbed (McEwen, 2000; McEwen and Wingfield, 2003). In other words, excessive allostatic load leads to disequilibrium, which subsequently causes diseases. HT aims to infuse clients with the vitality of plants through human-plant fellowship involving both soul and body. In this process, they learn to take care of others, rediscover their identity, relax emotionally and exert physically. As a result, they attain external as well as internal allostasis, which in turn restores health (Penedo and Dahn, 2005).

As for therapeutic horticulture, its purpose is to enjoy well-being by obtaining dynamic balance among soul, spirit and body. However, for HT, achieving the dynamic equilibrium of spirit, soul, and body is a specialized means to treat a diagnosed client.

FOUR EFFECTS AREAS OF HT

Now, as a result of a meta-analysis of a total of 547 papers on HT including 344 dissertations and 203 articles (unpublished data), it became evident that the effects areas of HT should be grouped into physical, social, psychological/emotional, and cognitive areas, which is also consistent with the views of Relf and other distinguished colleagues (Im et al., 2012).

Therefore, the completed HT theoretical model is as follows. The three elements of HT are clinically trained professional, diagnosed client in treatment, and horticultural activities with living plants while the three therapeutic elements are measurable goals, intended programs and scientific assessment. In addition, the three elements of HT action mechanisms are biophilia, mutual dynamics, and allostasis. Finally, the four categories of benefits a client can derive from HT are physical, social, psychological/emotional and cognitive healing (Figure 4).

The characteristics of this model, which builds on Relf's model, can be summarized in the following way. First, the distinction between HT and TH is more clearly defined. Second, it promotes acceptability of HT as professional treatment from a medical perspective. Lastly, it incorporates the therapeutic mechanisms unique to HT.

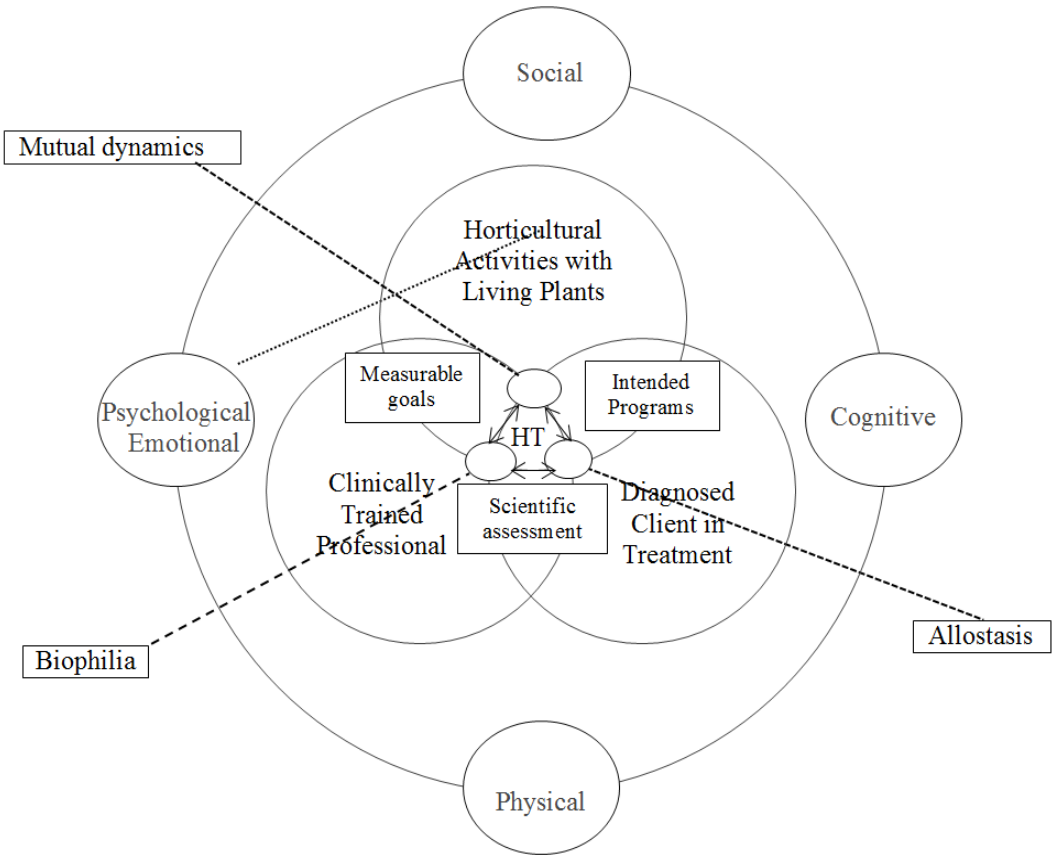

Figure 4. A New Model Proposed by Dr. Son (2014).

DEFINITION OF HORTICULTURAL THERAPY ON THE BASIC OF HT MODEL

The definition based on the new model that has incorporated the three elements of HT, three elements of HT action mechanisms, and the four treatment benefits of physical, social, psychological/emotional and cognitive healing could be proposed as: "Horticultural therapy is complementary medicine with the purpose of rehabilitating the social, emotional, psychological, physical, and cognitive ability of clients. To this end, a therapist who received both horticultural and clinical training conducts the intended program to diagnosed clients through horticultural activities using living plants in order to obtain measurable goals, after which the results are scientifically assessed".

CONCLUSION

In this paper a new model (Figure 4) was presented integrating three elements of HT including clinically trained professional, diagnosed client in treatment, and horticultural activities with living plants, as well as the three therapeutic elements which are measurable goals, intended programs and scientific assessment.

The model also incorporated the three elements of HT action mechanisms such as biophilia, mutual dynamics, and allostasis. Furthermore, the four categories of benefits a client can derive from HT are physical, social, psychological/emotional and cognitive healing.

I believe that this proposed theoretical model and definition of HT could contribute to the field of HT, by promoting HT as a professional treatment widely accepted by medical circles, clearly setting HT apart from TH, and by serving as a stepping stone in specialization of HT.

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