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Therapeutic Horticulture as a Healing Tool for Veterans

Abstract

The Department of Veterans Affairs (VA) faces a plethora of challenges as it daily encounters and treats veterans. With a great prevalence of co-occurring diagnoses, veterans' needs today are significant and arguably more complex than ever before (Clark, Bair, Buckenmaier, Girona & Walker, 2007; Phillips et al., 2016). The following two papers seek to build a justification for reconsidering how post-traumatic stress disorder (PTSD) is treated given the illness' prevalence and the efficacy of current treatments. The first paper reviews the literature and includes: a chronology of the PTSD diagnosis; an examination of current treatments offered by the VA and consideration of their effectiveness; a discussion of current and alternative treatments offered for PTSD; and an exploration of therapeutic horticulture as a healing modality for veterans coping with PTSD. After reviewing the historical and theoretical foundation for this research, the second paper details a mixed method study designed to better understand the depth and breadth of therapeutic horticulture programs that have been operationalized at VA facilities. Using survey and interviews of VA personnel, the author elicited information about VA therapeutic horticulture programs and was able to deduce themes related to the genesis of programs, details of programs' operationalization and facilitation, and the impact on veterans. The author concludes the study with recommendations for those VA facilities considering implementing a therapeutic horticulture program along with an appeal that the VA begins to more earnestly consider the increasing body of evidence concerning the efficacy of therapeutic horticulture.

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Therapeutic Horticulture as a Healing Tool for Veterans

Cherie Eichholz

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Degree of Doctor of Social Work

2020

Marcia L. Martin, PhD
Dissertation Chair

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Therapeutic Horticulture as a Healing Tool for Veterans

Dedication

This paper is dedicated to the members and work of Veterans For Peace, a group of veterans whom I first encountered in 2005 shortly after my discharge from the Army.

Dedicated to ending war as an instrument of foreign policy and making known the true costs of war, Veterans For Peace recognizes that wars are easy to start, hard to stop, and usually hurt the most vulnerable among us.

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ABSTRACT

THERAPEUTIC HORTICULTURE AS A HEALING TOOL FOR VETERANS

Cherie Eichholz, MSW

Dissertation Chair: Marcia Martin, PhD

The Department of Veterans Affairs (VA) faces a plethora of challenges as it daily encounters and treats veterans. With a great prevalence of co-occurring diagnoses, veterans' needs today are significant and arguably more complex than ever before (Clark, Bair, Buckenmaier, Girona & Walker, 2007; Phillips et al., 2016). The following two papers seek to build a justification for reconsidering how post-traumatic stress disorder (PTSD) is treated given the illness' prevalence and the efficacy of current treatments. The first paper reviews the literature and includes: a chronology of the PTSD diagnosis; an examination of current treatments offered by the VA and consideration of their effectiveness; a discussion of current and alternative treatments offered for PTSD; and an exploration of therapeutic horticulture as a healing modality for veterans coping with PTSD. After reviewing the historical and theoretical foundation for this research, the second paper details a mixed method study designed to better understand the depth and breadth of therapeutic horticulture programs that have been operationalized at VA facilities. Using survey and interviews of VA personnel, the author elicited information about VA therapeutic horticulture programs and was able to deduce themes related to the genesis of programs, details of programs' operationalization and facilitation, and the impact on veterans. The author concludes the study with recommendations for those VA facilities considering implementing a therapeutic horticulture program along with an appeal that the VA begins to more earnestly consider the increasing body of evidence concerning the efficacy of therapeutic horticulture.

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Preface

“The Casualty”

Today,
many Vietnam vets
still hang
suspended
under
the floating shelves of their former worlds-
each by a single strand of sanity
more narrow than a window-washer’s rope
oscillating slowly into middle-age
as from a madman’s drool.
His family watches
from a window
ten stories
higher than the moon
unable to reach him
unable to understand him
unable to be unable
anymore.

- Steve Mason, poet and Vietnam veteran (Mason, 1988, p. 78-79)

Steve Mason writes about a veteran I know very well. Between my experience as staff, member, and national board member of Veterans For Peace, an organization committed to “building a culture of peace, exposing the true costs of war, and healing the wounds of war” (Veterans For Peace, 2019), to my work with veterans at the Corporal Michael J. Crescenz VA Medical Center (CMJC VAMC), (previously the Philadelphia Veterans Affairs Medical Center), to my life with my partner and husband, Frank (a Vietnam veteran), I can attest that Mason gets at the heart of PTSD and life in the wake of trauma. In Mason’s brief words (an excerpt of a longer poem in his book *Johnny’s Song*), he details what it is to remain affixed to a world that is virtually impossible to leave behind

and how that experience shapes the veteran's life as well as the lives of those surrounding him/her/them.

In some ways, the experience of a Vietnam veteran, or any veteran for that matter, is prescribed. From the moment one raises their right hand and takes the oath of enlistment, the self is surrendered, relegated to a subordinate position, presumably to stand for something greater than the self, entering a wholly unique type of "social construction" (Shay, 2010). Recruits move through grueling weeks of physical and mental challenges, learning basic combat skills and are indoctrinated into a world of formal and informal regulations and traditions (Arkin & Dobrofsky, 1978; Jackson, Thoemmes, Jonkmann, Lüdtke & Trautwein, 2012; Shay, 2010). "New recruits are immersed in an extensive boot-camp program, in which their civilian status is broken down and the new identity of military recruit is forged," (Jackson et al., 2012, p. 271) and ties to civilian life are reduced "with time, mobility, and distance of the recruit from his civilian counterpart" (Arkin & Dobrofsky, 1978, p. 152). Basic training ultimately constitutes "the intentional disruption of civilian patterns of adjustment, replacement of individual gratifications with group goals, inculcation of unquestioning acceptance of authority and development of conformity to official attitudes and conduct," (Yarmolinsky, 1971, p. 397) shaping the individual into "a disciplined cog within the military machine" (Arkin & Dobrofsky, 1978, p. 158).

Once soldiers (used broadly in this paper to include military personnel from all branches of service) complete basic training and additional training related to their particular jobs (i.e. artillery, military police, medic, etc.), individuals assume their role in the active duty or reserves/national guard, occupying a job and "moral world that most of

the participants most of the time regard as legitimate, 'natural,' and personally binding. The moral power of an army is so great that it can motivate men to get up out of a trench and step into enemy machine-gun fire" (Shay, 2010, p. 6). For some this will mean deployment to combat zones, as it has for millions of Americans over the course of the past century. Countless others have been spared the tumult and torment of war, instead donning a uniform en route to service on any number of US bases.

In any event, and regardless of whether a soldier is stationed in Kansas or Kandahar, trauma is possible. For a moment imagine the experience of trauma. Imagine that a soldier and/or his/her/their wellbeing and/or conscience is violated in some way. Even in a combat zone, where a soldier may be in danger but also protected by battle buddies, imagine that this soldier is wounded in some way. The relative safety that that soldier once knew, even just moments before, is no longer and that soldier has effectively been failed.

This is a template scenario, yet throughout history it has been replayed innumerable times. It is felt by the soldier who followed orders but in the course of following those orders was forced to kill a human being or multiple human beings. It plays out in the lives of female soldiers who are raped while deployed, and in the lives of grunts who but for the grace of a few feet find themselves alive while their friends take their last breaths. Trauma is a part of lives of medics who day in and day out witness and try to remedy the effects of armed conflict, and in the lives of those soldiers who are required to knock on the doors of families, notifying parents of their child's demise, spouses of the loss of their partner, and children of the death of their mom or dad. Another kind of pain is a part of the lives of male soldiers who have been sodomized while on duty and those

soldiers who have been given immoral and wrongful orders and complied, then forever scarred as a result of what they have done. This scenario plays out in the lives of those soldiers who are tasked with deciding where to drop bombs, knowing that civilians will die, and in the hearts of those soldiers who have knocked on doors and pulled civilians away from their families, never to be seen again.

These are some of the scenarios that have played out for some of the veterans I know and part of the inspiration for this research.

Shared Introduction

In recent years, and against a backdrop of rampant suicide and widespread addiction to prescription and non-prescription medications among veterans, the Department of Veterans Affairs (VA) faces a plethora of challenges as it daily encounters and treats veterans, both young and old. With a great prevalence of co-occurring diagnoses (including traumatic brain injury, depression, post-traumatic stress disorder, and a range of physical ailments), veterans' needs today are significant and are arguably more complex than ever before (Clark et al., 2007; Phillips et al., 2016). Indeed,

the protracted nature of the OEF and OIF conflicts, the increased risk exposure because of constant threats, the lengthy deployment periods and multiple deployment episodes, the preponderance of blast injuries with their unknown long-term consequences, and the enhanced survival rates among even the most grievously wounded pose new challenges perhaps unmatched by any previous conflict, including Vietnam (Clark et al., 2007, p. 191).

To meet these needs, the VA has begun taking steps to improve service delivery (Department of Veterans Affairs, 2017b) and better meet the needs of today's veterans; nonetheless, current services are wholly insufficient for some veterans, as evidenced in part by the epidemic of veterans committing suicide that, according to a recent report by

the Department of Veterans Affairs, includes 6,000 annually between 2008 and 2017 (Department of Veterans Affairs, 2019a). Accordingly, considering the great number of veterans presenting to various health providers with a wide range of illnesses, the limited reach of current treatments, and the lack of rigorous research concerning veterans' responses to alternative treatments, it seems appropriate to more fully consider the efficacy of alternative therapies, and more specifically for purposes of this study, therapeutic horticulture.

According to Dr. Lee Newman, Associate Professor of Environmental and Forest Biology at the College of Environmental Science and Forestry, as a healing exercise, therapeutic horticulture involves “using the garden and gardening-related activities to improve the health and well-being of the patients, including their psychological outlook, but it is not part of a formal physical therapy program” (as quoted in Moore, 2017). It should be noted that therapeutic horticulture is different from horticultural therapy which involves the active participation of a client in horticultural activities to achieve particular goals within an established treatment, rehabilitation, or vocational plan (American Horticultural Therapy Association, 2015, 2017). While therapeutic horticulture can be offered in a variety of ways and in an array of places, ultimately the goal is to advance an individual's cognitive, psychological, physical, and/or social capacities (Simson & Straus, 1997). Despite this modality's versatility and its wide variety of potential applications, studies of its efficacy are limited and research concerning therapeutic horticulture's effectiveness with respect to US veterans (the population under consideration in this study) is particularly lacking even as a number of VA facilities have established therapeutic horticulture programs in an effort to advance a more holistic

program of healing. However, given the fact that so many veterans respond positively to the treatments typically afforded them (i.e. exposure therapies, cognitive behavioral and/or processing therapy, and ongoing counseling) (Eftekhari, et al., 2013; Goodson et al., 2011; Steenkamp, Litz, Hoge, & Marmar, 2015), alternative treatments such as therapeutic horticulture are offered only in varying manners and extents at VA facilities, including at the Corporal Michael J. Crescenz VA Medical Center (CMJC VAMC), (previously the Philadelphia Veterans Affairs Medical Center) (Libby, Pilver & Desai, 2012).

As the VA system nationally and locally moves to a “patient centered care” model, with a focus on “whole health,” wherein the VA is seeking to “shift the focus from the specific ailment or disease to a more holistic look at supporting veterans” (Department of Veterans Affairs, 2017b; Department of Veterans Affairs, 2017c), broadening the “toolbox” of treatments available to veterans seems not only appropriate but essential. While many veterans enjoy positive results from treatments currently offered, there remains a subset of veterans for whom these treatments are ineffective and for whom alternative treatments might offer benefit(s). As an example, within the wide range of today’s therapeutic modalities (Caddick & Smith, 2014; Metcalf et al., 2016; Rosenberg, 2012), emerging treatments for PTSD include yoga, meditation, mindfulness activities, hiking, acupuncture, and nature-based therapies, including therapeutic horticulture. For some clients, these techniques have provided some measure of relief (Libby et al., 2012; Metcalf et al., 2016; Wahbeh, Senders, Neuendorf & Cayton, 2014), with research also increasingly showing that some of these alternative techniques are specifically helping to improve some individuals’ symptoms of PTSD (Caddick & Smith, 2014; Colgan, Christopher, Michael & Wahbeh, 2016;

Heffner, Crean & Kemp, 2016; Hilton et al., 2017; Polusny et al., 2015; Stephenson, Simpson, Martinez & Kearney, 2017).

Thus, while certainly not a panacea to the overburdened VA system, nor a solution for every one of the complex challenges with which many veterans cope, it would seem that expanding the range of treatment options available to veterans is not only a humane action the VA can take, but a practical one as well, and certainly one that advances the VA's commitment to wholistic healthcare. In this spirit, further study of what specifically is taking place at those VA facilities which are employing some form of therapeutic horticulture is warranted. In this vein, after a review of the evolution of the PTSD diagnosis and background about current and alternative and complementary treatments for PTSD, this study will aim to describe the genesis of VA therapeutic horticulture programs and will include both an effort to ascertain what has compelled certain facilities to undertake therapeutic horticulture programs as well as focusing on how VAs have established their programs and what the programs entail.

Statement of reflexivity

The author identifies as a licensed social worker (LSW) who works at the Corporal Michael J. Crescenz VA Medical Center (CMJC VAMC) in Philadelphia, Pennsylvania. In addition, she is a veteran of the United States Army and is married to a veteran of the Marine Corps who endured combat in Vietnam in 1968. The origins of this dissertation stem from the author observing her veteran husband toil (and delight) in his garden and her recognition of the garden's embodying a truly safe and healing holding environment for her husband.

In addition to the author's awareness of her husband's healing experience via therapeutic horticulture, as a result of working at the CMJC VAMC she has become increasingly aware of the extraordinary healing possibilities available with alternative and complementary treatments. At the CMJC VAMC and other VA facilities, veterans are afforded opportunities such as participating in tai chi and/or yoga, engaging with therapeutic fly-fishing programs (see projecthealingwaters.org), working with support animals (see www.tailsofvalor.org), and engaging in therapeutic horticulture. Despite the lack of a significant amount of academic research, the author's personal experience tells her that these modalities can greatly enhance the experience of some veterans and minimize the impact of their physical and mental health ailments. With this, and due to the lack of a voluminous body of research, the author has undertaken this area of study in an effort to bring awareness to this modality and contribute to the body of research concerning therapeutic horticulture.

Paper One: Literature Review: PTSD, Moral Injury, Current VA PTSD Treatments, Alternative & Complementary Treatments, Nature, and Therapeutic Horticulture

Background and Significance. Since September 11, 2001, well over 2.5 million men and women have deployed to Iraq and/or Afghanistan, bringing the total number of US veterans to approximately 21 million (Department of Veterans Affairs, 2017a). These veterans, from the fairly young to the elderly, face a plethora of physical and mental health challenges, including the reasonably common condition of post-traumatic stress disorder (PTSD) (Department of Veterans Affairs, 2018b). Over the course of time the Department of Veterans Affairs has implemented various therapies to be used with veterans coping with PTSD as their numbers have escalated. However, as with any ailment – mental or physical – treatments evolve and as the diagnosis of PTSD has become infinitely more common among veterans, it is worth considering whether new treatments should be added to the VA's therapy repertoire.

Post-traumatic stress disorder (PTSD).

PTSD can be found among survivors of the Holocaust, of car accidents, of sexual assaults, and of other traumatic experiences such as combat. The fact is, PTSD is a new name for an old story—war has always had a severe psychological impact on people in immediate and lasting ways. PTSD has a history that is as significant as the malady itself. It's been with us now for thousands of years (Bentley, 2005).

While accounts of psychological trauma date back to ancient times (see Bentley, 2005; Crocq & Crocq, 2000; Shay, 2000, 2003, 2010, 2014; and Stein, 2015), only following the Vietnam War and the troubled psychological homecoming of US military personnel, did the American Psychiatric Association (APA) place the name “post-traumatic stress disorder” (PTSD) on this condition that affects countless veterans and civilians alike (Orr, Pitman, Lasko & Herz, 1993). In 1980 the authors of the Diagnostic and Statistical Manual of Mental Disorders (DSM) introduced post-traumatic stress disorder (PTSD) in the DSM's

3rd edition and in subsequent years the National Vietnam Veterans Readjustment Survey (NVVRS) helped to further elucidate the definition (the NVVRS represented an early large-scale study examining combat-related mental health issues in the American veteran population) (Kulka et al., 1990). Indeed, “the NVVRS helped to illuminate PTSD as a signature wound of the Vietnam War and resulted in greater recognition of PTSD as a mental health disorder. The findings contributed to the formal recognition of PTSD as a distinct disorder by the APA and later refining of the characteristic symptoms and diagnostic criteria” (Galea et al., 2012).

Evolution of PTSD in the Diagnostic and Statistical Manual of Mental Disorders (DSM)

Though PTSD was codified in the DSM-III, previous iterations of the DSM laid the foundation for its introduction as an official “disorder.” Cognizant of the “psychiatric casualties” of World War II, the DSM-I offered the diagnosis of “‘gross stress reaction’ under the category of ‘transient situational personality disorders’” (APA, 1952; Echterling, Field & Stewart, 2015, p. 192). This condition was characterized as a brief reaction to a significant stressor such as a “combat or civilian catastrophe” and the DSM-I envisioned a relatively short recovery period (i.e. a few weeks) (APA, 1952, p. 40). With placement in the “transient situational personality disorders” category and having explicitly stated that “when promptly treated, the condition may clear rapidly,” (APA, 1952, p. 40), the DSM-I’s authors seemed to suggest “that rapid intervention facilitates recovery from the impact of the stressful event, no matter how great was the degree of victimization” (Wilson, 1994, p. 689).

Significant to the DSM-I’s definition of gross stress reaction is the fact that the APA recognized that armed combat need not be a precursor for the disorder; natural disasters,

sexual and other assaults, car accidents, etc. could all conceivably induce this state (APA, 1952). Also notable in this definition is that the DSM-I explicitly stated that “this diagnosis applies to previously more or less ‘normal’ persons who experience intolerable stress” (APA, 1952, p. 40), and to be sure, “the inclusion of the ‘normal personality’ descriptor suggested that the pendulum had swung away from attributing the development of dysfunction to an individual’s character flaws (i.e. ‘neuropathic personality’) after exposure to a stressor” (Echterling et al., 2015, p. 192). Interestingly, it is noteworthy that despite the DSM-I offering a specific name for this condition, and despite the fact that up to 25% of the soldiers who fought in Korea (i.e. in the early 1950s) “were eventually found to have an associated psychiatric problem,” (Gambert, 2013), during the first half of the twentieth century military clinicians elected to use the labels *operational fatigue* or *operational exhaustion* to conceal the neurotic features of the illness from both the soldiers coping with it as well as their supervisors, in order to minimize the condition and rapidly return them to the battlefield (Grinker & Spiegel, 1945; Grinker & Spiegel, 1963; Hyams, Wignall & Roswell, 1996; Pols & Oak, 2007).

While the DSM-I’s introduction of gross stress reaction caused practitioners to reconsider trauma’s impact on individuals, this change also ushered in a spirited interest in better understanding military-related trauma and its aftermath. In 1954, Lewis and Engle published *Wartime Psychiatry*, a massive study of 1,166 articles by 1,431 authors, with the analysis’ most important finding being that regardless of whether authors conceived of the condition as being combat fatigue syndrome or psychoneurosis, nearly all investigators thought it to be a transient state (Lewis & Engle, 1954).

Then in 1962, Drs. Archibald, Miller, and Tuddenham, and Dorothy Long published their study which aimed to evaluate “the persistence and characteristics of the syndrome.” They sent questionnaires to combat veterans who had “experienced symptoms after an average time of 15 years” and non-combat veterans who had been seen at one time or another for mental health treatment (Archibald, Long, Miller & Tuddenham, 1962, p. 318). The researchers found that while there were similarities between the groups, by and large the combat veterans encountered a significantly more disabling condition “involving startle reactions, sleep difficulties, dizziness, blackouts, avoidance of activities similar to combat experience, and internalization of feelings” (Archibald et al., 1962, p. 321). Drs. Archibald and Tuddenham continued this study, recruited more participants, and published a subsequent report in 1965. They conclude by stating:

The data presented above make it clear that tension and anxiety reactions still characterize these combat patients two decades after the events which traumatized them. While the men in the street, and some psychiatrists, are inclined to urge such patients to “forget it,” these particular veterans cannot blot out their painful memories. The passage of time, even after two decades, has not sufficed to free them of their symptoms (Archibald & Tuddenham, 1965, p. 480).

DSM-II (1968). Though these researchers asserted the condition to have lasting adverse consequences on individuals, gross stress reaction was removed from DSM-II for unknown reasons, effectively leaving no DSM category for pathological responses to traumatization (Spitzer, First & Wakefield, 2007). Published in 1968, the DSM-II substituted the condition “transient situation disturbances,” changing the connotation from a “reaction” to a “disturbance” (APA, 1968). The APA submitted that transient situation disturbances “occur in individuals without any underlying mental disorders and that represent an acute reaction to overwhelming environmental stress” (APA, 1968, p. 48), implying that absent an underlying psychological illness, the individual’s experiences and

attendant responses would decrease as the stressor faded in memory (Yehuda & Bierer, 2009). In effect, this DSM-II change also meant that there was no diagnosis for lasting psychiatric disorders caused by exposure to and participation in combat (Andreasen, 2010; Scott, 1990).

As to why the conception and definition of this condition changed so radically in the DSM-II, reasons are unclear. Andreasen suggests that “the most plausible explanation for the omission is that the concept was closely linked to warfare and combat, and DSM-II was written in a peaceful era” (2010, p. 68). Others relatedly suggested that since the authors of the DSM-II lacked direct involvement with war neurosis from recent wars (i.e. the Second World War and Korean War), postwar sways of military mental health professionals waned, and preliminary indications from esteemed psychiatrists in Vietnam were that the prevailing terminology captured the array of illnesses encountered in country and treatments were effective (Horwitz, 2018; Scott, 1990, p. 297).

But some took exception to this rationale. Psychologist and PTSD expert John P. Wilson questioned this change observing:

It is puzzling that in the 16 year interval between the publication of DSM-I and DSM-II, there were more world wide traumatic events that were the focus of both national and international attention: the Korean and Vietnam Wars; Colonial Wars and revolutions; the assassination of John F. Kennedy; civil violence in Northern Ireland; wars in the Middle East; major natural disasters in many parts of the world and recognition of the prevalence of childhood sexual abuse... And yet the DSM-II equivalent of PTSD contained a mere three examples of “adjustment reaction to adult life”: (1) an unwanted pregnancy accompanied by depression and hostility; (2) a frightened soldier in combat; and (3) a prisoner facing execution in a death penalty case (Wilson, 1994, p. 690).

In any event, despite the surge in research concerning gross stress reaction following the publication of the DSM-I, demonstrating that symptoms of the condition persist for long periods of time following trauma, and despite the fact that the DSM-II was published the

same year as the Tet Offensive and the height of the Vietnam War, with the DSM-II the APA opted to maintain its insistence that this type of response to a stressor was always temporary (Horwitz, 2018), curable with removal from the traumatic situation (Scott, 1990), and seemingly relatively uncommon (Wylie, 2004).

DSM-III (1980). However, with the introduction of the DSM-III, the APA advanced a revamped understanding of the illness “in order to capture the psychopathology associated with traumatization in adults” (Van der Kolk, 2000, p. 9). In 1980, the APA officially recognized post-traumatic stress disorder as a legitimate condition, with the hallmark feature being that a particular traumatic event instigates dysfunction and/or distress in the present, and importantly, the stressor “would evoke significant symptoms of distress in almost anyone” (APA, 1980, p. 238). Per the DSM-III, to be given a diagnosis of PTSD the individual had to demonstrate at least four symptoms from three clusters of symptoms: 1) re-experiencing of fear memories, 2) avoidance of trauma reminders, and 3) hyperarousal symptoms (APA, 1980). The DSM-III stipulated that a PTSD diagnosis required having experienced a catastrophic trauma and that that trauma not be one that is usually well tolerated by others (APA, 1980). Additionally, the DSM-III further widened the landscape in terms of what constituted “trauma,” explicitly including rape, severe physical assault, and unusually serious automobile accidents alongside military combat (APA, 1980).

The shift in understanding dictated in the DSM-III came alongside and following a seemingly “perfect storm” of conditions. Vietnam veterans, now home in some cases for a decade or longer, were widely depicted as deeply troubled, an image Americans largely accepted, and which thereby stoked the flames of the country’s unescapable political and cultural rifts (Horwitz, 2018). Alongside the return of traumatized Vietnam veterans, the

women's liberation movement was on the rise and increasingly other types of traumas (i.e. child abuse, sexual assault, rape, etc.) came to be considered as incidents which may result in lasting distress and/or dysfunction (Ford, 2009; Van der Kolk, 2000). Further, even as authors of the first two DSM editions contended symptoms following trauma were short-lived, due largely to the ongoing symptomatology of Vietnam veterans, authors of the DSM-III were forced to acknowledge that in some cases symptoms persisted for far longer than previously thought (Horwitz, 2018).

The DSM-II was drafted and published as medical professionals were downplaying the psychological consequences of combat in Vietnam, in part because the US military instituted the "Salmon" program which positioned a psychiatrist in every battalion located in a Vietnamese combat area (Stein, 2015), effectively dropping the rates of in-theater psychiatric casualties (Horwitz, 2018; Scott, 1990; Tiffany, 1967; Wessely & Jones, 2004). However, by 1980 mental health professionals had interacted with countless ill-affected Vietnam veterans, and indeed, in the years between 1968 (i.e. the year the DSM-II was published) and 1980, hundreds of thousands of military veterans had deployed to Vietnam and returned to the US, battered both physically and emotionally. To be sure,

the Vietnam War featured combat situations thoroughly unlike those in previous conflicts. A large conventional American force faced small guerrilla bands that attacked unexpectedly. Battle lines rarely existed, and most encounters with the enemy involved surprise attacks, usually at night. Combatants were also confronted with various hidden improvised explosive devices, mines, and booby traps, which caused many casualties. Civilians, including women and children, were often indistinguishable from enemy soldiers (Horwitz, 2018, p. 85).

In the absence of a diagnostic category that truly spoke to the symptoms with which these veterans were coping (i.e. before the release of the DSM-III) (McNally, 2004),

"adherence to the nomenclature for purposes of treating patients varied according to

therapists' personal and clinical experiences" (Scott, 1990, p. 299); some clinicians reverted to using the terms gross stress reaction or war neurosis (Scott, 1990) while others adopted the label "post-Vietnam syndrome" (Dean, 1997; Scott, 1990; Shatan, 1972; Shepard, 2001; Young, 1995). Ultimately though, lacking an appropriate mechanism for identifying the condition, "veterans were often considered delusional and their flashbacks considered sensory-triggered hallucinations," assumptions which frequently led to misdiagnoses (Stein, 2015, p. 11).

Recognizing that the diagnosis "transient situation disturbances" was insufficient and was failing to fully capture the constellation of symptoms Vietnam veterans (and others coping with trauma) were facing, both veterans and clinicians began championing a more suitable diagnostic category. In "rap sessions" or "rap groups" which acted as "informal sessions in which veterans discussed their war experiences" (Scott, 1990, p. 300), veterans found a space to honestly share their experiences and subsequent struggles and to raise awareness concerning the effects of war (Herman, 1992; Horwitz, 2018; Lifton, 1973). Primarily organized by the group Vietnam Veterans Against the War (VVAW), "vets all over the country became very active, forming hundreds of rap groups to talk about their war experiences and coalescing into large, politically powerful, organizations to struggle for financial, social, and medical recognition of their problems" (Wylie, 2004). Though ostensibly launched to function as a kind of group therapy in which all participants were equals (i.e. without a clinician to guide sessions), VVAW leadership recognized that what they were organizing and participating in demonstrated that the challenges veterans were facing were not captured by the diagnosis "transient situation disturbances."

Cognizant of the inadequacies of the DSM-II and ever aware of the excruciating experiences of tens of thousands of Vietnam veterans, VVAW leadership and psychiatrists and anti-war activists Robert Jay Lifton and Chaim Shatan began corresponding and strategizing (Bloom, 2000; Scott, 1990; Young, 2000). Lifton and Shatan began sitting in on the rap groups “not as therapists, but as equals who shared an opposition to the war,” (Scott, 1990, p. 300) and started laying the foundation for significant collaboration between veterans, veterans’ advocates, and mental health practitioners (Bloom, 2000; Scott, 1990). The Vietnam Veterans Working Group summoned the expertise of psychiatrists already investigating the psychological impacts of war and trauma, clinicians currently working with Vietnam veterans, and veterans themselves, with the aim of classifying the symptoms and proposing changes to the soon to be released DSM-III (Fisher & Schell, 2013).

Originally introduced as “catastrophic stress disorder” with the recommendation that the subcategory “post-combat stress reaction” be included as an additional descriptor (Fisher & Schell, 2013; Scott, 1990; Shatan, Smith & Haley, 1976), the DSM’s Committee on Reactive Disorders ultimately backed inclusion of “post-traumatic stress disorder” in the DSM-III, noting that there was to be no “combat-specific subcategory” as research did not demonstrate PTSD’s clinical symptoms differing according to the type of trauma (Fisher & Schell, 2013). Thus, the criteria established by the DSM-III included the following: (Criteria A) significant, life-threatening traumatic stressor that would “evoke significant symptoms of distress in almost everyone,” (Criteria B) re-experiencing symptoms including nightmares, intrusive thoughts, and “flashbacks,” (Criteria C) avoidance and numbing symptoms including lack of interest in activities, feelings of detachment from others, and limited and/or restrained affect, and (Criteria D) impairment(s) to arousal including sleep

disturbances, exaggerated startle response, guilt, memory impairment, etc. (APA, 1980). The DSM-III also stated that symptoms had to have a duration of at least one month (APA, 1980).

In addition to offering veterans and others suffering with past traumas a tangible diagnosis and means to begin to appraise their experience, both past and current, the PTSD diagnosis that materialized in DSM-III offered several other valuable contributions to the mental health field. Unlike the scores of other diagnoses in the DSM-III, a diagnosis of PTSD signaled that mental health disorders could be prompted by environmental causes and need not have an innate origin (APA, 1980). The diagnosis also provided those suffering with the condition a channel by which to seek treatment and in some cases compensation (Brett, Spitzer & Williams, 1988; Horwitz, 2018; Young, 2000). Further, the diagnosis affirmed the notion that trauma can have long term impacts and consequences that may not be immediately felt, perhaps not felt until years later (Horwitz, 2018).

DSM-III-R (1987). A mere 7 years after the DSM-III was published, the DSM-III-R revised the definition of PTSD, providing more detail, attempting to refine language and the meaning of symptoms, and enhancing content concerning trauma responses (Andreasen, 2010; APA, 1987; Brett et al., 1988; Echterling et al., 2015; Horwitz, 2018; Wilson, 1994), as well as expanding the list of symptoms that would be applicable to those who did not experience combat or the Holocaust (Galatzer-Levy & Bryant, 2013; Helzer, Robins & McEvoy, 1987; McFarlane, 1988). One of the key limitations authors of the DSM-III-R observed with respect to previous editions of the DSM, was the lack of consideration for potential differences in response to trauma that may be due to differences in development (APA, 1987; Brett et al., 1988; Echterling et al., 2015). Therefore, in the DSM-III-R, authors

included age-specific characteristics that children and adolescents may display in response to stress and/or trauma (APA, 1987). The DSM-III-R also significantly expanded the symptom criteria to include forgotten memories as well as those that were intrusive (APA, 1987; Horwitz, 2018).

Another notable change to the DSM-III definition of a stressor is that the DSM-III-R embraces the idea that a threat of harm to one's children, spouse, or other close relatives or friends can constitute trauma (APA, 1987; Brett et al., 1988; McNally, 2004). Thus, those who experience trauma vicariously have the potential to develop symptoms of PTSD, or in other words, "to qualify as a trauma survivor, one need only respond with fright to learning about the misfortunes of others, including strangers" (McNally, 2004, p. 4).

DSM-IV (1994). With the unveiling of the DSM-IV in 1994, the APA broadened the criteria for PTSD specifying that "the person experienced, witnessed, or was confronted with events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others," and that the person's "response involved intense fear, helplessness, or horror" (APA, 1994, p. 427-428). According to DSM-IV (APA, 1994), PTSD is a syndrome comprising three clusters of signs and symptoms: (1) repeatedly reexperiencing the trauma (Criterion B: e.g., intrusive recollections of the event, nightmares); (2) avoidance of activities and stimuli associated with the trauma and emotional numbing (Criterion C: e.g., difficulty experiencing positive emotions); and (3) heightened arousal (Criterion D: e.g., irritability, exaggerated startle reflex). The disorder can only be diagnosed if a person has been exposed to an event that qualifies as a "traumatic" stressor (Criterion A). The symptoms must persist for at least one month (Criterion E) and must cause distress or impairment (Criterion F).

In addition, the DSM-IV ushered in two other important changes. In this iteration of the DSM the authors established that the experience of PTSD was about the unique interplay between the experience of trauma and the individual's response to that trauma, thus highlighting the fact that both external and internal factors contribute to one's having PTSD (APA, 1994). The DSM-IV also removed the stipulation that the precipitating stressor must be outside the individual's normal range of experience (APA, 1994). In short, the DSM-IV shifted such that the understanding of trauma became more subjective and explained as any incident an individual found to be extremely distressing (APA, 1994).

Interestingly, and due largely to the expanded definition of "trauma" (with the number of qualifying "traumatic events" increasing by 59% in the DSM-IV (Breslau & Kessler, 2001), the number of combinations of ways in which an individual could clinically meet the criteria for PTSD expanded from 135 (DSM-III) to 10,500 (DSM-IV). Not surprisingly, some took issue with this "bracket creep" phenomenon:

No longer must one be the direct (or even vicarious) recipient of trauma; merely being horrified by what has happened to others now counts as a PTSD-qualifying event. Such secondhand exposure seems qualitatively distinct from being subjected to artillery bombardment for days on end while huddled in a muddy trench. Yet prevailing nosologic practice brackets both kinds of event under the same stressor rubric. With such diverse events deemed causally relevant to PTSD, it will be difficult to identify common psychobiologic mechanisms underlying symptomatic expression (McNally, 2003, p. 231).

Regardless, the criteria remained in place until 2013.

DSM-5 (2013). In 2013 and following years of PTSD experts critiquing the criteria for PTSD established in the DSM-IV (McNally, 2009; North, Suris, Davis & Smith, 2009; Spitzer et al., 2007), the DSM-5 was introduced. As a significant portion of the research assembled between publications of the DSM-IV and DSM-5 pointed to concerns about what constitutes trauma, which symptoms and how many of them need to be included in a

diagnosis of PTSD, and whether PTSD is itself a legitimate diagnosis (Brewin, Lanius, Novac, Schnyder & Galea, 2009; McNally, 2009; Spitzer et al., 2007), authors of the DSM-5 went to great lengths to ensure that the voices and concerns of a variety of stakeholders were heard (Regier, Kuhl & Kupfer, 2013; Pai, Suris & North, 2017).

PTSD, which is now listed in the Diagnostic and Statistical Manual of Mental Disorders' (DSM-5) "Trauma and Stress or Related Disorders" chapter (moved from the anxiety disorders category), requires exposure to a traumatic or stressful event as a necessary prerequisite for the condition, along with symptoms lasting at least 1 month and causing impairment in regular functioning (APA, 2013). Symptoms are segmented into 4 diagnostic criteria: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity (APA, 2013). Four additional symptoms were added to the DSM-5 (negative beliefs/expectations, distorted blame, persistent negative emotions, reckless or self-destructive behavior), and the APA proposed a dissociative subtype and included anhedonic and dysphoric presentations (APA, 2013).

While the criteria for the definition of "trauma" did not change substantially with the DSM-5, and in fact was tightened so as to reduce "bracket creep" (APA, 2013; Echterling et al., 2015; Friedman et al., 2011; Kilpatrick, Resnick & Acierno, 2009), DSM authors carefully considered the symptoms associated with PTSD, modifying 8 of the symptoms, adding 3 ("persistent negative emotional state, persistent distorted cognitions about the cause or consequences of the trauma leading to blame of self or others, and reckless or self-destructive behavior"), and delineating Criterion C into two categories (a) avoidance and (b) negative reactivity and related numbing (APA, 2013; Hoge et al., 2016; Jones & Cureton, 2014). In addition, the past requirement (Criterion A2) that an individual have an intense

emotional response to an event was eliminated both because it lacked predictive use (Bovin & Marx, 2011) and because these internal symptoms are covered elsewhere in the definition (McNally, 2009).

The modifications to symptomology in the DSM-5 consequently resulted in a massive increase in the “ways in which to have posttraumatic stress disorder” - 636,120 to be exact according to Isaac R. Galatzer-Levy and Richard A. Bryant (2013). Galatzer-Levy and Bryant observed:

A great deal of work is necessary to identify and understand common outcomes of disparate, potentially traumatic, and common stressful life events. However, the lesson learned from the example of PTSD is that empirical findings are only as strong as the clarity of the constructs under study. If the construct is noisy, diffuse, or lacking in validity, it becomes increasingly difficult to study the phenomenon (2013, p. 660).

DiMauro et al. concurred: “this is a staggering number that exemplifies the problem of using a broad set of criteria to identify whether an individual qualifies for a specific diagnosis. In the pursuit of specificity and reliability, the diagnosis of PTSD loses its meaning in a fog of heterogeneity” (2014, p. 775).

Others acknowledge concerns that widening the criteria for PTSD has the unintentional effect of pathologizing natural reactions to distressing life events (McNally, 2009). This is a particular concern within the military and Department of Veterans Affairs which diagnose and treat millions of soldiers and veterans each year, and within which the incidence of PTSD has increased significantly since 2001 (Echterling et al., 2015). That being said and despite the increase in diagnosis, according to studies conducted by the Institute of Medicine, PTSD is being accurately and appropriately diagnosed among veterans at VA facilities (Institute of Medicine, 2006, 2007).

Controversies in evolution of PTSD diagnosis

It is important to note and maybe not surprising given the genesis of the PTSD diagnosis detailed heretofore, that introduction of the PTSD diagnosis in the DSM was quite controversial. Many claim that the Vietnam War politicized the APA and forced their decision to advance and establish this diagnosis (Becker, 2013; Echterling et al., 2015; Lembcke, 1998; McNally, 2004; Scott, 1990; Wessely & Jones, 2004). As sociologist and Vietnam veteran Dr. Wilbur Scott noted: “the struggle for recognition of PTSD by its champions was profoundly political, and displays the full range of negotiation, coalition forming, strategizing, solidarity affirmation, and struggle – both inside various professions and ‘in the streets’ – that define the term” (1990, p. 295). Scott further expounded that the establishment of the PTSD diagnosis

raises and examines substantive questions about what constitutes the normal experience and response of soldiers to warfare. We see that what psychiatrists once regarded as abnormal behavior is now thought by many to represent a ‘normal’ response to situations of combat. With the PTSD diagnosis, psychiatrists now say it is ‘normal’ to be traumatized by the horrors of war; ‘war neurosis,’¹ i.e., PTSD, occurs when this trauma is not recognized and is left untreated. Second, the story adds another sociological case to those that illustrate the politics of diagnosis and disease. What we see here is an especially clear instance of how medical scientists and their diverse allies successfully advanced a diagnosis as both an accurate description of objective reality and as a discovery of what was present but previously unseen (Scott, 1990, p. 295).

Despite the circumstances surrounding PTSD’s entry into the DSM – and/or perhaps as a result, the introduction of the PTSD diagnosis represented a turning point in how clinicians consider trauma and its aftermath: “the significant change ushered in by the PTSD concept was the stipulation that the etiological agent was outside the individual (i.e.,

¹ Scott specifically noted that he “uses the term ‘war neurosis’ in this paper to refer to the general category of mental disorders associated with warfare” (Scott, 1990, p. 295).

a traumatic event) rather than an inherent individual weakness (i.e., a traumatic neurosis)” (Friedman, 2018). Indeed, “PTSD became the first and only disorder that included a diagnostic criterion – a traumatic event – that is entirely external to the individual” (Echterling et al., 2015, p. 194). In other words, the PTSD diagnosis revolves around an individual experiencing a precipitating traumatic event and having difficulty in adjusting subsequently, as opposed to the difficulty in adjustment being caused by some innate limitation (Echterling et al., 2015).

Though Friedman’s observations highlight the change in the perception of PTSD as an illness, and the diagnosis continues to evolve and even face criticism (see Spitzer, et al., 2007), another controversy presented itself prior to the DSM-5’s launch but in this case the concern was about terminology and its implications for seeking treatment. Prior to the DSM-5’s unveiling, now retired Army General Peter Chiarelli and the United States Army championed a name change for the condition, remarking that the term “disorder” carries with it some measure of stigma and may preclude service members and veterans from seeking mental health support and treatment (Fisher & Schell, 2013; Jaffe, 2012; Ochberg, 2013; Sagalyn, 2012). Chiarelli, who served two tours in Iraq and became increasingly concerned about rising rates of suicide among soldiers and veterans, “concluded that many service men and women hate the term ‘disorder,’ and suffer in silence rather than endure that label,” and continued: “for a soldier who sees the kinds of things soldiers see and experience on the battlefield today, to tell them what they’re experiencing is a disorder does a tremendous disservice” (as quoted in Ochberg, 2013, p. 96).

Despite the fact that there exists little evidence that specifically demonstrates that US military service members with PTSD feel stigmatized and/or that feelings of

stigmatization reduce utilization of mental health services (Fisher & Schell, 2013) (though Hoge et al., 2004 and Pietrzak et al., 2009 show correlation between concern about stigma and receipt of a mental health diagnosis in younger OEF-OIF veterans), Chiarelli pushed this issue. To Chiarelli and the psychiatrists who “pressed for a change, the word ‘injury’ suggests that people can heal with treatment. A disorder, meanwhile, implies that something is permanently wrong” (Jaffe, 2012). Psychiatrist and PTSD expert Dr. Frank Ochberg supported Chiarelli in his quest to change PTSD to PTSI (post-traumatic stress injury), declaring that “there is a crisis of suicide, stigma, and misunderstanding affecting young veterans. Anything that helps them seek help is worth consideration” (Ochberg, 2013, p. 96). In the end however, and despite the best efforts of Chiarelli, other psychiatrists and physicians including Dr. Jonathan Shay (whose contributions in the area of post-traumatic stress and moral injury are detailed in following pages), and representatives of veterans’ groups and trauma survivors, the authors of the DSM-5 ultimately opted to retain the name post-traumatic stress disorder (PTSD).

Prevalence of PTSD among veterans

As the United States has been engaged in combat operations for much of the past 100 years, and as science and society at large have come to better appreciate what constitutes trauma, the number of veterans with a diagnosis of PTSD has grown. Annually, among US veterans of various combat eras (i.e. World War II, Korea, Vietnam, Gulf War, etc.), between 11 and 20% will struggle with PTSD in some manner (Department of Veterans Affairs, 2018b), with VA facilities treating approximately 571,000 PTSD afflicted veterans annually (Harpaz-Rotem & Hoff, 2014). Among younger veterans (i.e. Operations Enduring Freedom and Iraqi Freedom (OEF/OIF)), the numbers vary. Fulton et al.

conducted a meta-analysis of 33 studies published between 2007 and 2013 and found the prevalence to be approximately 23% (Fulton et al., 2015). Dursa et al. found a more modest prevalence of 13.5% (15.7% in OEF/OIF veterans and 10.9% in nondeployed veterans) based on their survey completed by 20,563 (Dursa, Reinhard, Barth, & Schneiderman, 2014), with the Department of Veterans Affairs reporting similarly (“15.7% of OEF/OIF deployed Veterans screened positive for PTSD compared to 10.9% of non-deployed Veterans”) (Department of Veterans Affairs, 2015).

Though countless soldiers (note: “soldiers” being used broadly to refer to all uniformed military personnel including those in the Army, Navy, Marine Corps, Air Force, and Coast Guard) who have endured combat experience PTSD, combat is again not a prerequisite for PTSD. Indeed, the inhumane practice of being conditioned to dehumanize another person and kill them, to witness the death of a comrade, to regularly be in harm’s way or to experience being sexually assaulted, and/ or any number of any other experiences encountered during military service, are enough for some soldiers (and veterans) to experience symptoms of PTSD. However, not everyone who faces traumatic experiences suffers with PTSD; some people are able to recover from the traumatic experience, while others will encounter the symptoms at some point after the trauma, and still others may endure the symptoms of PTSD for a lifetime (Wise, 2015). In the end, the spectrum of how trauma affects individuals is wide and variable, as are the explanations for how PTSD is best confronted.

Moral injury

In a consideration of PTSD, its rise among veterans, and current and possible treatments, there clearly exists a space to consider moral injury, a concept advanced by Dr.

Jonathan Shay, a psychiatrist at the Boston Veterans Affairs Medical Center. In Shay's work with veterans, many of whom were Vietnam veterans, he came to recognize a phenomenon he likened to the story recounted in Homer's *Illiad* (Shay, 2014) and British Journalist Charlotte Higgins expounds:

The Illiad still has much to say about war, even as it is fought today. It tells us that war is both the bringer of renown to its young fighters and the destroyer of their lives. It tells us about post-conflict destruction and chaos; about war as the great reverser of fortunes. It tells us about the age-old dilemmas of fighters compelled to serve under incompetent superiors. It tells us about war as an attempt to protect and preserve a treasured way of life. It tells us, too, about the profound gulf between civilian existence and life on the front line; about atrocities and indiscriminate slaughter; about war's peculiar mercilessness to women and children; about friendships and sympathies across the battle lines. It tells us of the love between soldiers who fight together. Most of all, it tells us about the frightful losses of war: of a soldier losing his closest companion, of a father losing his son (2010).

In working with veterans at the Boston Veterans Affairs Medical Center, Shay found that like those soldiers in Homer's tale, Vietnam veterans had been injured in a way conceivably far worse than if they had been physically wounded; instead of physical wounds, their injuries consisted of assaults on their consciences and challenges to their moral foundations (Shay, 2014).

Shay defines moral injury as an experience that betrays an ideal that an individual knows to be right, by someone who holds legitimate authority, in a serious situation (Shay, 2014). Additionally, it comprises a "syndrome of shame, self-handicapping, anger and demoralization that occurs when deeply-held beliefs and expectations about moral and ethical conduct are transgressed" (Gray et al., 2012, p. 408). Litz et al. (2009) go on to observe that, "Moral injury requires an act of transgression that severely and abruptly contradicts an individual's personal or shared expectation about the rules or the code of

conduct, either during the event or at some point afterwards” (p. 700). And finally, as Dokoupil points out, for the military and veteran population, moral injury

shifts the focus onto what service members do to others, or in some cases fail to do for each other – not what gets done to them...it allows for the fact that war itself, no matter how just or good, will leave many of the men who fight it feeling like they’ve dirtied their souls and perhaps for a simple reason: there is just something about killing that bites the conscience and doesn’t let go (Dokoupil, 2012).

In short, while service in the military necessarily entails a recognition that combat is possible and one may be witness or participant to/in violence and/or killing, “individual service members and units face unanticipated moral choices and demands and even prescribed acts of killing or violence may have a delayed but lasting psychosocial–spiritual impact (e.g., guilt and shame)” (Litz et al., 2009, p. 697). (See Appendix A for Litz’ et al.’s graphic representation of moral injury.)

Though studies concerning moral injury are still limited (Drescher et al., 2011; Litz et al., 2009; Nash & Litz, 2013), even the VA now recognizes moral injury, noting that “the key precondition for moral injury is an act of transgression, which shatters moral and ethical expectations that are rooted in religious or spiritual beliefs, or culture-based, organizational, and group-based rules about fairness, the value of life, and so forth” (Department of Veterans Affairs, 2018a). Of note, and even though modest in proportion, Drescher et al. (2011) undertook a study of Department of Defense and Veterans Affairs health care and religious ministry professionals, including chaplains, mental health providers, academic researchers, and policymakers. Twenty-three participants, all with knowledge of and experience with military service personnel or war zone veterans, were interviewed to “evaluate the construct of moral injury” (Drescher et al., 2011, p. 11).

The results suggest that there is consensus that there are uniquely morally injurious experiences in war and that these experiences create an array of psychological,

spiritual, social, and behavioral problems. There was unanimous agreement that the concept of “moral injury” is useful and needed; and that it was seen as a helpful construct for better addressing a wider range of the complex consequences of combat for many warriors. There was also universal agreement that the construct of moral injury was not fully encompassed by the PTSD diagnostic criteria and its related features (Drescher et al., 2011, p. 11).

Ultimately, though moral injury and PTSD are two different things (with a key difference being that a feeling of remorse is not necessary for a PTSD diagnosis), and moral injury is not a diagnosable disorder (i.e. in the DSM-5), there is certainly overlap such that likely some, if not many, of those veterans coping with PTSD are also struggling with moral injury. Indeed, “pure PTSD, as officially defined, with no complications, such as substance abuse or danger seeking, is rarely what wrecks veterans’ lives, crushes them to suicide, or promotes domestic and/or criminal violence;” moral injury is often the culprit in these veterans’ lives (Shay, 2014, p. 184). (Note: Shay provides an illustration of “What is missed by current conceptions of PTSD” which is shared in Appendix B.) Thus, as one considers the prevalence of the PTSD diagnosis among veterans along with the ongoing challenges clinicians face in treating the disorder, it is worth remaining mindful of the potential extent to which moral injuries are interwoven in the experiences of veterans.

Current PTSD treatments utilized by the Department of Veterans Affairs

Cognizant of the fact that so many veterans will endure PTSD at some point in their lifetimes (as PTSD is not predicated on symptoms appearing immediately after a trauma), and anticipating an increase in the number of veterans diagnosed with PTSD as a result of the US’ campaigns in Afghanistan and Iraq, in 2006 the US Department of Veterans Affairs introduced Cognitive Processing Therapy (CPT) as a treatment for PTSD and followed in 2007 with the introduction of Prolonged Exposure Therapy (PET) (Goodson et al., 2011; Karlin et al., 2010). Both considered evidence-based modalities, CPT and PE/PET are

trauma-focused cognitive-behavioral therapies (CBT) that seek to pinpoint, analyze, and address the symptoms of PTSD. Clinicians employing CPT and PE/PET work to help clients recognize automatic responses to stimuli, which may or may not be appropriate or rational, observe the dysfunction therein, and adjust their thinking to become more focused and centered in their current reality (Beck, 2011).

Though these modalities are still arguably in their infancy, especially with respect to their utilization at VA facilities, researchers have already begun studying their efficacy. Goodson et al. (2011) undertook a meta-analysis of 24 studies (n = 1742) and sought to quantitatively examine the utility of current PTSD treatments. Of those studies examined, 12 (50%) were exposure-based (including eye movement desensitization and reprocessing – EMDR), eight (33%) were PTSD inpatient programs, two (8%) were CBT studies, and three (13%) were classified as miscellaneous treatment studies (Goodson et al., 2011). In evaluating these studies, Goodson and his team found reasonable evidence to suggest that VA treatments (a requirement for inclusion in this analysis was that treatment be offered and received in a VA facility) are “moderately effective” as demonstrated by veterans self-reporting that their symptoms of PTSD, levels of anxiety and psychological distress, proneness to hyperarousal, etc., were lessened with these treatments (Goodson et al., 2011, p. 591). Effect sizes of the magnitude Goodson et al. found, suggests that “well over half of the combat veterans receiving treatment at VA settings would show improvement following their treatment,” (2011, p. 591) and “the average VA-treated patient fared better than 66% of patients in control conditions” (2011, p. 573).

Notably, despite previous studies which uncovered reluctance to utilize exposure-based interventions with veterans coping with PTSD (Boudewyns & Shipley, 1983; Fontana

& Rosenheck, 1993), Goodson et al.'s study's clearest finding "is that treatments with significant exposure-based components were effective in treating combat related PTSD, and as a broad category, appear to have the most empirical support" (Goodson et al., 2011, p. 592). Also, of note is the fact that while not all of the studies evaluated included longitudinal data (i.e. reports of PTSD symptoms after treatment is concluded), a number of those that did, reported that efficacy of treatments seemed to decrease as the veteran became further removed from active treatment (Goodson et al., 2011). Fontana and Rosenheck's (1997) analysis, which employed the largest sample (n = 785) within Goodson's et al.'s meta-analysis and considered 10 different programs, found this to be true noting that "following discharge, symptoms regressed toward admission levels" (Goodson et al., 2011, p. 581).

Haagen and his team (2015) observed similar findings in their analysis of 57 studies (n = 6878). Haagen's larger study considered a wider group of interventions (namely EMDR, exposure, stress management therapies, cognitive, cognitive restructuring, cognitive processing, and trauma-focused cognitive behavioral) and also found that exposure based treatments showed the greatest impact (2015) (note: whereas Goodson et al. included EMDR as an exposure therapy and cited its positive value, Haagen et al. did not find EMDR to have similar value and instead suggest it needs further evaluation) (Haagen, Smid, Knipscheer & Kleber, 2015). This analysis also pinpointed two other important observations: group therapy as a stand-alone intervention for veterans with PTSD is ineffective, and veterans whose PTSD fell into a kind of moderate range – as opposed to either low or high levels – experienced greater improvement with treatment (Haagen et al., 2015).

While these analyses demonstrate that current treatments are helping many veterans, several key considerations went unaddressed in these studies. In particular, are the following three. First, especially as many veterans have comorbid diagnoses (Haagen et al., 2015; Wahbeh et al., 2014), what is the role of those comorbidities and how might the VA better address comorbid diagnoses? Second (and Goodson et al. allude to this), is there a specific time at which “success” may be diminished or decreased? In other words, these studies lack a longitudinal perspective and it seems further analysis should be conducted concerning longer term efficacy of these treatments. Finally, and in particular because so many veterans are not only consuming an array of medications for physical and mental health complexities, but also because so many veterans are addicted to various legal and illegal substances, what is the role of medication in the treatment of PTSD? Perhaps even more challenging is how might the VA system move to a place of reduced reliance on prescription medication given the complexities of the veteran population’s relationship with both legal and illegal substances?

Ultimately though, these studies point to an even broader area of concern, especially as one ponders the fact that so many veterans commit suicide each day, and that is what happens with those veterans for whom standard or traditional treatments do not work. While existing treatments are yielding significantly positive results (Eftekhari, et al., 2013; Goodson et al., 2011; Haagen et al., 2015; Steenkamp et al., 2015), there remains a subset of veterans for whom these treatments are ineffective (Steenkamp, Litz & Marmar, 2020) and for whom alternative treatments may offer benefit(s). Unfortunately, given that so many veterans respond positively to the treatments typically afforded them (as detailed above), the fact that many alternative treatments have yet to be sufficiently tested and are thus not

considered evidence-based, and the reality that there are challenges associated with recruiting and employing personnel who are proficient in the techniques associated with alternative and complementary treatments, such treatments are offered only in varying manners and limited extents at VA facilities (Libby et al., 2012).

Alternative and complementary treatments

While the VA employs a particular array of treatments for PTSD, a range of alternative (i.e. in lieu of other treatment) and complementary (i.e. in addition to other treatment or adjunctive) treatments are now available for the treatment of PTSD and other conditions (Caddick & Smith, 2014; Libby et al., 2012; Metcalf et al., 2016; Rosenbaum et al., 2015; Rosenberg, 2012; Wahbeh et al., 2014). The National Institutes of Health, National Center for Complementary and Alternative Medicine defines complementary and alternative medicine as a body of distinct medical and health care systems, practices, and products that are not usually regarded as part of established medicine (National Center for Complementary and Alternative Medicine, 2008). To be more precise, “complementary and alternative medicine therapies are attractive because they use an integrative approach to healing and usually do not report side effects. Most complementary and alternative medicine modalities engage the healing process without trauma recall, and are thus, not trauma-focused” (Wahbeh et al., 2014, p. 162).

These alternative treatments, which vary widely and include utilizing practices like yoga, acupuncture, meditation, and even writing, have shown promise when utilized with various populations (Caddick & Smith, 2014; Libby, et al., 2012; Metcalf et al., 2016; Rosenbaum et al., 2015; Wahbeh et al., 2014), even if little research exists concerning their efficacy with respect to veterans specifically. What has been shown is that physical activity

in particular is effective in addressing PTSD's symptoms in both civilians and veterans (Caddick & Smith, 2014; Rosenbaum et al., 2015); symptoms other than those specifically related to PTSD are sometimes also improved (i.e. depressive symptoms, motivation to live, general and physical wellbeing, etc.) (Caddick & Smith, 2014; Libby, et al., 2012; Rosenbaum et al., 2015); physical activity has a positive impact on overall well-being (Caddick & Smith, 2014; Libby et al., 2012; Metcalf et al., 2016; Rosenbaum et al., 2015; Wahbeh et al., 2014); and a focus on the physical aspects of healing as opposed to a more myopic focus on the trauma itself, suggests that the exercise itself is less likely to induce distress (Caddick & Smith, 2014; Libby et al., 2012; Metcalf et al., 2016; Rosenbaum et al., 2015; Wahbeh et al., 2014).

It is clear that additional research is needed in order to advance alternative and complementary techniques even if existing research already suggests adjunctive therapies can and do provide benefit for those coping with PTSD (Caddick & Smith, 2014; Libby et al., 2012; Metcalf et al., 2016; Rosenbaum et al., 2015; Wahbeh et al., 2014). Interestingly, at least in the analyses considered for this review, no author discussed the real meaning of adjunctive therapy and/or what therapies a person or veteran might be receiving simultaneously (i.e. concurrent to Prolonged Exposure, CPT, etc.). Further studies on this topic that consider whether there is any difference in impact if a veteran is working through an exposure or CPT treatment in conjunction with participating in a complementary treatment would be beneficial. Likewise, analyzing various combinations of treatments in groups of veterans (i.e. those employing CPT and a complementary treatment such as yoga or those participating in Prolonged Exposure alongside a therapeutic writing program) may also reveal valuable and useful findings.

Notably, in the literature concerning alternative and complementary treatments is a discussion about the value of nature-based practices. Indeed, despite the fact that most research concerning effective treatment of PTSD focuses on evidenced-based treatments, there is a growing body of research that suggests for some, being in nature and activity therein is of benefit (Annerstedt & Währborg, 2011; Caddick & Smith, 2014; Cipriani et al., 2017; Clatworthy, Hinds & Camic, 2013; Frumkin et al., 2017). There is also a body of research that suggests that interacting with nature is beneficial for veterans specifically (Atkinson, 2009; Caddick & Smith, 2014; Dustin, Bricker, Arave, Wall & West, 2011; Duvall & Kaplan, 2014; Mowatt & Bennett, 2011; Poulsen, Stigsdotter & Refshage, 2015; Wise, 2015). Both Dustin et al. and Mowatt and Bennett reported that for veterans with PTSD, being in nature offered a space for reflection and this space was viewed as therapeutic (Dustin et al., 2011; Mowatt & Bennett, 2011). Dustin's team additionally found that veterans' experiences of interacting with the "bigness" of nature helped them put their own lives and struggles into perspective (Dustin et al., 2011), while Caddick & Smith's (2014) analysis found broader though similar "therapeutic" effects for veterans who engaged with nature as part of their healing process.

Nature

Though not a "theory" in the traditional sense of the word, the idea that nature represents a relaxing and healing environment and is fundamental to human life and wellbeing, represents a relevant construct for this study. Writing in the early 20th Century, conservationist John Muir remarked, "Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and reservations are useful not only as fountains of

timber and irrigating rivers, but as fountains of life” (as quoted in Fox, 1985, p. 116). Muir and countless others before and after him recognized humanity’s innate pull to nature, nature’s life-giving and sustaining qualities, and the fundamental manner in which nature enhances health.

With research begun in earnest by environmental psychologists Rachel and Stephen Kaplan, Dr. Roger Ulrich, and others, increasingly there exists an understanding that human beings not only function better when their/our lives are balanced with some amount of interaction with nature but that we are also physically, mentally, emotionally, and psychologically healthier (Bowler, Buyung-Ali, Knight & Pullin, 2010; Frumkin, 2001; Frumkin et. al, 2017; Hartig, Mang & Evans, 1991; Kaplan & Kaplan, 1989; Louv, 2011). Kaplan and Kaplan proposed the theory of attention restoration which holds that nature offers a specific type of surrounding which enables an individual to recuperate from attention fatigue, which is the result of the individual’s ongoing execution of cognitive tasks that necessitate continuous directed attention (1989). This restoration is prompted as individuals feel they are able to let go, to “be away” from their repetitive activities while they are in nature, and as they have the freedom to enjoy the “soft fascination” (i.e. with clouds, bugs, the breeze, etc.) that comes with even short moments outside (Kaplan, 1995). Stephen Kaplan provides a simple example: “Consider the factory worker, racing off during the lunch period, fighting traffic and distractions, in search of a spot in the shade of a tree for a peaceful break. If the peaceful effects were to be worn off totally by the time the return trip is made at the end of the hour, would this ritual be repeated again the next day?” (Kaplan, 1995, p. 174).

Dr. Roger Ulrich, an esteemed researcher who specializes in evidence-based healthcare design, offers a similar theory. His 'psycho-evolutionary' theory posits that nature facilitates psychophysiological stress recovery via instinctive responses to features within nature such as open space, water, and patterns (1983). Ulrich asserts that the experience of these properties generates positive emotional reactions (1983). Ulrich states elsewhere that “there is considerable evidence that restorative effects of nature scenes are manifested within only three to five minutes as a combination of psychological/emotional and physiological changes,” eliciting calm feelings, reducing negative emotions, diminishing stressful thoughts, and stimulating positive physiological changes (2002, p. 3).

In addition to the work of Rachel and Stephen Kaplan and Dr. Ulrich, Dr. Edward Wilson offers additional support for the contention that nature is critical to human existence. In 1984, Wilson offered his “biophilia hypothesis,” stating that biophilia represents the “innate tendency to focus on life and life-like processes,” and “the biophilia hypothesis proclaims a human dependence on nature that extends far beyond the simple issues of material and physical sustenance to encompass as well the human craving for aesthetic, intellectual, cognitive, and even spiritual meaning and satisfaction” (Kellert & Wilson, 1995, p. 20). The hypothesis asserts several prerequisites concerning the human tendency to seek and connect with life and life processes including the tendency is inherent (i.e. biologically based); it is part of our process of evolution; it facilitates the possibility of achieving personal meaning and fulfillment; it is associated with genetic fitness; and it engenders a human ethic of care, compassion for, and conservation of nature (Wilson, 1984). In short, because of our genetic composition and evolutionary history, we human

beings have an intrinsic love for nature which is commonly felt by all humanity (Kellert & Wilson, 1995).

Therapeutic horticulture

While ultimately what constitutes nature-based therapies is quite nonspecific, and a list of nature-based therapeutic modalities could be essentially limitless, for purposes of this study the author will specifically consider therapeutic horticulture. While the practice of incorporating horticultural activities to advance healing is not new, only in relatively recent times (i.e. the 19th and 20th Centuries) have clinicians begun to more thoughtfully consider nature's impact on health. Beginning in earnest with Dr. Benjamin Rush (a University of Pennsylvania professor and a man broadly considered the "Father of American Psychiatry"), who found evidence that field labor in a farm setting had curative effects on males exhibiting symptoms of mental illness (Rush, 1812), over the past 200+ years clinicians have increasingly come to appreciate the plethora of positive benefits elicited with time and work in nature (American Horticultural Therapy Association, 2017; Davis, 1997, p. 5).

"Therapeutic horticulture is the process by which individuals may develop well-being using plants and horticulture. This is achieved by active or passive involvement" (GrowthPoint 1999, p. 4). Different from "horticultural therapy" which is defined as the active participation of a client in horticultural activities to achieve particular goals within an established treatment, rehabilitation, or vocational plan under the supervision of a credentialed horticultural therapist (American Horticultural Therapy Association, 2015, 2017), "therapeutic horticulture" denotes a broader understanding of the manner in which horticulture can assist in healing. Not surprising, the manner in which therapeutic

horticulture is practiced is wide-ranging and constitutes a seemingly boundless array of methods to incorporate this treatment (i.e. “producing greenhouse crops, learning to make terrariums and bonsai, harvesting flowers, making dried flower arrangements, pulling weeds, and transplanting trees” (Relf & Dorn, 1995, p. 101)). Ultimately however, at its heart, therapeutic horticulture involves engagement with nature and ideally provides the participant with a pathway to improvement in symptoms and/or recovery through that engagement; the exact medium in which the therapy is delivered varies and is ultimately dependent on the needs of the client being served.

Though this modality is extremely versatile and has a wide variety of potential applications, studies of its efficacy are limited and research concerning therapeutic horticulture’s efficacy with respect to US veterans is lacking. Part of the challenge of assessing therapeutic horticulture – while also clearly one of the great advantages of the modality - lies in the fact that it can be offered in so many ways and under so many different circumstances, rendering its “success” particularly difficult to rigorously measure (Cipriani et al., 2017; Clatworthy et al., 2013; Kamioka et al., 2014). An additional challenge in terms of assessing therapeutic horticulture’s efficacy with respect to veterans lies in the fact that the VA does not currently consider the modality a best practice and/or a practice that facilities would benefit from employing, though more than a few VA facilities currently facilitate some type of gardening program.

That being said, in 2003, Sempik, Aldridge, and Becker conducted a sizeable analysis of over 300 articles which comprised the literature review of a larger study that aimed “to examine how social and therapeutic horticulture promotes social inclusion, health and well-being for vulnerable adults” (2003). Though they were less focused on clients with

mental health problems specifically, they concluded that “the reported benefits of social and therapeutic horticulture include increased self-esteem and self-confidence, the development of horticultural, social and work skills, literacy and numeracy skills, an increased sense of general well-being and the opportunity for social interaction and the development of independence” (Sempik, Aldridge and Becker, 2003). They postulate that the theoretical framework underlying therapeutic horticulture is the premise that nature can affect emotions, health, and behavior, stimulating “involuntary attention which requires no effort and is therefore restorative” (Sempik et al., 2003). Based on their study, the authors designed a model which illustrates humans’ innate attraction to nature and highlights the differences between and interrelatedness of active and passive interaction with nature (see Appendix C). The researchers further note that “the two groups of attributes are shown to be interconnected as one can lead to the other and vice versa. In most cases this exchange is desirable and intended; acceptance and inclusion should lead to peace and tranquility; and peace and tranquility can be the steps to acceptance, inclusion and rehabilitation” (Sempik et al., 2003).

In addition to Sempik, Aldridge and Becker’s analysis, a fairly small group of other researchers have considered the modality but have offered some valuable observations. Chief among these is the finding that even if not rigorously evaluated, people who have participated in therapeutic horticulture report improvement in their symptoms (“symptoms” in this instance is used very broadly to include a range of both physical and mental health conditions) (Cipriani et al., 2017; Clatworthy et al., 2013; Detweiler et al., 2015; Sempik et al., 2003; Sempik, Rickhuss & Beeston, 2014). Cipriani et al. and Clatworthy et al.’s analyses detailed these improvements, noting meaningful findings

including: decreases in depression and anxiety; positive advances with respect to self-esteem, social behavior, and personal relationships; improvements with respect to affect/agitation; progress with respect to mental well-being with specific improvements regarding paranoia, suspicion, depression, and anxiety; advancements in behavior/engagement, and cognitive functioning; decreases in stress and increases in ability to cope with life challenges; and enhancements in sleep (Cipriani et al., 2017; Clatworthy et al., 2013). Additionally, like Sempik, Aldridge and Becker's study, several pieces of research specifically note clients' improvement with respect to social functioning, interaction, and ultimately feeling a sense of inclusion (Diamant & Waterhouse, 2010; Harris, 2017).

However, as many of the researchers point out, even with the array of improvements noted in these meta-analyses and other studies, the fact remains that in order for therapeutic horticulture to be more widely practiced and seen as legitimate, more research must be undertaken that considers its efficacy (Clatworthy et al., 2013; Kamioka et al., 2014; Sempik et al., 2003). To date there simply does not exist a sufficient amount of scientific research – including randomized control trials - that systematically evaluates therapeutic horticulture (Clatworthy et al., 2013; Kamioka et al., 2014; Sempik et al., 2003; Stowell, Owens & Burnett, 2018). Clearly this reality represents an impediment to broader utilization of the technique, and while some have called for a more demanding approach in evaluating therapeutic horticulture (Frumkin et al., 2017; Frumkin, 2002; Sempik, 2007), that type of study remains to be undertaken.

Finally, as alluded to earlier, within this body of research there is precious little information concerning veterans specifically, and the potential value of therapeutic

horticulture for veterans. That being said, the following represent several small-scale studies which focus on American and other veterans.

Jacqueline Atkinson (2009) conducted an assessment of veterans participating in Combat Stress' Gardening Leave program. Housed at Combat Stress, the United Kingdom's ex-services mental welfare society in Ayrshire, Gardening Leave, a short-term horticultural therapy program, acts as an "add-on" to standard treatment provided to veterans who are struggling with combat related mental health issues. Offering a mixture of facilitated and independent activities, the program is open to both residents (attending the Combat Stress program) as well as those veterans who live within a reasonable distance. Atkinson aimed to evaluate this program asking two main questions: "1. What impact did veterans think this type of horticultural therapy project has had on them? Why and in what ways? 2. What impact did clinical staff think horticultural therapy has had? Why and in what ways?" (Atkinson, 2009, p. 3). She used a qualitative approach to broach these questions with staff and 44 veterans and came away with several key findings. Staff indicated that: the gardening program was beneficial, especially for veterans with PTSD; the gardening program acted as a great complementary treatment to other treatments offered; and veterans found improvement in terms of decreased levels of stress and increased concentration levels and mood (Atkinson, 2009). Veterans' responses to the qualitative interviews suggested that: for many the program was a "life-saver," providing structure and a sense of accomplishment; many found a renewed sense of purpose and appreciated the transferable skills they learned; mood and stress levels were improved and veterans generally enjoyed the physical nature of the activity which also led to improvements in

sleep; and veterans enjoyed the safe environment created by the program and the camaraderie with other veterans (Atkinson, 2009).

In a less academic writing, Barbara Kreski (2016) detailed her experience of working with veterans in Chicago at a botanic garden via “The Veterans Project,” a branch of programming offered by mental health provider, Thresholds. As an adjunct treatment for participants in The Veterans Project, a collaborative effort was formed by the Illinois Department of Veterans Affairs, the Chicago Botanic Garden, and Thresholds. In 2014, a pilot program was devised and undertaken wherein veterans enrolled in Thresholds programs attended a series of six half-day retreats at the Chicago Botanic Garden along with their therapists (Kreski, 2016). Though reporting was more anecdotal in nature, clinicians observed the following: veterans demonstrated progress in terms of movement toward recovery goals; veterans’ attendance was excellent even as some had to commute significant distances, indicating their commitment to and enjoyment of the program; socialization skills were improved; and veterans were able to deepen their understanding of personal wellness (Kreski, 2016). In addition, one of the most important take-a-ways was the fact that veterans felt safe in the space with Kreski elaborating: “They felt incorporated into the culture of the garden: not set apart or different, not in need of kidglove care, and not incapable of meaningful input into each retreat. The opportunity to spend several consecutive hours in a state of reduced stress, anxiety and hyper-vigilance was very meaningful to these men and women” (2016, p. 113).

More recently, though more limited in scope, Stowell et al. conducted a pilot program in Tennessee with 8 veterans, all of whom have mental health diagnoses (Stowell et al., 2018). The researchers designed and executed a five week horticultural therapy

program for these veterans which included pre and post-tests that assessed depression, anxiety and stress (Depression, Anxiety, Stress Scale-21 (DASS-21)) and quality of life (Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LESQ-SF) (Stowell et al., 2018). At the conclusion of the program depression scores were found to be significantly lower (though anxiety and quality of life scores reflected little change) and all the participants indicated that they not only enjoyed the program but would participate again and would recommend it to other veterans (Stowell et al., 2018).

In a similarly small study, Poulsen et al. utilized a ten-week nature-based intervention with eight Danish veterans diagnosed with PTSD and evaluated progress using semi-structured individual interviews and one focus group interview (Poulsen, Stigsdotter & Davidsen, 2018). The research team designed a program wherein the veterans attended a three hour session every week for ten weeks, with interviews conducted prior to the start of the program, at five weeks and then ten weeks (at the conclusion of the program), and then again at one year post-program completion (Poulsen et al., 2018). The sessions were structured with time allocated for: a walk to the therapy garden, a short gathering and check in, a mindfulness activity, an active gardening activity, and finally, time for private reflection (Poulsen et al., 2018). Though not every participant was available for every interview, the authors concluded the program to be successful as veterans reported: decreased physical symptoms; increased ability to engage in social activities; increased confidence with respect to handling difficult situations; and that living with PTSD had become easier (Poulsen et al., 2018).

Finally, in a somewhat larger study, Lehman et al. considered a slightly different dynamic among veterans participating at the Salem, Virginia VA inpatient Substance Abuse

Residential Rehabilitation Treatment Program (SARRTP) (2018). In this research, Lehman et al. were made aware that groups of veterans had independently and informally maintained a collection of raised bed gardens which were previously built but not currently being maintained (2018). Intrigued by this self-initiated and driven behavior, the researchers sought to learn more about it and found that since the initial pilot program had ended (in 2014), 50% of veterans enrolled in the SARRTP had independently (i.e. without supervision or direction) assisted in maintaining the gardens (through 2016), noting it to be a “meaningful stress reduction treatment modality” (Lehmann, Detweiler & Detweiler, 2018, p. 52). The authors summarized their findings stating: “these non-interventionist, therapeutic garden projects suggest the role of autonomy and patient initiative in recovery programs for veterans attending VAMC treatment programs and they also suggest the value of horticulture therapy as a meaningful evidence-based therapeutic modality for veterans” (Lehman et al., 2018, p. 50).

In short, the studies of Atkinson, Kreski, Stowell et al., Poulsen et al., and Lehman et al., portend hope for veterans and the use of therapeutic horticulture as a healing tool. However, each also represents more anecdotal research and unfortunately reveal little about the possible benefits of broader implementation of therapeutic horticulture programs in work with veterans. Regardless, and despite the lack of a voluminous body of academic research concerning the effects of therapeutic horticulture on veterans with PTSD, in order to better serve US veterans in the modern era, it seems expanding the toolbox of treatments available to veterans with PTSD is warranted. As articulated earlier, and in addition to the examples just presented, the literature does acknowledge that veterans who are simply in and attend to nature enjoy healing and greater well-being

(Caddick & Smith, 2014; Dustin et al., 2011; Mowatt & Bennett, 2011), and as Clatworthy's team noted, there is something even more valuable in being an active participant in that natural environment (2013). Given the varying needs of the millions of veterans VA facilities serve, including the great range of psychosocial experiences and traumas, along with the growing body of research which suggests the effectiveness of alternative treatments (including therapeutic horticulture), perhaps it is time to offer veterans the option of participating in therapeutic horticulture programs in an effort to advance their healing.

Therapeutic Horticulture Programs for Veterans: Linking Theory and Practice

Generally speaking, and to date, the academic literature that considers therapeutic horticulture programs is relatively scarce, and that which concerns program implementation at VA facilities and/or therapeutic horticulture's value to persons and/or veterans with PTSD is essentially non-existent. Toward this end, this dissertation employed a two-paper format wherein the first paper reviewed the literature associated with the genesis of the PTSD diagnosis along with its relevance for the veteran population, and additionally, appraised the literature concerning alternative and complementary treatments with an emphasis on the utilization of therapeutic horticulture in working with those diagnosed with PTSD. In this literature review, the author has attempted to more fully assess the rationale for using therapeutic horticulture with veterans coping with PTSD and build a case for utilizing this modality as an alternative or complementary treatment for PTSD.

To date little is known about the extent of therapeutic horticulture programs at VA facilities, hence the second paper in this dissertation seeks to describe and better understand existing VA horticulture programs utilizing surveys and interviews as mechanisms for collecting information. The researcher attempted to survey all VA facilities which have or have had a therapeutic horticulture program in recent years, and then conducted interviews with three facility representatives at programs with current therapeutic horticulture programs in order to gather more in-depth information. The researcher then synthesized the findings and concludes the second paper with important lessons for VA staff and facilities seeking to establish a therapeutic horticulture program at a VA facility along with recommendations for further study.

Paper Two: Breaking Ground: A Study of Existing Therapeutic Horticulture Programs at US Department of Veterans Affairs Facilities

Based on the researcher's preliminary exploration of therapeutic horticulture within the Department of Veterans Affairs, she had good reason at the outset of this study to believe that this type of programming was operational at more than a few VA sites. However, as this modality is not currently considered a "best practice" for treatment of any ailment at the VA, and therefore not utilized in a systemic way at VA facilities, the researcher had no way to gauge the scope of therapeutic horticulture programming. Given these gaps in knowledge along with the researcher's contention that therapeutic horticulture may offer a reasonable treatment for a range of ailments, this paper aims to assess the degree to which VA facilities are employing therapeutic horticulture programs, identify key findings and commonalities among programs, and consider relevant lessons for VA facilities seeking to establish therapeutic horticulture programs.

Theoretical Framework

Trauma. As a diagnosis in the Diagnostic and Statistical Manual of Mental Disorders (DSM), post-traumatic stress disorder (PTSD) was codified in 1980 with the DSM's 3rd edition. Though the introduction of PTSD in the DSM was not without controversy, with many claiming the Vietnam War politicized the APA and forced their decision to introduce this diagnosis (Becker, 2013; Lembcke, 1998). The introduction of the diagnosis represented a turning point in how clinicians consider trauma and its aftermath: "the significant change ushered in by the PTSD concept was the stipulation that the etiological agent was outside the individual (i.e., a traumatic event) rather than an inherent individual weakness (i.e., a traumatic neurosis)" (Friedman, 2018). In other words, the PTSD diagnosis revolves around an individual experiencing a precipitating traumatic event and

experiencing difficulty in adjusting subsequently, as opposed to the difficulty in adjustment being caused by some innate limitation (Courtois & Ford, 2013).

Since the adoption of PTSD as a diagnosable condition, the APA has modified its definition with each DSM iteration, and the criteria for what constitutes “trauma” has evolved and subsequently grown considerably wider. Whereas at one time PTSD was primarily associated with combat and the traumas soldiers endure in combat, the DSM-5 expanded “the universe of human problems considered pathological, further cementing the cultural role of individual diagnosis in a social world” (Becker, 2013, p. 178). Today a far greater range of human experiences qualify as precursors for PTSD. A car accident, sexual assault, being robbed, experiencing a natural disaster – all of these are now considered legitimate precursors for PTSD.

At its most basic level, “psychic trauma occurs when a sudden, unexpected, overwhelming intense emotional blow or a series of blows assaults the person from outside. Traumatic events are external, but they quickly become incorporated into the mind” (Terr, 1990, p.8). Trauma expert Dr. Judith Herman further expounds: “Psychological trauma is an affliction of the powerless. At the moment of trauma, the victim is rendered helpless by overwhelming force...Traumatic events overwhelm the ordinary systems of care that give people a sense of control, connection, and meaning” (Herman, 1992, p. 33).

With the widening understanding of the definition of trauma, including the recognition that trauma is not “uncommon” as early iterations of the DSM suggested (Herman, 1992), has come a broader acceptance of theory focused on trauma. Trauma theories aim to address the unique ways in which affected individuals respond to and cope with trauma, observing that reactions are complicated and involve emotional, behavioral,

psychological, and physiological responses (Bloom, 2013; Courtois & Ford, 2013; Crittenden, 1997; Rivard et al., 2004; Van der Kolk, 2014). Indeed,

...our ability to think clearly, logically, and in an integrated way is vulnerable to a multitude of stresses. These stresses can be biological, psychological, social, or moral, or any combination of these. Regardless of the kind of stress, our capacity for clear thinking is constantly jeopardized by physiologically based bodily and emotional reactions, over which we have little control and about which we often have little awareness (Bloom, 2013, p 20-21).

Not surprisingly, experiences of trauma can have lasting – sometimes lifelong – repercussions, especially as one recognizes that the event becomes psychologically and physically lodged in the mind and body (Pavlov, 1960; Perry & Szalavitz, 2017; Van der Kolk, 2014). To be sure, “a traumatic experience impacts the entire person - the way we think, the way we learn, the way we remember things, the way we feel about ourselves, the way we feel about other people, and the way we make sense of the world are all profoundly altered by traumatic experience” (Bloom, 1999, p. 2). Herman adds to Bloom’s assertion, stating:

The conflict between the will to deny horrible events and the will to proclaim them aloud is the central dialectic of psychological trauma. People who have survived atrocities often tell their stories in a highly emotional, contradictory, and fragmented manner that undermines their credibility and thereby serves the twin imperatives of truth-telling and secrecy. When the truth is finally recognized, survivors can begin their recovery. But far too often secrecy prevails, and the story of the traumatic event surfaces not as a verbal narrative but as a symptom (1992, p. 1).

When an individual experiences trauma, he/she/they feel a diminished sense of security, lacking the sense that they have a secure retreat in which to process what has transpired, and are subsequently rendered partially or wholly helpless (Bloom, 1999; Herman, 1992; Van der Kolk, 1987). The trauma is then lodged in the victim’s mind and body and “the human system of self-preservation seems to go onto permanent alert, as if

the danger might return at any moment” (Herman, 1992, p. 35). Dr. Sandra Bloom refers to this state of hyperarousal as an inability to “control the volume,” stating, “...usually, we respond to a stimulus based on the level of threat that the stimulus represents. People who have been traumatized lose this capacity to ‘modulate arousal.’ ... Instead of being able to adjust their ‘volume control’, the person is reduced to only an ‘on-or-off’ switch” (1999, p. 4).

Trauma affects individuals in uneven and disproportionate ways, depending on a variety of factors including, but not limited to, the developmental stage/age of the individual, prior experiences, social and familial support available to the individual, and the individual’s existing strengths (Ogden, Minton, & Pain, 2006). In addition, symptoms experienced by those having suffered a trauma can vary widely, from fairly minor to incapacitating. Trauma survivors often experience depression, anxiety, and flashbacks, and may struggle with common everyday duties and rituals. Ultimately, however, trauma is treatable and as the signature wounds of trauma are disempowerment and disconnection, “recovery, therefore, is based upon the empowerment of the survivor and the creation of new connections” (Herman, 1992, p. 133).

Object Relations Theory and Winnicott’s Holding Environment. At its core, “object relations theory fundamentally addresses the absolute, primary need for attachment and the harm that can come if that need is not met” (Flanagan, 2016, p. 129). Initially conceived of by Melanie Klein, this body of theories considers the process by which people come to understand themselves as independent of others and yet wholly in need of attachment to others, with both needs being profound and yet regularly at odds with one another (Flanagan, 2016). Object relations theorists assert that each and every

person is innately gifted with a way of knowing the world based on how an individual identifies with others, appraises others, and turns thoughts and feelings about others into perceptions of the self. The “object” in object relations theory is not only a relationship or relationships with another or others, “but it also includes a whole internal world of relations between the self and other, and the ways in which others have become part of the self” (Flanagan, 2016, p. 124).

Object relations theorists believe that early relationships between children and their parents, particularly their primary caregiver, are infinitely important and help shape individuals’ relationships for the course of their lifetimes. “The term ‘object relations’ refers to a theory about the development of specific intrapsychic structures that constitute an aspect of ego organization. An ‘object’ is a person, place, thing, fantasy, idea, or memory that is invested with strong emotion” (Applegate, 1990, p. 87). Object relations theory holds that as a child grows and develops, he/she/they learn to understand his/her/theirself and their environment and relationships as a direct result of the relationship they have with their primary caregiver. The theory posits that children who are raised by a loving, present, compassionate, etc. caregiver will be made to feel safe and will consequently feel safe when that caregiver is not around, confident about the caregiver’s return. The theory likewise holds that a child not raised in a safe environment will have a wholly different experience both as a child and adult. Thus, from a very early age, the shared “moments” between child and caregiver are established and the child recognizes that this is what relationships look like and are supposed to look like (Pine, 1987). Over time then, as a child has more experiences with their caregiver (and presuming the caregiver is a nurturing, loving, present caregiver), the child gains confidence in both him/her/theirself as well as in their

caregiver and begins to feel secure when the caregiver is absent (Applegate, 1990). In short, from a very early age, the degree to which relationships with others are healthy, positive, and consistent bears a significant impact on how that child will appraise the environment around him/her/theirself in the short and long term future.

Two concepts are key to object relations theory, though different object relations theorists have nuanced ideas of what the terms meant/mean. First is the idea that all children “split,” that is, they view things, people, places, etc. as either good or bad, happy or sad, etc. (Flanagan, 2016, p. 147). In part, and in order to reconcile competing thoughts, splitting functions as an early defense mechanism that protects the individual against pain in relationships (Scharff, 1996). While a defensive stance, the act of splitting is not all maladaptive; it can help people put order in chaos, differentiate good and bad, and aid in organizing feelings (Flanagan, 2016). Additionally, object relations theorists (especially Kleinian) suggest that phantasy has a role in development of the self. For Klein, phantasy is the earliest activity of a child’s mind; “...it constitutes the direct, unmediated manifestation of the instincts themselves” (Greenburg, 1983, p. 174). Kleinian object relations theory posits that any and every experience with significant people in a child’s life becomes internalized as that child seeks to preserve the memory; he/she/they then use this established set of introjects to help organize thoughts about the world, “and phantasies and anxieties concerning the state of one's internal object world become the underlying basis for one's behavior, moods, and sense of self” (Mitchell, 1981, p. 375).

Building upon the original tenants of object relations theory, Donald Winnicott postulated that a safe “holding environment” is crucial for a child’s healthy development. Though he uses the metaphor of the environment of a mother with her child, for Winnicott

“holding” is an “ontological concept that he uses to explore the specific qualities of the experience of being alive at different developmental stages as well as the changing intrapsychic-interpersonal means by which the sense of continuity of being is sustained over time” (Ogden, 2004, p. 1350). Winnicott used the term “holding environment” in two ways: to illustrate the biopsychosocial sphere in which children are cared for by their caregivers, and as a metaphor for the safe environment created with a positive and healing therapeutic relationship (Applegate, 1997; Flanagan, 2016), with the fundamental focus on “human-to-human relating” (Cushman, 1995, p. 253).

Important to social work practice generally speaking but without a doubt applicable to the veteran population as well is the fact that “an intact holding environment, past or present, cannot be assumed. Many, either through chronic deprivation, trauma in the past, or disruptive life crises in the present, have been let down or dropped” (Applegate, 1997, p. 18). With this in mind this researcher posits that re-introducing the concept of a holding environment in the form of a garden and/or therapeutic horticulture program to those veterans coping with PTSD may be a valuable exercise.

A garden as a “holding environment.” Fundamental to this study concerning the breadth of VA therapeutic horticulture programs, is the contention that gardens and therapeutic horticulture programs have the capacity to act as holding environments, to become spaces of healing for traumatized veterans. While various treatments may be and are utilized to help traumatized soldiers and veterans, given that the trauma may have severely damaged the individual’s sense of safety and ability to trust the introjects around him/her/theirself, this author posits that incorporating Winnicott’s idea of a holding

environment in the form of a garden and/or therapeutic horticulture program could prove healing.

As a restorative modality, therapeutic horticulture (i.e. involving the active participation of a client in horticultural activities (American Horticultural Therapy Association, 2015, 2017)) not only provides clients with access to nature and space to heal physically, but it provides the opportunity to engage with other people – including clinicians - in meaningful activity (Clatworthy et al., 2013). Via activities that encourage the participant to interact with nature in active or passive ways in the context of a safe space, a client is re-introduced to stability and feelings of security. In this space, clients/veterans feel safe to let their guard down, to relax in the beauty and splendor of nature, to physically interact with plants and nature, and to create meaningful bonds with both clinicians and other clients in a shared effort to heal.

For some, a garden or nature itself acts as a metaphor for the “good enough” caregiver, offering clients a supportive and caring environment and “stable objects of attachment” (Adevi & Mårtensson, 2013). For others, a clinician in conjunction with a garden or therapeutic horticulture program creates the new holding environment, with a clinician guiding his/her/their client through awareness and activities and together re-establishing the safe holding environment. Adevi and Mårtensson, in their qualitative study of five Swedish participants diagnosed with exhaustion disorder noted a garden’s capacity to act as a holding environment with one of their participants poignantly stating:

The garden consolidates and enhances the effects of relaxation exercises. The garden was like a curative balm. At times when I was terribly sad and had been seeing the psychotherapist, the garden was there to comfort me. I could seek out any part of the garden – choosing garden [room] according to my particular mood and feelings at the moment. It was a wonderful feeling of security. And it was greatly strengthened by the garden. Like a big embrace (2013).

In the case of traumatized veterans, who in some cases know few if any safe spaces due to the nature of their trauma, introducing this concept of a holding environment in the form of a garden offers hope where other treatments may be lacking. In other words, whether a garden itself acts as the holding environment or if it is the garden in collaboration with a clinician, the researcher would argue that a garden and the practice of therapeutic horticulture offer traumatized veterans the possibility of re-creating a safe, holding environment, with the space both literally and figuratively to heal from a range of conditions including PTSD.

Theoretical summary. In the case of many veterans who have endured an experience of trauma, on some basic level their humanity has been fractured along with their sense of safety and attachment. While the level of impairment due to the trauma and fracture is variable among veterans, this researcher would argue that re-establishing a veteran's primary support structure, including incorporating a safe holding environment, could be invaluable in a veteran's healing. Toward this end, this researcher would further argue that for some veterans a garden and/or therapeutic horticulture program offers a space which may prove extraordinarily curative with respect to re-developing healthy attachments and addressing the effects of their trauma(s).

Methodology

At the time of this project's inception, the researcher had identified 47 VA facilities throughout the United States thought to be employing or having had employed some kind of garden or therapeutic horticulture program (note: the list the researcher built included VA facilities which are employing horticulture programs very generally speaking and did not delineate what kind of program each facility executed specifically). In this section the

researcher outlines the methods she employed to better understand the scope of these and other VA therapeutic horticulture programs.

In advance of beginning this study, the author sought and received appropriate Institutional Review Board (IRB) approval through the University of Pennsylvania and the Corporal Michael J. Crescenz Veterans Affairs Medical Center (CMJC VAMC).

Preliminary actions. In advance of beginning this study the researcher spent several months compiling a list of VA facilities thought to have or have had a therapeutic horticulture program. This search involved simple google searches, searches via google scholar and other academic databases, seeking information via word of mouth, and searches of VA listserves and internal news articles. This preliminary search yielded 47 VA facilities believed to have or have had therapeutic horticulture programs. Importantly, in some cases, the appropriate VA staff was identified in the article or communication, but in many cases a VA staffer was not identified in the article.

With this as a starting point, the researcher assembled a simple excel spreadsheet (which was stored in a password protected file on a secure drive in the VA system). The researcher included in this spreadsheet: the name and location of the VA facility, the likely best point of contact, the contact person's telephone number and email address, and links to any relevant articles about that VA facility's garden program. For those VA facilities that seemed to have a therapeutic horticulture program but who initially lacked an appropriate point of contact, the researcher then undertook a search for the appropriate personnel using both google searches as well as cold calls to the facility.

Once the researcher had secured sufficient information for the facilities, she sent an initial email to each point of contact (from her VA email address to the point of contact's VA

email address). As denoted in Appendix D, the email served to briefly introduce the researcher and research agenda; request that the recipient identify the most appropriate point of contact; and ask that the recipient provide the name of their facility's director and director's executive assistant (to facilitate the researcher's communication with them). Per VA IRB stipulations, the researcher was required to inform the VA facility director of each facility of their facility's participation in advance of actually sending out the survey. The researcher then awaited responses from recipients, tracking these (both the response and the director and assistant's information) in the excel spreadsheet along with existing information.

With names of facility directors and assistants, the researcher then sent emails to each director and assistant via Microsoft Outlook and using the researcher's VA email address. As seen in Appendix E, the intent of the email was to make the director and assistant aware of this research project and the request that one of their staff participate in a brief survey, and possibly an hour-long interview. The researcher requested a "read receipt" from each director and so when emails were opened, the researcher then received a "read receipt" that confirmed the director was made aware of the research project. This action sufficed for the VA IRB requirement that each director be made aware of the project. With "read receipt" in hand, the researcher edited the spreadsheet to reflect her email had been read, then sent the survey, the oral consent form (see Appendix F), and VA Notice of Privacy Practices to the appropriate point of contact. The researcher requested that the point of contact sign VA form 10-0483 (Acknowledgment of the Notice of Privacy Practices), which indicates he/she/they had received the Privacy Practices and requested

return of the signed form. For those interviewed, the interviewee was asked to initial the Oral Informed Consent document and return the document to the researcher.

While many of these emails were met with enthusiastic responses from staff as well as directors and assistants, many others went unread and failed to solicit responses. In these cases, the researcher attempted twice more to reach an appropriate point of contact and/or to reach the facility director and assistant. Similarly, in some cases even with facility director sign off, the main point of contact failed to complete the survey. These points of contact were asked twice more to respond after the researcher initially sent the survey. Given the researcher had sufficient reason to believe these facilities actually have operational programs currently, the researcher thus feels it is safe to assume that every VA facility currently overseeing a therapeutic horticulture program was NOT included in this research.

In addition, throughout the entirety of the time the researcher was assembling this research and circulating the survey, she continued to seek out additional VA facilities with therapeutic horticulture programs. In addition, one of the questions on the survey asked respondents whether they had knowledge of other facilities with garden programs, and the researcher followed the process just articulated with 12 additional facilities (i.e. after the initial 47). Thus, after several months of building the initial list and then learning of additional potential sites (as survey responses came in with awareness of other potential sites), the researcher ultimately sent her outreach email to 59 VA facilities thought to have or have had therapeutic horticulture programs.

Survey of facilities. While the researcher was wholly interested in the more thorough analysis of the three interviewed VA facilities, she recognized the importance of

learning about other VA facilities which may also be offering some kind of gardening and/or therapeutic horticulture programming. Toward this end, she saw value in surveying these facilities in order to learn something about the extent of this programming.

With that in mind, the researcher used purposive sampling and contacted (via email) those facilities the researcher had identified as having or having had a therapeutic horticulture program (i.e. the 47 facilities mentioned earlier) to request that each facility complete a survey which was housed on the Qualtrics platform. The researcher asked that the survey be answered by the point of contact who was most familiar with the current program. The brief survey addressed the organization of the programs, including questions related to resources required, challenges faced, who participates, etc. (see Appendix G for survey questions). The survey was concluded by asking the respondent if they had any anecdotal reflections and asked if they were aware of additional VA facilities which were hosting therapeutic horticulture programs. When respondents offered the name of a facility of which the researcher was unaware, she then contacted that VA facility using the process described above.

While the researcher provided space for survey respondents to provide anecdotal reflections (if respondents were inclined to offer more information), the survey was intended to take only 15 – 20 minutes. As the researcher was aware of the time constraints so many VA staffers face, she recognized brevity is preferred and would ideally increase participation. In advance of sending the surveys to VA personnel, the researcher provided the survey to one non-VA employee currently facilitating a therapeutic horticulture program in order to better estimate how long the survey would take to complete. The participant took the survey, typing responses to each answer, and reported it took her 12

minutes to complete. This was before the researcher had uploaded the survey into the Qualtrics program which in theory should have required VA personnel even less time to complete.

In-depth interviews. From among the facilities the researcher had identified, she attempted to select three facilities with garden programs that closely resemble the CMJC VAMC in terms of: geographic setting (i.e. urban), size of population served, and facility design and constraints (i.e. as the CMJC VAMC lacks usable and/or appropriate green space on its own campus, the researcher sought other VA facilities which she believed may have encountered the same challenge). The researcher then requested to interview the VA personnel at these three selected sites who had previously responded to the survey. The conducted interviews represented an effort to glean more information about the development of the programs, the value of the programs to veterans with various ailments including PTSD, and facilitators' overall experience of their programs (see Appendix H for interview guide). With these interviews, the researcher sought to gain insights into not only the development of the programs at these facilities, but also how a therapeutic horticulture program might be implemented at the CMJC VAMC and/or at other VA facilities.

Importantly, in order to be included in this part of the analysis, gardening programs must have been currently operational and veterans must actually be participating in the therapeutic horticulture programs. In other words, for the interview part of this study, the researcher intended to include and analyze only those programs where veterans were actively participating in the programs as opposed to more passively observing some element(s) of horticulture or nature.

Once the researcher had identified the facilities she wished to interview, she contacted those staffers and conducted interviews using Skype Business, a program the VA uses internally to facilitate communication among employees, and also a safe and encrypted virtual platform that possesses the capability to record the interviews. After completing the interviews, the researcher then stored the content in a password protected file on her VA computer and proceeded to transcribe the interviews. She stored the transcriptions in password protected files on her VA computer.

After the interviews were transcribed, the researcher executed a qualitative content analysis and employed an inductive process as existing knowledge of the depth and breadth of VA-based therapeutic horticulture programs is not exactly clear (Elo & Kyngäs, 2008). Using the format Mayring (2004) codified (see Appendix I), the researcher reviewed and organized the transcriptions into specific categories containing similar meanings (Moretti et al., 2011), subjectively interpreting the “content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). The researcher sought to

formulate a criterion of definition, derived from theoretical background and research question, which determines the aspects of the textual material taken into account. Following this criterion the material is worked through and categories are tentative and step by step deduced. Within a feedback loop those categories are revised, eventually reduced to main categories and checked in respect to their reliability (Mayring, 2004).

In utilizing this method, the researcher sought to better understand via a systematic manner of categorization, what has been done at various VA facilities, by whom, and to what effect (Schreier, 2012). Her focus was on understanding the true meaning of respondents’ answers and assembling a deeper understanding of what was transpiring at these facilities. Ultimately, the researcher aimed to offer a glimpse of what VA therapeutic

horticulture programs look like, including how they were established, who is facilitating and who is participating, and what about the programs is or is not working.

Ensuring accuracy and objectivity. Vital to any study which employs qualitative methods is attention to the study's rigor and trustworthiness, with trustworthiness established according to the following criteria (and in parallel to quantitative methods' standards): a) credibility (as opposed to internal validity); b) transferability (instead of external validity/generalizability); c) dependability (in preference to reliability); and d) confirmability (in lieu of objectivity) (Guba, 1981; Lincoln & Guba, 1985). This study sought to ensure credibility by truthfully scrutinizing and communicating respondents' answers to the survey questions. In employing two additional readers, the researcher sought to hinder any bias which may emerge, and to more accurately portray what was communicated in the survey responses.

With respect to transferability, while the researcher recognizes the unique experience of veterans with PTSD, she also is cognizant of the fact that therapeutic horticulture may prove beneficial for other veterans and other populations. As Lincoln and Guba state (1985), "By describing a phenomenon in sufficient detail, one can begin to evaluate the extent to which the conclusions drawn are transferable to other times, settings, situations, and people" (p.306). As such, in this study the researcher intended to consider how her findings may be applied to other populations, and which populations in particular, as well as what future research might be indicated.

In terms of dependability, throughout the research process the researcher spent time reflecting on findings and revelations as well as challenges encountered (see following page 63). Among important revelations, the researcher was encouraged by the positive

response received by so many program facilitators as well as medical center directors and assistants; via email, many staff expressed enthusiasm for this project, interest in reading the researcher's final report, and excitement regarding the prospect of moving this modality forward. Another important finding *and* revelation is the fact that VA therapeutic horticulture programs are so incredibly varied with respect to funding, personnel, participants, etc. This researcher believes this to be not only a testament to the range of veterans who may see benefit from this modality, but also the adaptability of this type of programming.

Finally, in terms of confirmability, the researcher sought to avoid threats of subjectivity by employing two additional readers/coders. The researcher also addressed her own predispositions as part of the final analysis. Ultimately, the researcher aimed to present the survey results as an accurate and honest depiction of respondents' reports.

Findings

Survey findings. Twenty-three VA facilities responded to the researcher's survey request, with one facility reporting two distinct projects. Twenty responses indicated that their programs are currently active while three reported programs that are not currently operational. Responses were collected from the following sites: Fargo, ND, White River Junction, VT, Butler, PA, Perry Point, MD, North Little Rock, AR, Martinsburg, WV, Topeka, KS, West Los Angeles, CA, Waco, TX, Providence, RI, Ann Arbor, MI, Tampa, FL, Huntington, WV, Gainesville, FL (two different garden projects), Brooklyn, NY, Reno, NV, Long Beach, CA, Bedford, MA, Dayton, OH, West Palm Beach, FL, San Francisco, CA, and Portland, OR / Vancouver, WA.

From the survey responses, the following information was gleaned. First, most programs are currently operational, are in urban areas, and have been implemented in VA facilities that serve at least 10,000 veterans annually, with ten reporting they serve more than 50,000 veterans each year. Three programs are not currently active, with one survey response reporting staff changes and departures to be the main reason for the inactivity. Most programs have been operational for at least three years, with several indicating they have been functioning for far longer (i.e. decades). Most of the garden projects have been implemented on VA property. Only one facility reported receiving funding for their program from VA Central Office and none reported receipt of funding from their VISN (Veterans Integrated Service Network, also known as the VA's regions, though one respondent noted past receipt of funding from their VISN in their anecdotal comments); instead, most programs are or were funded by their own facility's budget, their voluntary services department, or outside sources (including employee "donations," as indicated in one respondent's anecdotal comments).

Interestingly, and important to note with respect to funding, is that this research project was undertaken during a time period in which the VA's Office of Rural Health was overseeing a grant program wherein they provided funding to ten VA facilities to support training veterans in agriculture (Department of Veterans Affairs, 2018b). The Veterans Affairs Farming and Recovery Mental Health Services (VA FARMS) pilot program awarded funding to ten facilities (Canandaigua VA Medical Center, VA Maryland Health Care System, Huntington VA Medical Center, VA Puget Sound Health Care System, VA Caribbean Health Care System, Madison VA Medical Center, VA Hudson Valley Health Care System, VA Butler Health Care System, VA Portland Health Care System, and VA New Jersey Health Care

System) to provide veterans with agricultural vocation training and behavioral health care services and treatment (Department of Veterans Affairs, 2018b). As the researcher's definition of "therapeutic horticulture" was intentionally broad and therefore inclusive of many activities including farming, she accordingly sought participation in this research by these facilities. Unfortunately, while the researcher attempted to contact each of these facilities using the same efforts as described above, she was unable to reach an appropriate point of contact in several of these facilities, ultimately and only three of these facilities participated in this research project.

Regarding the expertise of both those who worked to establish programs as well as those currently facilitating programs, the variety was found to be impressive, with only two facilities mentioning a "horticultural therapist" or a "whole health horticulturalist." The list included but was not limited to: psychologists, social workers, art, recreational, and occupational therapists, dieticians, psychiatrists, health promotion and disease prevention program personnel, peer specialists, nurses, physicians, vocational rehabilitation staff, patient centered care personnel, and even an anthropologist.

One of the most important survey findings was that in 20 facilities, veterans are actively participating in therapeutic horticulture programs at this time and while many programs have relatively few participants currently (i.e. 10 or less), five programs reported having more than 25 participants at this time, and 17 facilities reported that over 25 veterans have participated since their program's inception. The survey additionally found that more VA facilities actively facilitate or facilitated their programs (14) via structured or semi-structured programs, as opposed to encouraging/allowing veterans to participate in an unorganized fashion (9). As mentioned earlier, it is worth noting here too that the

researcher believes there exists unreported data which would only add to the extent to which veterans are participating in programs and the manner in which they are doing so.

Prominent themes. In addition to the survey findings just reported, from the surveys and interviews several themes emerged. One of the themes that arose is the importance of interdisciplinary involvement both in terms of galvanizing a facility to undertake a garden project, but also in terms of sustaining a program. As previously stated, the survey revealed a wide range of personnel who had both worked to establish programs, but also who currently oversee and/or have overseen the programs. The interviews further confirmed this, with the researcher speaking to three VA staffers with very different skill sets and expertise (an addictions counselor, a gardener, and a palliative care / hospice nurse practitioner), all of whom detailed some of the unique alliances built to both implement and sustain the programs. For several programs, service (i.e. nutrition, occupational or recreation therapy, mental health, etc.) participation has varied. One survey respondent stated:

At this point, horticulture therapy is overseen by the mental health department. The most regular programming is completed by our art therapist, however, there are working groups run by a community case manager. In the past, staff psychologists would bring individual clients as well as inpatient groups to the greenhouse... We are currently working to develop a program for veterans in our residential recovery program. Additionally, we may be starting a group that integrates primary care/nutrition.

Another survey response offered: "All populations are served, (e.g. Mental Health, Long Term Care, Residential, Substance Abuse Rehab., Outpatient, Vocational Rehab.)." This range speaks to the unique manner in which therapeutic horticulture programs have been implemented but also to the variety of veterans who may find benefit from therapeutic

horticulture as, for instance, an occupational therapist likely champions gardening for reasons different than a social worker or substance abuse counselor.

Several survey and interview responses detailed having involved community partnerships, volunteers, and various types of in-kind support. Two of the three interviewees noted that Eagle Scouts had designed their final service projects in support of the VA gardening initiative at those facilities, and responses also indicated VA facilities having received support from: garden clubs, local colleges and universities, master gardeners, businesses, church groups, nurseries, and other community groups. Several survey and interview responses noted the impact that even “small” in-kind donations of soil, lumber, tools, etc. can make, and thus the importance of building relationships with people outside the VA system. Several responses also noted the reciprocal nature of community partnerships in the shape of providing food for non-participants and one survey respondent reported that their VA’s gardeners had actually assisted another community organization in building gardens “so their populations can enjoy the benefits of therapeutic horticulture.”

Another theme to emerge had to do with the challenge of getting regular participation with some barriers being: weather, distance, transportation, addiction relapse, interest, and lack of incentive. Surveys and interviews noted the importance that staff play in filling the gaps when veteran participation lags, though several staff acknowledged that this can be taxing. In any event, it was especially evident during the interviews that despite this challenge, staff who are facilitating these programs seem especially accepting and ready to meet veterans who want to engage wherever they are at even if in some cases participation is irregular or erratic. One interviewee recounted that

one veteran in particular got very involved with the garden project and was getting a lot out of it, so much so in fact that he started clandestinely gardening other areas of the VA campus. The interviewee stated the veteran “got stopped by the police and they asked him what he was doing. It wasn’t in the volunteer garden – it was just on campus – so they kind of ran him off and he hasn’t come back yet... I’m hoping to get him back because it was really helpful for that veteran.”

Survey respondents and interviewees also shared perceived benefits of participation in garden programs. Several respondents indicated that the social interactions driven by participation in the programs was beneficial for some veterans, with a few responses indicating that in the absence of garden tasks (i.e. when there is no work to be done in the garden), facilitators seek other nature-based activities as a means to further engage the veterans. Another benefit cited is improved mental health. One interviewee described their process for assessing depression using the PHQ-9, which is a tool for measuring depression. This respondent noted that while it is difficult to assess over a long period as the assessment specifically asks about the past two weeks, the scores of several garden participants (i.e. symptoms of depression) were reduced.

All three interviewees made mention of the positive effect therapeutic horticulture has had on participants. One interviewee noted that participants who have become more involved are excited about what’s next and take pride and pleasure in sharing what they have learned, and another asserted: “They’re happy in the garden, they’re calm and peaceful and they tell me that.” Another interviewee, in reflecting on whether gardening offered benefits that may not be reaped by other treatments, stated that, “While they are in the garden working, they’re not thinking about their problems.”

In addition, one of the survey responses reported:

The Veterans find working in the garden helps them with their mental illness. We have Veterans who have started their own garden at home after working in the garden. It's not just gardening, but I have held groups there because of its therapeutic value, with flowers and ponds and plants there. Veterans love the area in the Summer time. Veterans love reaping the crops and cooking at home knowing it's fresh and they grew it themselves from seedlings.

Another offered:

The Gardening Group focuses on the intrinsic relationship between gardening and hope. We teach our Veterans that the very action of planting a seed in the soil requires hope. We try to encourage, I dare say impose, a sense of hope to our Veterans to facilitate their journey of recovery. A lot of our Veterans struggle with hope and oftentimes find little to hope for. Encouraging them to participate in activities based on the practice of hope is highly therapeutic and also provides countless physical, cognitive and social benefits.

An additional theme that emerged had to do with the challenge of implementing a therapeutic horticulture program from a bureaucratic standpoint. As the Department of Veterans Affairs is an extraordinarily massive bureaucracy, it is not surprising that several VA facilities commented on challenges borne by regulations, appropriately coding for billing, difficulties in gaining leadership support, etc. A survey response stated, "We have encountered far too many obstacles to name, some of which are funding, bureaucracy, campus rules, construction, and proper support from administration." Another added:

I was on a committee for about two years talking about starting a garden... We finally picked a location but nothing was happening so one day I brought five shovels from home and myself and five other veterans started digging. Within a week the director at the time called me up to his office and asked what I was doing so I told him we were starting a veterans' garden. Since we did not have permission, he said that was like the tail wagging the dog. He said that they were planning to use that location for storage boxes. He had been an officer in the Navy and supported vets so he said that since we already started, we could keep the location for the garden.

Finally, while perhaps not a theme in the same sense as those just discussed, one of the very important discoveries from the surveys and interviews is the great diversity of

therapeutic horticulture programming in VA facilities. Within VA gardening / therapeutic horticulture programs there is a wide array, from those that are very small with few participants, small budgets, and fairly spontaneous programming, to others that are quite robust, with considerable participation, significant funding, and solidified program structure. Several programs have been in existence for decades and are deeply ingrained in their facility's cultures whereas others are newly developed and developing. Thus, despite the fact that VA facilities vary in terms of resources, both financial and otherwise, there exists a variety of ways to implement therapeutic horticulture programs. Toward this end, even though this study represents a fairly small-scale assessment of VA therapeutic horticulture programs, given the breadth of implementation it seems deeper study and understanding of how VA facilities are executing this modality would be warranted.

Challenges. Throughout the survey process, and indeed even before the survey was opened, the researcher encountered several challenges. The most relevant included, first, the search for therapeutic horticulture programs and the identification of knowledgeable personnel. From the initial list of VA facilities identified and then those that were identified subsequently, only one VA identified "Horticultural Therapy" as a department at their facility on their facility's website. This meant that in order to find a staffer knowledgeable about this programming, the researcher placed dozens of cold calls to VA facilities, asking for recreation therapy or social work or anyone who may have some knowledge of who the right person was. Many times, the VA staffer who answered the phone had no knowledge of a program even if one existed at their facility, and yet in most cases the staffer was helpful in at least trying to identify someone else who was likely to have information if it existed. The results of this challenge meant not only that the process truly was like searching for a

needle in a haystack and quite time consuming, but ultimately the researcher simply could not find a point of contact for every program that she believes to exist and as such those programs were not included in this research.

Second, as the VA IRB required the researcher to notify each and every participating facility VA director of this research in advance of sending the survey to the appropriate personnel, and as several directors did not open these emails, several VA facilities, again thought to have programs, were not included in the survey. Thus, not only was there the additional challenge of identifying the director and assistant (as some staff did not provide information), but this also signifies a reason that the researcher believes the number of VA facilities with therapeutic horticulture programs to be underrepresented in this study.

Third, while the researcher initially envisioned using Zoom (an internet based conferencing system) for the interviews, she realized that using the Zoom platform to conduct interviews with VA personnel would prove challenging due to VA computer security settings. As such the researcher opted to change the interview platform to Skype Business, a program already installed on every VA employee's desktop and which has the capability to record. In making this change, the researcher notified the Penn IRB staff who indicated this was not a problem and no revision was necessary. The researcher then submitted the appropriate modifications to the VA IRB fully expecting an efficient turnaround as this change was minimal and theoretically should have been seen as utilizing a platform which was more secure. Unfortunately, this change resulted in a significant delay, first with obtaining IRB approval (which took approximately 1 month), and then in finding VA personnel who were actually able to turn the record feature in Skype Business on for the researcher (this required an additional six weeks).

Future Directions and Implications for Developing Therapeutic Horticulture Programs at VA Campuses

When the researcher began to conceive of this study, in the Fall of 2017, she had already been speaking with various personnel at the Corporal Michael J. Crescenz VA Medical Center (CMJC VAMC), (previously the Philadelphia Veterans Affairs Medical Center), for nearly a year about the idea of trying to develop a healing garden and therapeutic horticulture program at her home facility. Her hope in the Fall of 2017 was to establish this garden and conduct a pilot program to gauge whether therapeutic horticulture presented a viable complementary treatment for veterans coping with PTSD. However, despite her efforts and now well over 3 years of attempting to implement this project at the CMJC VAMC, she has been unsuccessful in that endeavor and the focus of this research was therefore modified.

Nevertheless, given the reports of VA personnel currently facilitating garden programs across the country (as documented in this study) and especially given the fact that so many of these projects are facilitated in urban settings, considering the implications for how to establish a therapeutic horticulture program at a VA facility is justified. What follows are the considerations the researcher has identified to be most pertinent based on this study in conjunction with her own experience at the CMJC VAMC. They are listed in no particular order.

Interdisciplinary involvement. One of the very important findings of this research is that having backing and cooperation from a variety of disciplines as well as facility leadership is crucial. The VA is a massive bureaucracy and individual VA facilities are large bureaucracies that function as such. Even with the best of intentions, an individual with an idea such as establishing a healing garden or therapeutic horticulture program can usually

only go so far. He/she/they must collaborate, build alliances, and gain support from their leadership. Ultimately too, he/she/they must be prepared for delays and unforeseen challenges.

Toward this end it is also important to highlight the fact that champions of therapeutic horticulture programs at VA facilities cover a wide range of professions and affect a variety of veterans. While some programs are embedded at VA Community Living Centers (i.e. VA skilled nursing facilities) and domiciliaries (i.e. VA residential treatment programs), others are rooted in Compensated Work Therapy Programs or in mental health interventions, and still others exist in no structured program at all. This breadth of implementation speaks too to the variety of veterans participating in the programs and to the range of benefits offered by therapeutic horticulture. A veteran in hospice care at a VA Community Living Center is reaping benefits different than those of a veteran participating in Compensated Work Therapy, or of those enjoyed by a veteran who occasionally stops by to water plants. In other words, the benefits are not solely physical or cognitive or social; benefits of this modality can be any of those or all of those and/or something different.

In short then, for a VA seeking to establish a therapeutic horticulture program, it would be wise for the program champions to seek interdisciplinary partnerships and leadership support, in an effort to promote a therapeutic modality that will possibly meet the needs of a variety of veterans.

Value of community partnerships. As 12 survey responses indicated community partnerships have been or were developed, and several responses also reported Eagle Scout projects having buoyed garden development, VA facilities looking to establish a therapeutic horticulture program would be wise to consider how and with whom to

partner. Especially in urban areas like Philadelphia, with an abundance of universities and students, as well as community organizations and businesses, building partnerships and seeking in-kind support (as allowable according to VA policy) is not only practical in the short term but possibly adds to program sustainability in the long term (i.e. given staff turnover and the ebb and flow of veteran participation). Moreover, in addition to the practicality and sustainability aspect community partnerships add, they also offer community involvement, and for veterans who are living at a Community Living Center or lacking opportunities for social engagement, being able to engage via gardening may be a life changing experience. Thus, VA facilities which are looking to establish therapeutic horticulture programs may wish to consider potential community resources and allies.

Creative thinking about logistics. As space is sometimes a barrier for developing programs at VA facilities, and as obtaining buy-in for a modality which is not currently considered “evidence-based” may be challenging, VA facilities looking to develop therapeutic horticulture programs may wish to think more imaginatively about how to incorporate a program. In the case of the CMJC VAMC, and likely for other urban VA facilities, a consistent obstacle to instituting a therapeutic horticulture program has been the lack of appropriate space and therefore, even though the researcher has sought and received interdisciplinary and leadership support, there exists a significant impediment to moving forward. For other VA facilities the hindrance to establishing a therapeutic horticulture program may involve concerns about the lack of research which demonstrates this modality’s efficacy.

In response to these barriers and based on this researcher’s experience as well as the survey and interview responses, the researcher suggests that VA facilities interested in

developing a therapeutic horticulture program attempt to more creatively consider implementation strategies. In other words, in a VA facility setting where space is an obstacle, program champions may wish to think about beginning a program using a small number of transportable raised beds. These portable raised beds could be relocated on a VA campus as necessary and would pose less of an investment in terms of committing to the modality should it be unsuccessful (i.e. as opposed to claiming green space and constructing a garden therein). Another strategy, especially for a VA seeking to overcome concerns about the modality itself, may be to introduce small scale horticulture related projects or activities (i.e. pressing flowers, building terrariums, assembling flower arrangements, incorporating indoor planters, etc.) which would allow veterans to experiment with the modality and to determine if there is broader interest. Ultimately, anticipating the concerns, thoughtfully considering them, and then planning accordingly will only smooth a champion's goal of implementing a therapeutic horticulture program.

Whole Health. In 2016 the Department of Veterans Affairs adopted the "Whole Health" approach to healthcare in order to attempt to better respond to the changing and increasingly complex needs of today's veterans. The VA's Whole Health website describes the approach as meaning: "Whole Health centers around **what matters to you**, not what is the matter with you. This means your health team will get to know you as a person, before working with you to develop a personalized health plan based on your values, needs, and goals" (Department of Veterans Affairs, 2019b). "The new personalized model and 'practice' of care starts with the Veteran at the center and begins with an exploration of their values and goals and their vision of health," and in combination with veteran self-care, attempts to help veterans in living their fullest life (Krejci, Carter & Gaudet, 2014).

Importantly, Whole Health aims to make use of all appropriate therapeutic modalities, involve a variety of health professionals and disciplines, and empower veterans in order to utilize inherent strengths and support veterans in seeking optimal health (Krejci et al., 2014).

Whole Health is now universally part of VA care and is relevant to include in a discussion concerning alternative and complementary treatments for health and mental health conditions, as several survey and interview responses acknowledged. The value of Whole Health lies in the manner in which it aims to put the entire veteran, as opposed to simply his/her/their ailments, at the center of their health plan, and then, theoretically at least, assist the veteran in meeting their life goals. Toward this end, it is reasonable to assume that not all veterans have needs/interests which are or will be served by current treatments and therefore, it may behoove VA facilities interested in developing therapeutic horticulture programs, to build their programs around the Whole Health platform and in earnestly asking “*what matters to you?*” Clearly not every veteran will say that he/she/they want to garden, but given the reports obtained in this research, therapeutic horticulture will likely hold promise for some. Ultimately, in seeking to advance a therapeutic horticulture program under the Whole Health umbrella, program champions can “sell” the modality as one which addresses holistic health care and components of the Personal Health Inventory (i.e. sleep, relaxation, exercise, relationships, etc.) (Department of Veterans Affairs, 2019c), and thus supports improved overall health.

Shared Conclusion and Recommendations for Further Study

I could give a workshop on what gardening has done for me. I don't know where I'd be. I'm a combat vet with significant PTSD and gardening was one of the things that saved my life. It's like playing basketball – shutting off your mind – but without all the running around. In basketball, your mind stops – I concentrate so hard – it is absolute relief from my thoughts. When I could no longer play basketball, gardening gave me that same satisfaction. When I'm there in the garden, there's nothing else. It's just quiet and peaceful. There is something really special about gardening. You get lost in it. Working the soil. Going to the nursery, creating designs, and then sitting there in this place you created. You can just sit there – with a coffee in the morning or a beer in afternoon – just watching the bees and butterflies and bugs, watching as different plants mature at different times. I never thought I could just sit there and be. I never thought this could give me so much joy (Corcoran, personal communication, 2017).

These words, spoken by the researcher's husband, speak to not only the impetus for this research but to the extraordinary potential of therapeutic horticulture, and succinctly summarize why this researcher believes the VA should consider wider adoption of therapeutic horticulture programs.

In a time when Americans are inundated by messages of “support the troops,” and “honor our veterans,” and simultaneously veterans continue to commit suicide at alarming rates, go homeless and hungry, face battles with addiction, and isolate themselves, it certainly feels as if more effort can be made to think of and offer innovative programs and therapies that may better address veterans' needs. While this researcher would not claim that therapeutic horticulture is a panacea to all the problems that plague the veteran population, nor would she argue that every veteran would be interested in and/or benefit from this modality, as this research shows, some veterans are reaping significant benefit by engaging in this practice.

Seemingly toward this end (i.e. recognizing that more can and should be done to holistically address the needs of veterans), in 2016 the Department of Veterans Affairs

adopted the “Whole Health” approach to healthcare, and Whole Health has now been introduced and implemented in various ways at VA facilities across the country. As the spirit of Whole Health is to change the clinician/client conversation from one which focuses on “what’s the matter with you?” to “what matters to you?” (Department of Veterans Affairs, 2019b), does it not seem appropriate to begin more sincerely asking veterans what matters to them and then designing interventions that speak to veterans’ preferences? As one interviewee for this research reported:

We had a medical center director that was trying to get people engaged in trying to improve the quality of lives of the veterans that we serve. And several of us got together and we brainstormed and we decided we wanted to do something – we weren’t really sure what. So for myself, I actually met with my veterans in the dining hall at the time, which was also the recreation hall, and I asked them, I told them that we wanted to try something new, some new ideas, new projects, new strategies, and they wanted to do something beyond bingo – they were tired of the status quo. And we brainstormed and basically what came out of that session was that they wanted to do things that reminded them of happier times and they wanted to be able to be involved with gardening, because that was something they recalled from their youth, victory gardens and so forth, and it made them happy to remember those times.

Ultimately, Whole Health is about doing exactly what this interviewee did: she asked veterans what mattered to them, she listened, and then together they acted. This researcher would contend that more conversations like this need to be had in order to provide veterans with better and more appropriate care. To be sure, this researcher would further argue that as current evidence-based treatments for illnesses such as PTSD enjoy mixed results (Goodson et al., 2011; Steenkamp et al., 2020), veterans’ lives increasingly depend on thorough and thoughtful implementation of the Whole Health model. Ultimately, this implementation must necessarily include the VA’s being open to new ideas and new therapeutic modalities.

In this spirit, perhaps it is time to more thoughtfully consider the developing body of anecdotal research that explores the impact therapeutic horticulture can have upon veterans with PTSD and a range of other ailments. Perhaps it is time to try to understand why a veteran would take the skills he has learned at a VA therapeutic horticulture program and then independently begin gardening on other parts of a VA campus. Perhaps too it would be worth listening to the reasons why veterans may be tired of the status quo and it would absolutely be worth talking with veterans who are participating in therapeutic horticulture programs about why gardening makes them happy and/or solicits feelings of peace and tranquility.

This is compelling evidence even if anecdotal and yet when combined with other anecdotal research, including perhaps most pertinently, Lehman et al.'s research focused on an inpatient substance abuse residential rehabilitation treatment program (SARRTP) (2018), it amounts to justification for not only further research but possibly for moving this modality in the direction of evidence-based practice. To be sure, as Lehman et al. reported, even when unprompted and without any facilitator or formal program, 50% of veterans in the program chose to engage in active and/or passive gardening activities at the Salem, VA SARRTP over two years (2018). These veterans, many of whom were coping not only with addiction and withdrawal concerns but also with depression, anxiety, PTSD, insomnia, nightmares, and other biological and psychosocial stressors (Detweiler et al., 2015), found the garden to provide a "safe haven," and helped them feel calm, serene, and refreshed (Lehman et al., 2018). The authors conclude:

The two years of autonomous, non-interventionist, horticulture therapy garden projects by 50 percent of the Salem VAMC SARRTP veterans strongly support the role of autonomy and self-discovery in recovery programs for veterans attending VAMC treatment programs. Moreover, the ardently pursued horticulture garden

project is a powerful statement by the veterans as to what they think is important and effective for them in addressing the multiple stressors that are interfering with their quality of life to the degree that they seek medical assistance from the Veterans Affairs Healthcare System. Given that there is an existing evidence-based foundation for the effectiveness of horticulture therapy, the authors suggest that horticulture therapy programs with some autonomy and self-discovery become a standard OT treatment option for all inpatient and outpatient veterans seeking care from the Veterans Affairs Healthcare System (Lehman et al., 2018, p. 53).

Given the body of evidence that exists concerning the efficacy of nature-based and therapeutic horticulture programs among the veteran and civilian populations, this researcher would agree wholeheartedly with Lehman et al.: there is a solid enough foundation to support wider adoption of therapeutic horticulture programs in VA facilities. With this, ultimately, this researcher hopes that inspired consideration of this modality along with broader implementation of therapeutic horticulture programs at VA sites will open the door to future study of programs' benefits and to this modality being considered evidence-based at some point in the future.

Recommendations for future study. Given that there seems to be reasonable interest in continuing this modality, as evidenced by the findings of this report as well as the fact that the VA Office of Rural Health invested significantly in the FARMS (Farming and Recovery Mental Health Services) project, further study seems appropriate. With respect to recommendations for further and/or future study, which could be essentially limitless, the researcher offers the following suggestions.

First, as the researcher has good reason to believe that at least several VA facilities with therapeutic horticulture programs did not participate in this study, and as this research only provided a basic snapshot of what VA facilities are doing with respect to therapeutic horticulture, a broader and more detailed analysis of VA therapeutic horticulture programs seems to be warranted. In particular, this researcher would want to

conclusively determine: how many VA facilities have therapeutic horticulture programs and what their programs consist of; how programs were conceived and how are they funded; who exactly is participating (i.e. veterans with PTSD, residents of VA Community Living Centers, participants in Compensated Work Therapy programs, etc.); and how are the programs sustained in terms of funding, personnel, etc.

In addition, and again as this modality lies outside of the range of what the VA currently would consider evidence-based, the researcher would suggest additional research focusing on the efficacy of therapeutic horticulture programs with respect to veterans with: PTSD, anxiety disorders, depressive disorders, social anxieties and/or isolation, military sexual trauma, etc. As reported by survey and interviews for this project, VA therapeutic horticulture programs are serving veterans with a wide range of health and mental health concerns, as well as a range of ages and physical abilities. A deeper understanding of the actual impact of therapeutic horticulture programs and how the programs are impacting veterans with specific ailments, could go a long way in helping to increase the extent to which this modality is considered evidence-based.

Appendix A

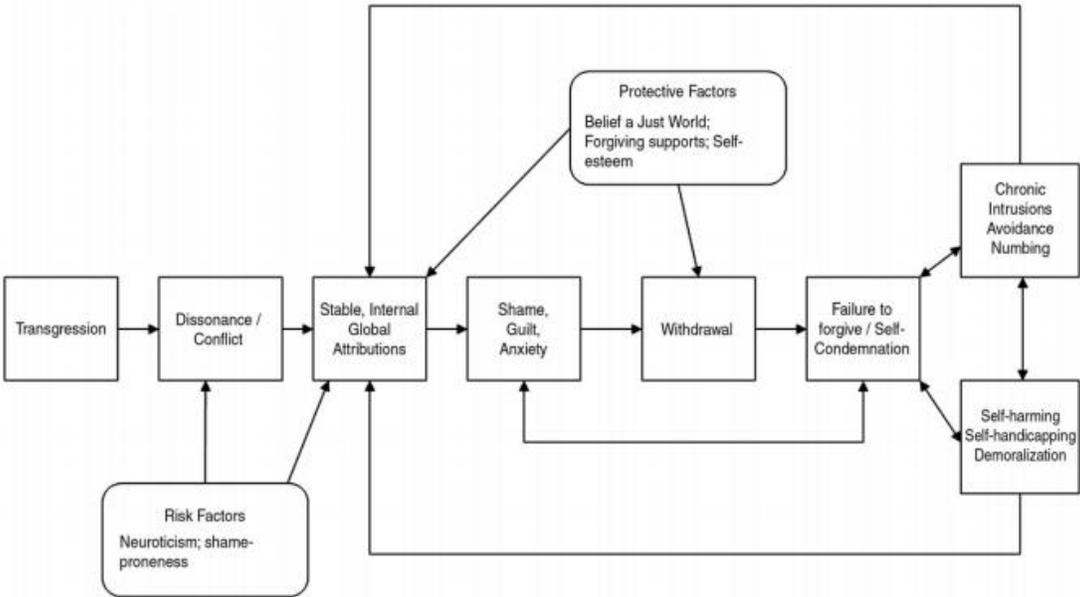


Fig. 1. Working causal framework for moral injury.

Litz et al., 2009

Appendix B



	PTSD	Moral Injury
Triggering Event (A1 Criterion)	Actual or threatened death or serious injury	Acts that violate deeply held moral values
Individual's role at time of event	Victim or witness	Perpetrator, victim, or witness
Predominant painful emotion (A2)	Fear, horror, helplessness	Guilt, shame, anger
Reexperiencing (B Criteria)?	YES	YES
Avoidance or numbing (C Criteria)?	YES	YES
Physiological arousal level (D Criteria)?	YES	NO
What necessity is lost?	Safety	Trust

See: Litz B.T, Stein N., Delaney E., Lebowitz L., Nash W.P., Silva C., & Maguan S. (2009). Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clinical Psychology Review*, doi:10.1016/j.cpr.2009.07.003.

Figure 1. What is missed by current conceptions of PTSD?

Shay, 2014, p. 185

Appendix D

Dear VA Colleague,

My name is Cherie Eichholz and I am a social worker at the Corporal Michael J. Crencz VA Medical Center (CMJC VAMC), (previously the Philadelphia Veterans Affairs Medical Center). I am also a social work doctoral student at the University of Pennsylvania. I am writing to invite you to participate in my research study about therapeutic horticulture programs and their use with the veteran population at VA facilities. You're eligible to be in this study because your VA facility has been identified as one which has or has had a therapeutic horticulture program of some type. I obtained your contact information from the VA's internal Outlook address book.

If you are interested in participating in this study, I would ask that you respond to my email with a reply email and indicate the following:

1. If you are the most appropriate person to address questions related to the garden project or if someone else is more familiar with the project, can you provide their full name.
2. The name of your facility's director and your director's executive assistant. In order to comply with the VA IRB's (Institutional Review Board) directive, I have been asked to make the director of each participating facility aware of your participation in this study. I will then email each director and executive assistant to advise of your participation.

I will then ask you to complete a survey that is designed to take no longer than 15 minutes via Qualtrics (which is similar to Survey Monkey). In addition, I will contact 3 facilities and request a facility representative participate in a more in-depth interview, which will be recorded and transcribed. I will use all the information to try to describe the extent to which VA facilities are employing therapeutic horticulture programs and some of the ways in which they are doing so.

No compensation will be provided for your participation. Remember, this is completely voluntary. You can choose to be in the study or not. If you'd like to participate or have any questions about the study, please email or contact me.

Thank you very much.

Sincerely,
Cherie Eichholz, LSW
cherie.eichholz@va.gov
215.823.5800 x3340

Appendix E

Dear VA Director,

My name is Cherie Eichholz and I am a social worker at the Corporal Michael J. Crencz VA Medical Center (CMJC VAMC), (previously the Philadelphia Veterans Affairs Medical Center). I am also a social work doctoral student at the University of Pennsylvania. I am writing to make you aware of a small study I am doing and have invited one of your employees to participate in. In order to comply with the VA IRB's (Institutional Review Board) directive, I have been asked to make the director of each participating facility aware of your facility's participation in this study.

My dissertation focuses on the use of therapeutic horticulture with veterans. Your facility is eligible to be in this study because your VA facility has been identified as one which has or has had a therapeutic horticulture program of some type. As such, I would like to learn a little more about what your facility is doing with respect to therapeutic horticulture. Toward this end I have invited (employee name) to participate in a survey that is designed to take no longer than 15 minutes via Qualtrics (which is similar to Survey Monkey). In addition, after collecting survey responses, I will contact 3 facilities and request a facility representative participate in a more in-depth interview, which will be recorded and transcribed. I will use all the information to try to describe the extent to which VA facilities are employing therapeutic horticulture programs and some of the ways in which they are doing so.

If you have any questions about the study, please email or contact me.

Thank you very much.

Sincerely,
Cherie Eichholz, LSW
cherie.eichholz@va.gov
215.823.5800 x3340

Appendix F

 Department of Veterans Affairs	Non-Veteran Oral Research Consent Document Corporal Michael J. Crescenzo VA Medical Center
Title of Study: <u>Therapeutic Horticulture as a Healing Tool for Veterans</u>	
Principal Investigator's Name: <u>Cherie Eichholz, MSW</u>	
number: <u>2, 11/7/2019</u>	Version date and version

Principal Investigator's Complete VA Address:
Cherie Eichholz, MSW
3900 Woodland Avenue, Social Work Service
Philadelphia, PA 19104
Cherie.eichholz@va.gov
215.823.5800 x3340

Name of Study Sponsor: n/a

WHY AM I BEING ASKED TO VOLUNTEER?

You are being invited to voluntarily participate in a research study because your VA facility has been identified as one which has or has had a therapeutic horticulture program of some type. The researcher obtained your contact information from the VA's internal Outlook address book. Your participation is voluntary, which means you can choose whether or not you want to take part. If you choose not to participate, there will be no loss of benefits to which you are otherwise entitled. Before you can make your decision, you will need to know what the study is about, the possible risks and benefits of being in this study, and what you will have to do in this study. The study doctor and/or the research team will talk to you about the research study. You are encouraged to discuss this study and consent form with your family, friends, or family doctor. You may find some of the medical language difficult to understand. Please ask the study doctor and/or the research team about this form.

WHAT IS THE PURPOSE OF THIS RESEARCH STUDY?

The purpose of this research study is:

This study seeks to better understand the alternative treatment of therapeutic horticulture and its current utilization at VA facilities in the United States. Therapeutic horticulture is utilized in health facilities in the US and abroad and consists of participants using plants and nature to improve well-being. Different from horticultural therapy which utilizes a much more regimented protocol, therapeutic horticulture denotes a broader understanding of the manner in which horticulture can assist in healing. Not surprising, the manner in which therapeutic horticulture is practiced is wide-ranging and constitutes a

seemingly boundless array of methods to incorporate this treatment (i.e. producing greenhouse crops, learning to make terrariums and bonsai, harvesting flowers, making dried flower arrangements, pulling weeds, and transplanting trees). Ultimately however, at its heart, therapeutic horticulture involves engagement with nature and ideally provides the participant with a pathway to improvement in symptoms and/or recovery through that engagement; the exact medium in which the therapy is delivered varies and is ultimately dependent on the needs of the client being served. With this research, the author aims to examine the extent to which therapeutic horticulture has been implemented at VA facilities and learn more about how exactly VA facilities are implementing the practice.

HOW LONG WILL I BE IN THE STUDY? HOW MANY PEOPLE WILL BE IN THE STUDY?

You will be involved with this study for the amount of time it requires to complete a survey (approximately 15 minutes).

You will have 0 (zero) visits at the Corporal Michael J. Crescenz VA Medical Center (CMCVAMC).

We plan to enroll 0 (zero) individuals from the CMCVAMC and anticipate enrolling 30 representatives from other VA facilities.

*Note: If you are asked to be interviewed, the researcher requests 1 (one) hour of your time.

WHAT AM I BEING ASKED TO DO?

- You are being asked to complete a brief survey that requests you to provide information about your VA facility's therapeutic horticulture program.
- The survey will be sent to you via email and will be housed on the Qualtrics website. Based on test response to this survey, the research anticipates the survey will take 15 minutes to complete.
- Of those facilities that respond to the survey, the researcher will ask 3 facility staffers to take part in a more in-depth interview. This audio interview will last approximately 1 (one) hour and will occur using the VA's Skype system.
 - Audio recordings will be NOT be disclosed outside of the VA and will be reviewed only by the Principal Investigator.
 - If you are requested to participate in an interview, and agree to do so, the researcher asks that you place your initials in this box (and return to the researcher) in order to confirm that you have reviewed this document.
- The survey and interview are designed to try to describe the extent to which VA facilities are employing therapeutic horticulture programs and the ways in which they are doing so.
- No compensation will be offered for your participation.
- Participation is completely voluntary.
- All study procedures will be done from the researcher's home facility. Respondents will not be required to travel for any purpose.

WHAT ARE THE POSSIBLE RISKS OR DISCOMFORTS?

The researcher has identified no risks for participants in this study.

WHAT ARE THE POSSIBLE BENEFITS OF THE STUDY?

You may not benefit from participating in this research study.

WHAT OTHER CHOICES DO I HAVE IF I DO NOT PARTICIPATE?

You have the choice not to participate in this research study. Participation is voluntary and you do not have to participate if you do not want to.

FUTURE USE OF DATA AND RE-CONTACT, if applicable.

Once research is complete and appropriate records forwarded to the National Archives and Records Administration VHA's Records Control Schedule, researcher will work with privacy officer and/or information technology to destroy all data.

WILL I HAVE TO PAY FOR ANYTHING IF I PARTICIPATE IN THIS STUDY?

You will not have to pay for any research procedures or tests that result from participating in this study.

WHO CAN SEE OR USE MY INFORMATION? HOW WILL MY PERSONAL INFORMATION BE PROTECTED?

Information that will be used: During the course of this study, no personal information will be collected. Your name will not be associated with your responses to the survey and/or interview.

If you have an accident or reaction during the course of the study, and you have a VA medical record, this medical record may be used and disclosed as clinically necessary.

Internal monitors from the CMCVAMC Institutional Review Board (IRB), a research oversight committee, may inspect study records for quality assurance.

The results of this study may be published; however, you will not be identified by name or other personal identifiers. Further, if you have a VA medical record, your medical records will not be revealed unless required or authorized by law.

All research records, including the investigator's research records, must be retained according to the National Archives and Records Administration VHA's Records Control Schedule.

SPECIAL CIRCUMSTANCES

n/a

WHAT SHOULD I DO IF I HAVE BEEN INJURED OR EXPERIENCE A MEDICAL PROBLEM?

It is important that you tell the study doctor, Cherie Eichholz, if you feel that you have been injured because of taking part in this study. You can tell the study doctor in person or call her at 215.823.5800 x3340.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?

You understand that you do not have to take part in this study, and your refusal to participate will involve no penalty or loss of rights to which you are entitled. You may withdraw from this study at any time without penalty or loss of VA or other benefits to which you are entitled. If you withdraw, you may be asked to return for a final study visit in order to assure your safety. Even if you withdraw, we can continue to use information about you that has been collected up to that point. No information will be collected after you formally withdraw.

This study is expected to end after all participants have completed all visits, and all information has been collected. This study may also be stopped at any time without your consent because:

WHAT ARE MY RIGHTS AS A RESEARCH SUBJECT?

You have read or have had all of the above read to you. Cherie Eichholz has explained the study to you and answered all of your questions. You have been told of the risks or discomforts and possible benefits of the study. You have been told of other choices of treatment available to you.

In case there are medical problems, research related injuries or questions, you have been told that you should call Cherie Eichholz at 215.823.5800 x3340 during the day, or at xxx.xxx.xxxx after hours.

If you would like to discuss problems, complaints, concerns, or questions with someone who is not directly associated with your participation in this study or you have any questions regarding your rights as a research subject, or you want to check the validity of the study and its personnel within the VA, you should contact the Research Compliance Officer at 215-823-7847 or the Patient Representative at 215-823-5803 from 8:00 AM to 4:30 PM Monday through Friday.

If you have concerns or complaints about the research study, you should contact the research staff involved with this study at 215.823.5800 x3340.

As a research subject, we value your input into how research is conducted at the CMCVAMC. If you would like to offer suggestions and opinions, or if you would like to participate in future discussions of research in Philadelphia, please call the Research and Development (R&D) Administrative Officer at (215) 823-6020 or R&D Associate Chief of Staff at (215) 823-5893.

Every reasonable safety measure will be used to protect your well-being. The CMCVAMC will provide necessary medical care and treatment for any injury that is a result of

participation in this study for Veterans. Compensation for such an injury may be permitted by applicable federal laws and/or regulations. The VA is not required to provide treatment for injuries in research studies if the injuries are caused by your non-compliance with study procedures.

There will be no cost to you for participation in this study. However, some Veterans are required to pay co-payments for medical care and services provided by the VA. These co-payment requirements will continue to apply to medical care and services provided by the VA that are not part of this study. If you decide to participate in this study, you cannot be charged nor your insurance billed, for research-related interventions or procedures that are required by the protocol.

You voluntarily consent to participate in this study. You have read this consent document or it has been read to you; it explains what this research project is about and how and why it is being done. A copy of this consent will be given to you or sent to you via postal mail along with a VA Notice of Privacy Practices.

Appendix G

Therapeutic Horticulture as a Healing Tool for Veterans: Survey

Is your garden / therapeutic horticulture program ongoing/operational at this time?

Response: Yes or no

Where is your VA facility located? Would you describe the location as urban, suburban or rural?

Response: Please indicate the city and state
and select one: Urban, Suburban or Rural

How many veterans does your facility serve annually?

Response: 10,000 or fewer, 10,001 – 50,000, or over 50,001

When did your gardening / therapeutic horticulture program begin and who (i.e. psychologists, social workers, etc.) worked to establish the program?

Response: 3 or fewer years ago or more than 3 years ago

Response: (circle all involved) psychologists, social workers, physicians, nurses, other mental health staff, physical therapists, occupational therapists, recreation therapists, facility leadership, others (please specify)

Who facilitates the garden / therapeutic horticulture program currently?

Response: (circle all involved) psychologists, social workers, physicians, nurses, other mental health staff, physical therapists, occupational therapists, recreation therapists, facility leadership, others (please specify)

Does your program operate on VA property?

Response: Yes or no

From where does funding come for your garden / therapeutic horticulture program?

Response: VA Central Office, your facility's VISN, your facility's budget, your voluntary service department or other (please specify)

Have you developed in-kind partnerships with local businesses, schools, etc.?

Response: Yes or no

Do veterans actively participate in your program (i.e. by planting, pruning, weeding, etc.)?

Response: Yes or no

If veterans actively participate, are they provided guidance by staff?

Response: Yes or no

If veterans are actively participating, is the program structured in terms of sessions and/or learning objectives? Or is it more free flowing / organic?

Response: Program is (at least somewhat) structured or veterans participate as they wish and are able

How many veterans are currently participating?

Response: 10 or fewer, 11 – 25, over 26

How many would you estimate have participated since your program's inception?

Response: 10 or fewer, 11 – 25, 26 – 50, over 50

Are you aware of other VA facilities that are employing some kind of therapeutic horticulture program? If yes, please list those facilities.

Please feel free to share other information regarding your program's inception or ongoing process, including any obstacles your program has encountered.

Appendix H

Therapeutic Horticulture as a Healing Tool for Veterans: Interview Guide (for 3 facilities to be examined in depth)

Opening question: Please tell me about the gardening / therapeutic horticulture program at your VA facility.

Content question: Please talk about the evolution of your gardening / therapeutic horticulture program at your facility.

- Probe: What was the process/timeline for establishing the gardening / therapeutic horticulture program at your facility?
- Probe: Who championed the project? And why?
- Probe: What were some of the obstacles?
- Probe: Are other community partners and or in-kind sponsors involved? If yes, who is involved and how was this partnership cultivated?
- Probe: Would you please describe the physical space in which your program takes place (i.e. raised beds, at a nearby park or church, on your grounds, etc.)?

Content question: Please describe the types of activities that take place in your garden and/or with your therapeutic horticulture program.

- Probe: Are the activities structured? If yes, how?
- Probe: Do veterans participate individually or are they part of groups?
- Probe: Is there a series of sessions? If yes, how many, and can you describe what the sessions consist of?
- Probe: Who facilitates the sessions?
- Probe: Have you involved a licensed horticultural therapist?

Content question: Who participates in your facility's gardening / therapeutic horticulture program(s)?

- Probe: Is any veteran welcome to participate or are you working with veterans who have been given a specific diagnosis (i.e. those with serious mental illness or PTSD, or those with physical and/or occupational needs, etc.)?
- Probe: If a specific group, how did you come to work with this group?
- Probe: How are participants chosen? Do they volunteer or are they recruited by providers or are they chosen in a different manner? If another manner, please explain.
- Probe: If your program is group based, would you speak to the social interactions between veterans during the horticultural exercises?
- Probe: Is participation documented in CPRS (the VA's recordkeeping system)?
 - Are there notes associated in the veteran's medical record to account for these services?

- How is participation in your therapeutic horticulture program captured and coded?

Content question: Could you speak to the results you have seen?

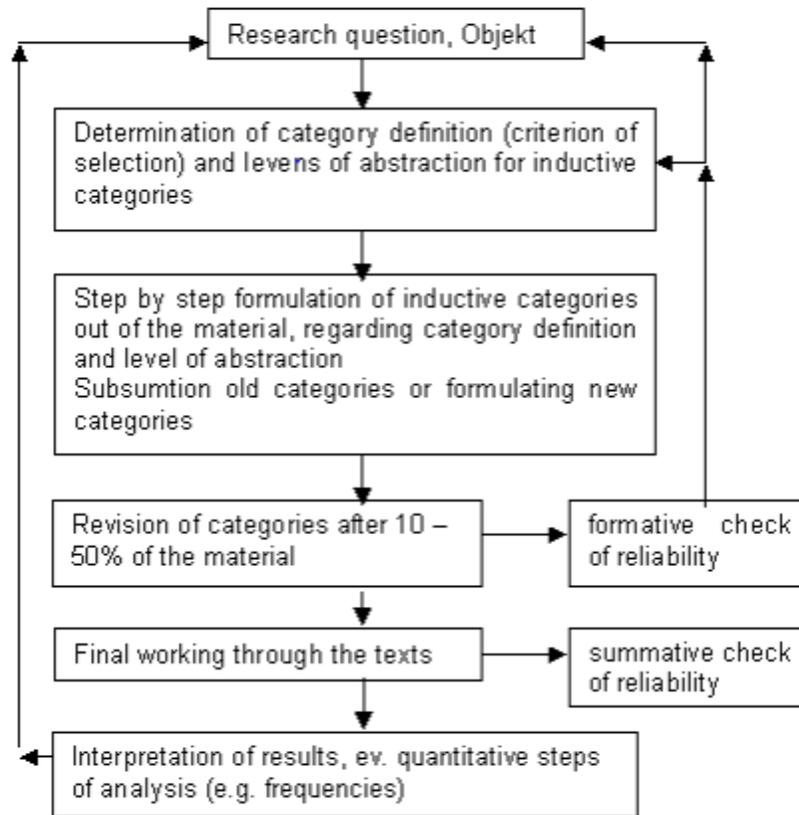
- Probe: Are you collecting data that pertains to the impact of your program? If yes, what are you seeking/measuring?
- Probe: Has there been an impact on individual veterans? Can you describe what this has looked like?
- Probe: Can you think of an instance where there was or has been an especially poignant impact? If yes, could you tell me about it?
- Probe: Have you analyzed your program in other ways? If yes, please describe.

Content question: Based ONLY on your experience with your VA's program, what value do you see in therapeutic horticulture programs for veterans?

- Probe: Do you think there would be value in wider adoption of therapeutic horticulture programs by individual VA facilities and/or the VA nationwide? If yes, why? If no, why not?
- Probe: Are there benefits that therapeutic horticulture may provide veterans that are not realized with other treatments? Can you say more about this?
- Probe: Can you think of reasons why therapeutic horticulture may not be appropriate for veterans? If yes, please explain.

Concluding question: Is there anything else I should have asked and/or anything else you would like to make sure is included in your response?

Appendix I



Step model of inductive category development (Mayring, 2004)

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