

A Feasibility Study of Tai Chi Easy for Spousally Bereaved Older Adults

by

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ABSTRACT

Spousal bereavement is one of the most stressful life events, resulting in increased morbidities and mortality risk. Negative health outcomes include depressive episodes, anxiety, sleep disruption, and overall poorer physical health. The older adult population is rapidly increasing and over 30% of the US population 65 years and older are widowed. Current studies regarding older adults and spousal bereavement treatment have been limited to psychological and educational interventions. Meditative movement practices (e.g. Tai Chi) have shown benefits such as mood elevation, anxiety reduction, and other physical function improvements. A feasibility study applying an 8-week Tai Chi Easy intervention was examined to address the sequelae of spousal bereavement among adults 65 and older. Grounded in geriatric nursing as a discipline that addresses the unique needs of older adults' psychological and physiological health needs and related theoretical constructs, this project also draws from exercise science, mental health, and social psychology. Theoretical premises include Orem's Self Care Deficit Theory (nursing), Stroebe and Schut's Dual Process Model (thanatology), and Peter Salmon's Unifying Theory (exercise). Aims of the study examined feasibility as well as pre-post-intervention changes in grief and the degree of loss orientation relative to restoration orientation (Inventory of Daily Widowed Life). A trend in the direction of improvement was found in measured subscales, as well as a statistically significant change within the loss orientation subscale. Based upon these encouraging findings, effect sizes may be used to power a future larger study of similar nature.

DEDICATION

To my mother and friend Sheila Ann Hammer:

Thank you for all the last minute, late night, and unending unconditional support. You always reminded me to take care of myself when I needed it. You helped me with anything I asked within a moments notice. I could not have completed this without your help, love, and support. Thank you is not enough to show my gratitude.

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Chapter 1

INTRODUCTION

Statement of the Problem

Older adults are the fastest growing age group and the loss of a spouse is a significant psychological and physical health threat for this population (Elwert & Christakis, 2008; Hart, Hole, Lawlor, Smith, & Lever, 2007). Negative health outcomes include sleep disruption, depressive episodes, anxiety, impaired immune function and overall poorer physical health (Bruce, Kim, Leaf, & Jacobs, 1990; Phillips et al., 2006). Martikainen and Valkonen (1996) found an increase in mortality in both men and women when a spouse dies. A 2011 study established that widowhood is a causal factor in the increase of mortality risk of the surviving spouse (Boyle, Feng, & Raab, 2011). The institutionalization rate in the older adult population has been noted to immediately increase after the loss of a spouse (Nihtila & Martikainen, 2008; Strohschein, 2011). The increase of morbidity and negative health ramifications render loss a very difficult and challenging life change for the older adult population.

In the U.S., the 65 years and older population is projected to double from 38.7 million (2008) to 88.5 million in 2050 (US Census Bureau, 2010). According to the United States Census Bureau (2010), in 2008 18.3% of the United States population aged 55 and older are widowed and in the 65 years and older group the percentage increases to 29.8%. This is an 11.5% increase in widowhood in only ten years. This specific population is prone to financial, physical, psychological

and social issues, thus compounding the loss of a spouse. The median income of adults older than 65 is \$24,857 (United States Social Security Administration Office of Retirement and Disability Policy, 2010) and may be substantially decreased with the loss of a spouse. Financially, older adults are on a fixed income and the loss of a spouse or significant other may result in a decrease of the household income. A decrease in income may mean the surviving older adult must leave their home, leading to another loss. Another significant consideration is that about 75 % of older adults have at least one chronic condition, possibly restricting them from reentering the work force and managing other activities of daily living (Agency for Healthcare Research and Quality, 2002). These financial and physical considerations may have severe consequences when the loss of a spouse is sustained.

Psychologically, the older adult depression rate is 2 million and another 5 million are estimated to have subsyndromal depression. The suicide rate among older adults is higher than the general population with 14.3 of every 100,000 people aged 65 and older in 2004 (National Institutes of Mental Health, 2011). As the mean age of the population increases, the rate of elder depression and suicide is predicted to increase as well. In 2006, 15.7% (fifth highest in the US) of adults aged 65 years or older in Arizona reported that they “rarely” or “never” received the social support they needed compared to the US rate of 9.8% (Centers for Disease Control, 2006). Taking into account the following; a) the growing number of the aging population; b) the higher concentration of widowed among

the growing older age categories; c) negative physical, and psychological statistics of the older adult population; and d) the financial ramifications of spousal loss suggests a need to focus on this subgroup of at-risk individuals, and to build and refine the evidence base for what might help alleviate some of these physiological and psychological sequelae of loss.

Aging and Physical Activity

Aging presents a variety of structural and functional changes. Various organ systems and tissues experience physiologic changes that may have an effect on daily activities and overall quality of life. Falls are a significant issue in the older adult population. Many older adults fear falling, leading them to inactivity, muscle atrophy, balance issues and ultimately increasing their risk for falls (Tennstedt et al., 1998).

Life stressors, such as spousal loss, have the potential for negative impact on health as well as health behaviors such as physical activity (Wilcox & King, 2004). Grimby, A., Johansson, Sundh, & Grimby, G. (2008) found that the first years of grieving for a widow has been associated with slower walking speed, possibly due to the time restraints initially on managing life without one's partner, or may be sequelae of the emotional distress affecting physical vitality.

Regular exercise has a plethora of advantages for all ages, including older adults. Benefits of regular exercise include risk reduction of heart disease, stroke, obesity, depression, and anxiety. Unfortunately only 31% of older adults age 65-74 engage in 20 minutes of moderate physical activity on a regular basis and this

figure decreases with increasing age (Healthy People.gov, 2011). Women over 75 years of age (largest category of spousally bereaved) may be the most sedentary group, as high as 53%. (American College of Sports Medicine et al., 2009). According to Healthy People 2020 the current goal is to decrease the physical inactivity of adults from the current 36.2% to 32.6%.

Inactivity, and the often-associated overweight, is expensive. Over 70% of the U. S. older adult population is overweight or obese (Patterson, Frank, Kristal, & White, 2004). In 2000, the total costs of U. S. overweight and obesity combined was estimated to be \$117 billion (Center for Disease Control, 2011). Every year, fall-related injuries associated with poor balance, strength, and coordination among older people cost the nation more than \$20.2 billion. By 2020, the total annual cost of these injuries is expected to reach \$32.4 billion (Agency for Healthcare Research and Quality and the Centers for Disease Control, 2002). Lifestyle changes, that include physical activity, have the potential to decrease obesity and falls, ultimately reducing healthcare expenditures that are so costly.

Physical activity has been shown to provide symptom relief for clinical depression, anxiety, sleep and other health problems. (Blumenthal et al., 1999; Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Mather, 2002; Rosenberg, 2010; Sjösten & Kivelä, 2006). Physical activity, in the context of a supportive group environment, may be an effective interventional approach to support bereaved spouses and has not been empirically tested. Exercise that is gentle, easy

to learn and adopt, and that may be practiced safely in small group settings may be an appropriate choice for elderly bereaved spouses.

Bereavement Intervention Research

The majority of interventions directed at reducing suffering in older adults during spousal bereavement have focused on the psychological aspect (Caserta, Utz, Lund, & de Vries, 2010; Levy, Derby, & Martinkowski, 1993; Lieberman & Yalom, 1992; D. Lund, Caserta, Utz, & de Vries, 2010; Segal, 2001). There are mixed reviews from experts in the thanatology field regarding the effectiveness of current bereavement interventions (Currier, Neimeyer, & Berman, 2008a; Tudiver, Hilditch, Permaul, & McKendree, 1992). Support group interventions have shown effectiveness when interaction includes positive, supportive communication, but there is a lack of strong scientific evidence acknowledging that the benefit is due to the intervention and not other confounding factors (Constantino, Sekula, & Rubinstein, 2001; Larson & Hoyt, 2007; Schut & Stroebe, 2005; Sikkema, 2004).

A major confounding factor for bereavement studies is the passage of time. In a recent review of bereavement studies for older spousally bereaved adults, improvement was noted in the outcome measured for each intervention compared to baseline, however the inclusiveness of bereavement interventions seem to exist due to the improvement of the intervention group as well as the control group resulting in a lack of statistical significance between the two groups in the majority of the studies (Nseir & Larkey, In press).

As stated previously, time can be a healing factor and some bereaved individuals may be able to effectively manage their own symptoms without bereavement intervention (Stroebe, Stroebe, Schut, van den Bout, & Zech, 2002). As individuals in control groups appear to also improve over time, even if not at the same rate as the intervention groups, this limits power, making intervention effects difficult to distinguish from naturally occurring healing over time. Even further complicating the ability to detect intervention effects, experts in the thanatology field posit that early grief interventions for uncomplicated grief may have the potential for a more harmful than helpful effect, possibly interfering with progression of the “normal” grieving process (Currier, Neimeyer, & Berman, 2008a; Schut & Stroebe, 2005; Tudiver, Hilditch, Permaul, & McKendree, 1992).

Of the published research testing interventions for supporting spousally bereaved older adults, only one study showed a significant improvement compared to a control group. The results from this study combining psychoeducation with a novel approach, Dan jeon, a form of meditative movement appears promising (H. Y. Kang & Yoo, 2007). Kang and Yoo (2007) used a self-help group activity along with Dan jeon in a small sample ($n=27$) of spousally bereaved women. A statistically significant ($p < .001$) decrease in grief levels was found with the Dan jeon intervention as compared to a health check control group. Furthermore, symptoms of stress were significantly reduced in the Dan jeon group after treatment as compared to the control group ($p < .001$). This is a promising study but limitations included a small non-random assignment

sample and restricted to two Korean cities.

Research involving bereavement and physical activity interventions or description of behavior is sparse. Psychotherapy and peer support groups continue to be the common support systems for helping individuals who request assistance through the most often painful process of mourning. However, it has been established that not all individuals will respond to these aforementioned methods. Exercise may be a novel intervention for grieving individuals that may have a multitude of added physical and psychological benefits.

Meditative Movement

Many psychological and physical benefits have been reported with the practice of TC/QG. For example, an improvement in depressive symptoms, have been reported with TC/QG practice (Chou et al., 2004; H. W. H. Tsang & Fung, 2008; W. W. Tsang & Hui-Chan, 2006). A recent review of TC/QG in older adults concluded that TC/QG was particularly effective with populations who were initially clinically depressed (Nseir & Larkey, 2012 under review). Other benefits include increased self-esteem, (Kutner, Barnhart, Wolf, McNeely, & Xu, 1997; L. Lee, Lee, & Woo, 2007) improved physical functioning, (F. Li, McAuley, Harmer, Duncan, & Chaumeton, 2001; F. Li, Fisher, Harmer, & Shirai, 2003) sleep quality, (M. R. Irwin, Olmstead, & Oxman, 2007; F. Li et al., 2004) cardiovascular improvement, (Chang R. et al., 2010) improved immune function, (M. R. Irwin, Olmstead, & Oxman, 2007) balance and falls prevention (Fransen, Nairn, Winstanley, Lam, & Edmonds, 2007; Gatts & Woollacott, 2006; F. Li,

Fisher, Harmer, & Shirai, 2003; F. Li, Fisher, Harmer, & McAuley, 2005) and the promotion of social integration (Jancewicz, 2001) are positive outcomes of TC/QG. Promising results have been reported for people with conditions such as arthritis, lupis, and fibromyalgia (Centers for Disease Control, 2010).

In support of a mind-body exercise for spousally bereaved older adult, a recent qualitative study found nine out of 11 bereaved older adults (aged 55 and older, mean age of 70.6) would be willing to participate in a group physical activity program specifically for the spousally bereaved older adult population (Nseir & Larkey, Unpublished manuscript) and, to this date, there have not been other physical activity or mind-body interventions tested for effects with older spousally bereaved adults. Given the lack of interventions that are actually helpful to older spousally bereaved adults and the empirical evidence presenting the advantages of meditative movement, there is a strong possibility that meditative movement may be highly beneficial to older spousally bereaved adults during their time of mourning.

Theories of Bereavement, Grief, and Mourning

The conceptualization of bereavement, grief, and mourning has evolved over the last few centuries. The English naturalist, Charles Darwin documented the first scientific conceptualizations of grief as he studied the facial expressions and behavior of social birds and mammals (Darwin, 1872). Sigmund Freud then laid the theoretical foundation in *Mourning and Melancholia* (Freud, 1917/1953) theorizing that grief served to detach thoughts and feelings from the dead person

so that the bereaved person can develop new attachments and move forward in life. This led Freud to develop the concept of grief work, postulating that the person in mourning engages in an active process of continued confrontation with memories and thoughts of the deceased in order to give up the attachment and disengage from the deceased. He thought pathological grief resulted from either conflicting feelings about the deceased or lack of adequate grief work. Freud's work had been the theoretical underpinning for many studies in the thanatology field into the 20th century.

To decrease confusion, it is important to define terms commonly used in thanatology. As defined by M. S. Stroebe, Hansson, Schut and W. Stroebe (2008), bereavement is the situation of having lost of a loved one through death. Grief is the affective reaction to the loss of a loved one through death and mourning is the public display of grief, including beliefs and practices (such as religion) of a culture or society. Having a well-defined comprehension of these terms will provide a better understanding of the theoretical strengths and limitations that will be presented.

To explain the expansion of bereavement and grief theories, it is important to have a grasp of the attachment theory. In 1969, John Bowlby, a British psychologist/behaviorist, identified distinct features in the infant-mother relationship. He described the infant as having behaviors to nurture the attachment (e.g. smiling, babbling) and loss reactions (e.g. crying, searching) when separated from their mothers thus developing the attachment theory to explain this

phenomenon. Bowlby speculated that there is a biological foundation to the attachment behavior to keep the mother in close proximity, thus increasing survival. Behaviors that illustrate the attachment (or lack of) to a particular person include separation anxiety, despair, and detachment. Bowlby (1969) applied the attachment theory mainly to explain child-parent behavior but recognized that the attachment theory also applied to loss behavior in other ages as well. Contrary to infants, adults are able to comprehend the finality of death. Grieving and mourning behaviors are akin to the attachment theory, with the loss being a threat to an individual's emotional and possibly physical survival, even in adulthood. Bowlby examined the research of Colin Murray Parkes, a British psychologist, ultimately leading to the description of phases of grieving. Parkes had conducted research noting the same behaviors during grieving as described in the attachment theory (Parkes, Benjamin, & Fitzgerald, 1969; Parkes, 1970). Searching, yearning, anger, anxiety, and protest are some of the behaviors noted during separation of an attachment figure in infants and adults. From the aforementioned work, the following four phases of grief were conceived: 1) numbness, 2) yearning and protest, 3) disorganization and despair, and 4) reorganization. This was also during the time period when Elizabeth Kubler-Ross introduced specific stages of grieving similar to Bowlby and Parkes that became very popular within the public (Kubler-Ross, 1969). These stages consist of the following: 1) denial and isolation, 2) anger, 3) bargaining, 4) depression, and 5) acceptance. A criticism was that the work of Kubler-Ross was not the result of rigorous research,

but rather based on her professional observations and experiences. As research has progressed, theories with set stages or phases have been criticized for their linearity and structure arguing that human emotions are very individualistic and not linear. However, these ideas stimulated the conceptualization of the grief process to move forward.

Utilizing concepts from the attachment theory, Klass, Silverman, and Nickman (1996) presented the Continuing Bonds Theory and began a new movement in the field of thanatology. The potential value or dysfunction of an ongoing or continuing relationship with the deceased is the premise of this theory. Bereavement, the actual event of loss, initiates the mourning process that encompasses the feelings and reactions of grief. The loss of a loved one changes the relationship between the deceased and the mourner but an ongoing relationship continues to exist. Contrary to Freud's ideas, there is no final disengagement, but rather a metamorphosis of the relationship between deceased and bereft. Testing the actual theory of continuing bonds (CB) is sparse (M. Stroebe, Schut, & Boerner, 2010), with empirical studies utilizing the concept but not testing the actual theoretical basis of CB in adults (Epstein, Kalus, & Berger, 2006; Field, Gal-Oz, & Bonanno, 2003; Waskowic & Chartier, 2003) and even fewer concentrating on the older adult population (Bennett, 2010; Nseir & Larkey, Unpublished manuscript). The exception to this is the examination of the CB theory by Field, Gao, and Paderna (2005). The authors concluded that individual differences in attachment styles determine whether effective or

ineffective CB are used. For example, anxious-preoccupied attachment style in an adult is thought to develop through the unavailability and lack of response from the primary caregiver during childhood (Mikulincer, Shaver, & Pereg, 2003). An excessive emotional dependence on the spouse is usually the result of this insecure attachment style leading the bereft individual to have a heightened reaction to the loss, that may ultimately lead to complicated grief (Neimeyer, Prigerson, & Davies, 2002). The ineffective CB seen with this type of insecure attachment style are the excessive use of the deceased's belongings in hopes of reestablishing a closeness with the deceased, even with the realization that the loved one is deceased (Field, Gao, & Paderna, 2005).

Factors associated with the loss (e.g. relationship to the deceased, manner of death), culture, and spirituality also have a strong influence on how CB are employed. A study of 506 young adults within the first two years after bereavement were found to have several factors that affected their CB with the deceased; the relationship to the deceased and the nature of the death. However, if meaning-making of the death was established, heightened levels of distress were decreased, and bereavement complications (e.g., complicated grief) declined (Neimeyer, Baldwin, & Gillies, 2006).

Another contemporary model is Stroebe and Schut's Dual Process Model (DPM) of Bereavement (1999; 2001). This model describes the grief process as dynamic with oscillation between the two dimensions of stressors as a key component (Figure 1) to effective adaptation. The loss orientation (LO) side refers

to grief work, ruminating about the deceased, denial or avoidance of changes during mourning. The restoration orientation (RO) side involves distraction from grief, doing new things, identifying with new roles and relationships and attending to changes in life. As depicted in figure 1, LO and RO is occurring as daily life continues around the person. In 2001, Stroebe and Schut amended the DPM to incorporate positive and negative meaning construction/reconstruction recognizing the important role that meaning making plays during the grieving process within both dimensions of the model. Stroebe, Schut, and Boerner (2010) explain that the DMP is compatible with various attachment styles, mental representation processes, and coping styles.

Caserta and Lund (2007) derived a measurement tool in an attempt to quantify the oscillation process of the DPM. From a sample of 163 bereaved spouses, aged 45-94 years, it was concluded that the more recent the loss (sample was bereaved 2-5 months) the more oscillation between the two dimensions of stressors occurred. The final questionnaire, the Inventory of Daily Widowed Life (IDWL), is a 22-item scale with 11 LO and 11 RO focused questions in a Likert-scale format. Alpha coefficients of .90 (LO) and .79 (RO) were produced from this study. Greater emphasis was seen in the RO dimension among spouses who had been bereaved for a longer period of time (sample was bereaved 12-15 months) versus greater oscillation balance for individuals in the early stages of bereavement (2-5 months bereaved). Greater LO and less RO were associated with more grief, depression, loneliness and lower bereavement coping self-

efficacy. Individuals with greater RO were associated with greater perceived self-care and personal growth.

From this study, Caserta and Lund identified five dimensions of oscillation other than balance that are suggested for future research; depth (overall oscillation into both dimensions), frequency (how often an individual moves back and forth between dimensions), awareness of the oscillation, control over the oscillation, and motive (purpose that the individual has for being in one dimension or the other). These categories are not assessed by the IDWL but are helpful to better explain the grieving process in terms of this model.

To test the DPM, Lund, Caserta, Utz, and DeVries (2010) conducted a 14-week randomized controlled trial. A participant sample of 298 (61% women) aged 50-93 years old were randomly assigned to receive either a LO only focused intervention (control), or a primarily RO focused intervention. The LO group utilized traditional support group methods that focused on the actual loss and related emotions. The RO group included the LO information but also incorporated discussions of how to cope with secondary stressors such as finance changes, adjusting to new roles as a single person, examining the changes in life, allowing and encouraging the emotional processing of these practical issues, but focusing less on the emotional processing of grief and loss. Both groups demonstrated change over the time of the intervention, with no statistical differences between groups on the use of the RO coping component.

From the quantitative and qualitative data gathered in this study the

authors concluded that directly targeting particular RO stressors post bereavement does not necessarily increase an individual's oscillation in the RO dimension. The authors suggest that interventions need to be targeted to the specific situations and needs of each individual.

J. William Worden (2009) describes exploring the grieving process by dividing it into tasks but also stresses the idea that these tasks are not linear. Task I is "To Accept the Reality of the Loss". Although it may be painful to come to terms with the reality of the death, an intellectual and emotional acceptance of the loss are integral to the first step of the mourning process. Denial of the loss is a protective mechanism that often takes place during the immediate learning of the loss but becomes maladaptive if not completed in due time. The next task may occur simultaneously or at a later time in the process.

Task II is "To Process the Pain of Grief". This entails experiencing the emotional pain a person feels due to the loss. Anxiety, fear, guilt, loneliness, depression, and anger are common emotions experienced in Task II. The pain is unique for each person and although there are no physical damages incurred from bereavement many people report somatic symptoms. In a recent qualitative study a spousally bereaved older woman stated the pain she felt was "cellular" (Nseir & Larkey, Unpublished manuscript). According to Worden, it is imperative to work through these feeling. Avoidance may lead to more difficult and complex emotions, including an increase in somatic symptoms, complicated grief and ultimately becoming more challenging to work through than they would have

been at an earlier time.

Task III is “To Adjust to a World Without the Deceased”. Worden describes this task as having external, internal, and spiritual adjustments to manage. External adjustments are physically living without the deceased in the environment. This includes managing roles that the deceased held. The newly bereaved may have to engage in various new responsibilities such as the management of finances or the task of raising children. Worden believes meaning making of the loss, a theory derived by Neimeyer (1999), usually occurs during this task. Meaning making provides an aspect of logic to the loss and helps the individual live on. Internal adjustments refer to the coming to terms with one’s own sense of self without the deceased. Roles and relationship changes occur as well as possible questions regarding one’s self-esteem, self-efficacy, belief systems and identity. Spiritual adjustments may encompass religious, spiritual, and philosophical beliefs. Depending upon the circumstance, the death of a loved one may disrupt the individual’s assumptive world leaving them questioning much of what they have learned and believed throughout their life (Worden, 2009). For example, a bereaved spouse may become angry with God and feel abandoned by her faith, disregarding all that she has believed during her lifetime. However, as Worden points out, some forms of loss may have the opposite effect and verify our assumptions. For example, the death of a 100-year old woman, who has lived a fruitful life, may meet the expectations of the living family members, confirming their assumptions of the world. Worden comments that

people who promote their own helplessness and fail to deal with the adjustments of task III fall into “failure to adapt to the loss”, thus hindering the mourning process.

Task IV is “To Find an Enduring Connection With the Deceased in the Midst of Embarking on a New Life”. This task involves the concept of continuing bonds with the deceased in order for the bereft to have a healthy continuation of life without the deceased. Enjoying activities (old and new), reminiscing about the deceased with others, and forming bonds with others (old and new) while maintaining a bond with the deceased is part of this task. Worden states that people tend to get “stuck” in this task and may be the most difficult to achieve.

As stated previously, Worden does not look at these tasks as linear or fixed but rather as “a fluid process” (p. 53). He explains that tasks may be forged simultaneously or both tasks may be revisited depending upon the moderators and mediators of mourning. Worden takes heed of Stroebe and Schut’s (1999) Dual Model Process of Grieving (Figure 1.1) and posits that the oscillation process is too fixed, or locked, and does not allow a person to be active in the LO and RO dimensions at the same time.

An understanding of basic bereavement, grief and mourning theories and models is necessary to advance the thanatology field, providing structure for future study of spousal bereavement among older adults. Empirical studies that use the previously discussed theories in the context of the older adult are few and the literature indicates that the effectiveness of current bereavement interventions

is weak. Considering the increasing magnitude of the older adult population and the aforementioned significant financial, physical, psychological and social impact of bereavement, it is imperative to generate interventions that will promote the well-being of this specific population.

Research Question

This study evaluated the feasibility of TCE and the effect it has on grief and depression among community dwelling adults 65 years and older who have lost a significant other. Feasibility (acceptability, demand, implementation) and recruitment and retention strategies will be evaluated to refine the research protocol in preparation for a future larger scale randomized controlled study. Additionally, changes in grief and LO/RO focus will be examined to assess the potential for the intervention to achieve results with this population. The research question that guided this research was, “Is TCE an exercise that is feasible for spousally bereaved older adults (aged 65 and older) and will TCE facilitate a change in symptoms of grief and the proportion of oscillation within the loss orientation and restoration dimensions of the DPM?”

Specific Aims

Specific Aim 1

(a) Evaluate intervention feasibility (acceptability, demand, and implementation) of TCE among community dwelling adults 65 years and older who have lost a spouse and score 21.5 or greater on the LO questions of the IDWL. (b) Evaluate recruitment strategies. (c) Evaluate retention strategies to refine the research protocol in preparation for a future larger scale randomized controlled study.

Specific Aim 2

Evaluate whether the TCE intervention facilitates a positive trend in the grieving process (despair, panic behavior, blame and anger, detachment, disorganization, and personal growth) as measured by the Hogan Grief Reaction Checklist (HGRC).

Specific Aim 3

Evaluate if a change of focus within the LO and RO dimensions as measured by the IDWL was noted from pre-intervention to post-intervention as well as evaluate whether depression scores show a decreased trend from pre-intervention to post-intervention as measured by the CES-D

Chapter 2

BACKGROUND

Theoretical Framework

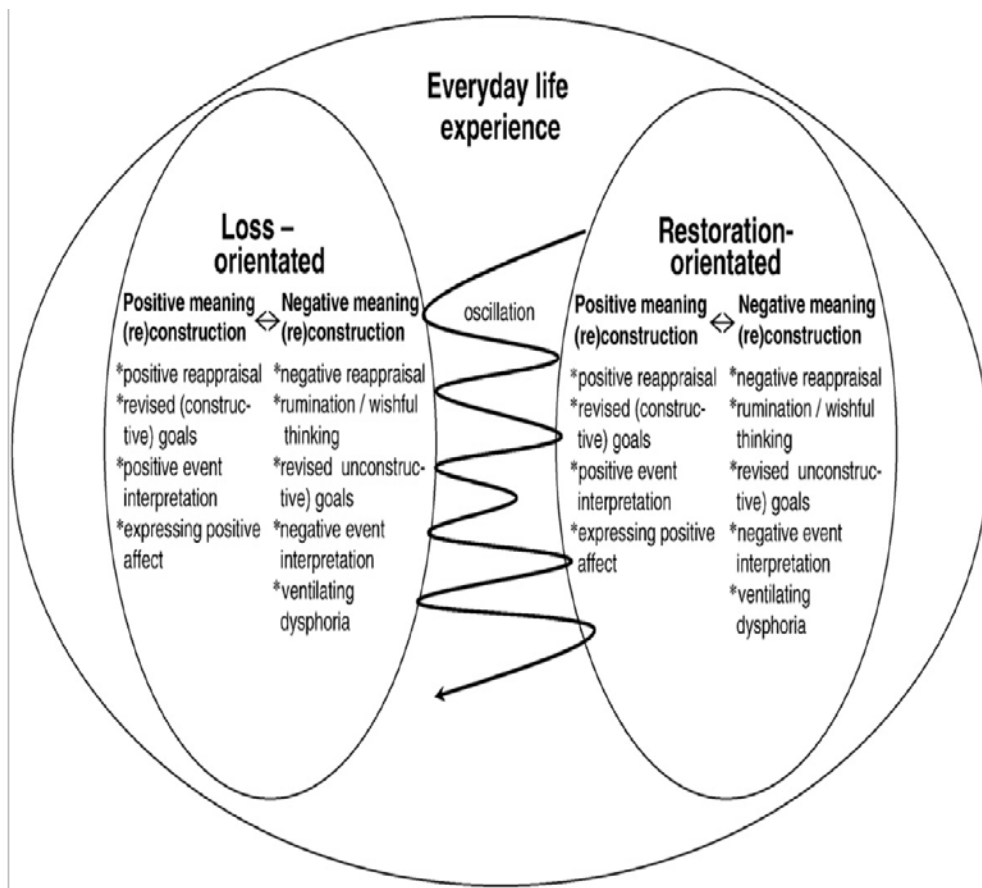
This study was guided by three theoretical frameworks: Dorothea Orem's Self-Care Theory (Orem, 2001), the Dual Process Model (DPM) (M. Stroebe & Schut, 1999) and Peter Salmon's Unifying Theory (Salmon, 2001). Orem's Self Care Theory proposes that people should be self-reliant and responsible for their own care. Nursing is a medium, aiding the individual by providing information and resources that lead to healthy self-care behaviors. It is important to maintain or improve normal health behaviors and, in the specific instance of bereavement, focus on relieving or both preventing stressors that arise during the process of grieving. Within the framework of the Self-Care Theory, the nurse's position is to help the individual maintain or promote a healthy lifestyle. TCE is purported to help create a positive mental and physical environment, assisting the bereaved individual to cope with situational stressors that are encountered.

The DPM describes the grief process as dynamic with oscillation between the two dimensions is a key component (Figure 1) to effective adaptation. The LO side refers to grief work, ruminating about the deceased, denial or avoidance of changes during mourning. The RO side involves distraction from grief, doing new things, identifying with new roles and relationships and attending to changes in life. As depicted in Figure 1.1, oscillation between LO and RO is occurring as daily life continues around the person. In 2001, Stroebe and Schut amended the

DPM to incorporate positive and negative meaning construction/reconstruction recognizing the important role that meaning making plays during the grieving process within both dimensions of the model. Stroebe, Schut, and Boerner (2010) explain that the DMP is compatible with various attachment styles, cultures, mental representation processes, and coping styles.

Figure 1.

Dual Process Model of Coping with Bereavement (Stroebe and Schut, 2001)



In this study, the practice of TCE is posited to facilitate the grieving individual to concentrate on the present by maintaining a focus on breathing and the action of gentle movements during the direct practice of TCE. The meditation component of TCE is proposed to clear the mind, possibly decreasing oscillation within the negative aspects of the LO dimension and encouraging a focus on the present moment. It is further proposed that the meditation component can be utilized in various situations and settings to serve as a purposeful method of managing one's negative thought processes, especially at times that seem unbearable, unrealistic, and overwhelming to the grieving individual. For example, deep breathing may be used as a technique during a painful memory of the deceased or to deal with distressing feelings that may erupt while trying to execute tasks that were handled by the deceased. The added component of exercise is proposed to increase an individual's sense of control and self-esteem due to the mastering of new tasks (Mirmillo, Durando, & Rolla, 2007). A nurse-led TCE session is a group activity but tailored by each individual to his/her self-care needs at that particular time.

The Unifying Theory is used in conjunction with the DPM. The Unifying Theory utilizes a history of exercise research to explain the effects of exercise on mood and emotional disorders. This theory contains three basic premises: 1. Exercise can be perceived initially as aversive, but also has positive enjoyable qualities (accruing over time); 2. Exercise training has antidepressive and anxiolytic effects; 3. Exercise training reduces sensitivity to stress (explained

simply that, exercise a controllable stressor, causes the release of catecholamines, such as norepinephrine). Exercise causes a turnover and even depletion of these catecholamines with initial exercise but when the stressor becomes chronic, as in regular exercise, the brain increases the production of catecholamines. There is also an opioid link that is triggered with physical exercise within the central nervous system. The body's reaction to these chemical changes produces positive effects. Salmon raises the point that the value of exercise is not only established by past research, but by the popularity and face-validity of exercise's ability to improve well-being in our society. The concentrated deep breathing and meditative state of TCE is proposed to have an added positive effect.

The majority of Salmon's theory is based on high impact aerobic activity evidence such as running, however there is growing knowledge to support a similar effect with low impact activities. A meta-analysis of low-intensity physical activity provides evidence for a decrease in depressive symptoms even among individuals without clinical depression (Conn, 2010) and as well as the psychological benefits established among meditative movement practices (Frye, Scheinthal, Kemarskaya, & Pruchno, 2007; Jin, 1989; Jin, 1992; L. Y. Lee, Lee, & Woo, 2010; Lim & Hong, 2010; Rogers, Keller, & Larkey, 2010; C. Wang et al., 2010; W. C. Wang et al., 2009). Lim and Hong (2010) conducted a randomized controlled trial (RCT) in Korea concluding that a meditative movement, Kouk Sun Do, is a feasible exercise for older adults, increasing emotional state as well as physical fitness. Jin (1989) found an increase in

noradrenaline excretion in urine, a decrease in salivary cortisol concentration, decreased tension, depression, anger, fatigue, and anxiety in adults who participated in a TC program. Lee and colleagues (2010) found an increase in self-esteem and quality of life, specifically in nursing home residents who practiced TC. Wang, et al. (2010) reviewed 40 studies examining the psychological impact meditative movement and found an increase in psychological well-being with decreases in stress, depression and anxiety in a majority of the studies analyzed. The evidence from TC/QG studies among older adults supports the positive psychological benefits of TC/QG, specifically for depressed older adults (Nseir & Larkey, Manuscript in preparation). The Unifying Theory explains that physical exercise has antidepressant and anxiolytic effects. The chemical changes proposed in Salmon's theory, backed by prior research, are similar to the chemical changes noted in the study from Jin (1989) as well as MM research as described above. From this evidence, it is postulated that TCE will have a similar effect on psychological state as proposed in the Unifying Theory.

Mediators and Moderators

Mediators in bereavement studies include depression, anxiety, somatic symptoms, resilience, stress, mindfulness, and social support (Worden, 2009). Moderators include relationship to the person who died (e.g., spouse), nature of the loss (e.g., murder, suicide, accident, illness), nature of the attachment (e.g., dependent, ambivalent, attachment strength), historical antecedents (e.g., prior losses, mental health history, past unresolved grief), personality variables (e.g.,

resilient, age, coping skills), social variables (e.g., ethnic variables, social support, spiritual connections), concurrent stressors (e.g., economic distress, family dissonance, secondary stressors) (Worden, 2009). The impact of these mediators and moderators throughout the grieving process provide support to the individualistic nature of grief. An awareness of these factors during the research process may provide rationale to the variations and particular patterns that may arise during the grieving process.

Complicated Grief

The majority of bereaved individuals are able to cope with their grief and as time goes on the symptoms of loss usually lessen but about 10% (Shear et al., 2011) develop chronic grief (CG). CG is characterized by feeling emotionally numb, stunned, or that life is meaningless (may include suicidal idealizations); experiencing mistrust; bitterness over the loss; difficulty accepting the loss; identity confusion; avoidance of the reality of the loss; or difficulty moving on with life (Prigerson et al., 2009). The idea of a mind-body exercise based intervention is intended to assist with the mourning process as well as promote a wellness lifestyle behavior for future health.

Meditative Movement

Meditative movement (MM) is a category of exercise that includes movement of the body or postures while focusing on the breath and clearing the mind for a meditative state to achieve deep states of relaxation (Jahnke, Larkey, Rogers, Etnier, & Lin, 2010). Yoga, Tai Chi, Tai Chi Chuan, Tai Chi Chih, Tai

Chi easy and Qigong are types of Meditative Movement (Ospina et al., 2007).

The manner in which TC/QG “works” can be partially explained by examination of the intervention’s key components: The meditative state, movement and breathing. The meditative state promotes calmness and alertness in the present moment. It encourages the participant to be aware of the surrounding and to experience a sense of connection with nature (as suggested in language and visualizations accompanying the teaching), in a positive, harmonizing manner, focusing on one’s own inner energy, otherwise known as “chi”. The meditative state and focus on the breath is what separates MM from other physical exercise (Ospina et al., 2007) and is intended to clear the mind and provide the participant with a reenergized and serene psyche. For example in a study of another form of MM, Hatha Yoga and Omkar Meditation, it was found that the psychophysiologic stimuli increased endogenous secretion of melatonin, a hormone hypothesized to improve an individual’s sense of well-being (Harinath et al., 2004).

Physiologically, cortical thickness has been noted with regular practice of meditation in the areas of somatosensory, auditory, visual and interoceptive processing (Lazar et al., 2005). In this study, individuals who actively meditate were compared to control individuals who did not meditate. The largest between-group difference was noted within the insula, a section of the brain that is associated with emotions, self-awareness and cognitive functioning. Lazar et al. (2005) concluded that meditation might induce changes in the areas of the brain important for cognitive, sensory, as well as emotional processing. This

information is important because it indicates that meditation has an affect on the area of the brain is associated with emotional cognition. It is hypothesized that regular meditation practice may stimulate increased self-awareness, leading to better control over cognitive and emotional states. The meditative state of TCE and clearing of the mind during practice may have a cathartic effect that may aid the processing of emotional and cognitive thinking during bereavement. This processing may shift the individual to a more positive emotional state by controlling the active thought process. During this time it is proposed that active oscillation within the LO and RO dimensions is occurring. The goal is not to avoid LO activities, as this is part of the necessary grief work, but to provide the participant with a helpful tool to manage the pain of grief and the oscillation between the processes efficiently and effectively, gradually increasing the time spent in the RO dimension as the intervention progresses.

Tsang and Fung (2008) conducted a review on the neurobiological and psychological mechanism that may explain the QG effect on reducing depression in older adults. Previous studies involving older adults in a 12 to 16 week QG exercise perceived fewer limitations, experienced a higher sense of mastery, and higher self-efficacy overall resulting in a decrease in depression. Tsang and Fung (2008) examined the neurobiological mechanisms leading to hypotheses involving the areas of neurochemicals, neuroendocrine and neurotrophic that ultimately reduce depression. The neurochemical hypothesis purports QG increases levels of monoamine neurotransmitters, thus promoting the circulation of tryptophan and

thereby increasing serotonin to be synthesized in the brain. The neuroendocrine hypothesis suggests that QG reduces negative thinking/emotional signals to the limbic system, reducing the activity of Hypothalamus Pituitary Adrenal axis activity, and reducing the release of glucocorticoid. The neurotrophic hypothesis suggests that QG reduces stress and ultimately promotes neurogenesis in the hippocampus to alleviate depression. It is thought that the combination of benefits shown to accrue from TC/QG practices, ranging from improvements in physical function and balance as well as profound changes in emotional health (Jahnke, Larkey, Rogers, Etnier, & Lin, 2010). These neurobiological hypotheses are congruent with the neurobiological evidence presented to support Salmon's Unifying Theory, in that chemical changes occur within the body during exercise, including TC/QG.

In this study, it is suggested that the focus on the breath may further the meditative component. Inhalation and exhalation is encouraged in a full, natural fashion and holding of the breath is discouraged. This action expands the lungs and abdomen in tandem with the body movements and is proposed to facilitate the flow of "Qi" or energy during the exercise. It is postulated that slow deep breathing "resets" the autonomic nervous system by stretching lung tissue synchronizing neural elements in the heart, lungs, and limbic system and cortex (R. Jerath, Edry, Barnes, & Jerath, 2006). A study of deep breathing meditation exercise has been shown to reduce stress, nervousness, self-doubt and anxiety in college students (Paul, Elam, & Verhulst, 2007). The relaxing component is

proposed to further the individual into a hypo-arousal meditative state.

The well-known physical benefits of exercise, such as increase or maintenance of muscle strength and endurance, are major components to the Unifying Theory. The flowing/stretching movement of MM has been shown to have similar benefits (Choi, Moon, & Song, 2005; Lan, Lai, Chen, & Wong, 1998; Lan, Lai, Chen, & Wong, 2000) and is classified as physical exercise due to these properties (Larkey, Jahnke, Etnier, & Gonzalez, 2009). It is proposed that the previous evidence based knowledge provides rationale for researching MM as a physical exercise with spousally bereaved older adults encompassing the Unifying Theory as support.

The Unifying Theory (examines the relationship between exercise and mental states), the DPM (proposes that oscillation occurs between LO and RO dimensions during the grief process and gradually shifts from LO to RO as time passes) and Dorothea Orem's Self Care Theory are used to explain how a nurse led TCE study intends to help spousally bereaved older adults. An explanation gathered from past research of how TCE is proposed to impact the participant provides premise for this study when combined with the theoretical framework established.

Chapter 3

METHODOLOGY

Research Design

Study Design. The following research is a feasibility study as well as a one-group, pre-post design study of an 8-week TCE intervention. A network and convenience sample of spousally bereaved community dwelling older adults (65 years of age and older) within the Phoenix, Arizona area were recruited. The feasibility study included qualitative questions as well as quantitative data to address specific aim 1. The preliminary assessment of the potential of the intervention to produce changes in the grieving process (pre-post design) used measures of grief (HGRC), and oscillation within the LO and RO dimensions (IDWL) to address specific aims 2 and 3. This study is the first step in this program of research to test the feasibility and acceptability of TCE with spousally bereaved older adults.

Sample. This is a feasibility study and a sample of 30 participants was based on a power analysis and recommendations from a university statistician. An attrition rate of 20% was calculated into the equation based on previous studies involving older adults. Currier, Neimeyer, & Berman (2008b) conducted a review of psychotherapeutic interventions for bereaved individuals and found an attrition rate of 15.1 (SD 16.3) with a range of 0-61% throughout 56 studies.

Setting. The TCE sessions were conducted at two senior centers, three assisted living communities, and one private home in the greater metropolitan

Phoenix Arizona area. The locations were suitable for the kinds of movements and mobility required by TCE. Each participant was given a TCE DVD and manual for at-home practice. The TCE group sessions were 20 to 40 minutes in duration, with time increasing as the number of group sessions increased.

Protection of Participants' Rights

This research was approved by the Arizona State University Institutional Review Board (IRB) (Appendix A). The researcher carried out the introduction of the study, informed consent, intervention, and data collection. Informed consent (Appendix B) was obtained from all participants after a thorough discussion about the study between the researcher and potential participant occurred. All questions were answered and the participant verbalized understanding of the study and consent prior to signing.

A modification to the IRB application was submitted in the first few weeks of recruitment. Due to suggestions from potential participants and site staff, the intervention length was decreased from 12-weeks to 8-weeks. Also, the cut-off point for the LO score of the IDWL was decreased (21.5) due to potential participants being excluded solely for this reason.

Eligibility Criteria

Inclusion criteria. Older adults aged 65 and older living within the Phoenix metropolitan area, male or female, English speaking, able to comprehend and provide written informed consent, physically and mentally capable of completing a structured class one hour in length, spousally bereft for six weeks or

more and not remarried were recruited. A person who is less than 6 weeks bereft is most likely immersed in tending to tasks such as the funeral and working to accept the reality of the loss (Worden, 2009). Studies have shown mixed lengths of time as to the mourning process; therefore no cut-off time was used (Worden, 2009). However, it is important to determine if a participant will show change, specifically within their grief symptoms. Therefore, a score of 21.5 or more within the loss-orientation questions (1-11) of the IDWL was used to establish a cut off point for qualification within the study. This score is one standard deviation below LO scores of bereaved older adults (12-15 months) reported by Caserta and Lund (2007). To ensure a diverse sample, all volunteers were enrolled in the study without regard to gender, ethnicity, race, literacy, or educational achievement. Two participants had literacy issues (poor eyesight) therefore the researcher read the material to the participants, conducted a conversation regarding consent and data collection materials to assure understanding. Non-ambulatory or wheelchair bound volunteers were encouraged to join, and were taught the chair-version of TCE (which is included as examples in the manual and DVD). Healthcare provider approval and consent to participate in PA was obtained by the participants (Appendix C). The participant was given the Healthcare Provider Form after consent to the study was obtained. The participant was asked to have the form signed by their healthcare provider and return it to the researcher for participation in the study. The consent described the nature of the study and the researcher's contact information if questions should arise.

Exclusion Criteria. To try and maintain homogeneity of the sample, any volunteer who lost a spouse by suicide or homicide was to be excluded but this instance did not arise. The impact and circumstances of these types of deaths challenge the grieving process and meaning making in individuals differently than other types of death (Worden, 2009). The focus may be to deal with the trauma first rather than the feelings of grief and the effect of MM on individuals who have been through a traumatic experience are unknown.

As described previously, the IDWL was used at baseline in an attempt to further homogenize the sample. Individuals who scored below 21.5 were excluded from the study but were given the option to participate in the TCE sessions. It is hypothesized that individuals who scored less than 21.5 on the IDWL are most likely focused on RO activities and may not be likely to show a transition since the maximum score on the LO portion of the IDWL is 44.

Individuals who had been bereaved 6 months or more and scored > 25 on the ICG were excluded from the study, however, none of the participants scored > 25. Individuals who scored >25 and above on the ICG would have been directed to their healthcare provider for further professional grief therapy. This cut-off score of > 25 was adapted from prior studies utilizing the scale for various populations (Golden & Dalglish, 2010; Mitchell, Yookyung, Prigerson, & Mortimer-Stevens, 2004).

Recruitment

Twenty-one participants were recruited from the Greater Phoenix

Metropolitan area. Potential participants were invited to participate via word of mouth, snowball method, and flyers distributed at recruitment sites identified: City of Chandler Senior Center, Mesa Senior Center, Pyle Recreation Center (Tempe), Widowed to Widowed Grief Support Group, local churches, three assisted living communities and a physician office in Chandler. Presentations were given at two churches and three assisted living communities describing the study and demonstrating TCE to emphasize the minimal exertion, low impact and the relaxed nature of the exercise. Names were recruited from the Phoenix-area obituary (on-line). After a time period of 6 weeks or longer from the date of death, a letter describing the study and the researcher's contact information (email and telephone) was sent via U.S. mail (Appendix D). Due to the nature of the study and the challenge of recruitment, rolling recruitment was utilized. Table 1 presents the details of the various TCE sessions. Potential participants who telephoned the researcher were informed about the study and a date and time to meet face to face was scheduled. At the face-to-face meeting the researcher provided a detailed explanation of the study. If the potential participant was interested in participating in the study, screening was conducted to assure eligibility, informed consent was obtained, and the baseline data collection was completed as described in the next section.

Table 1

Tai Chi Easy Sessions

| | Mesa Senior Center | Pyle Tempe Center | Assisted Living 1 | Assisted Living 2 | Assisted Living 3 | Private Residence |
|----------------------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Study Participants | 2 | 4 | 5 | 5 | 4 | 1 |
| Study and non-study participants | 1-3 | 1-6 | 4-10 | 2-7 | 4-10 | 1-3 |
| Dropped from Study | 0 | 0 | 0 | 1 | 2 | 0 |

Informed Consent and Enrollment

Announcements and flyers included a phone number to call to inquire about the study (Appendix E). The researcher informed callers about the opportunity to participate in the study. The purpose and requirements of the study were explained. A written summary of the study’s purpose, requirements, incentives, and sponsors was provided at the beginning of the first meeting. Potential benefits of TCE (based on the evidence of the research in elderly and other populations, but not specifically established benefits for bereaved elders) were discussed and the researcher answered questions regarding the study. Participants were asked to complete a self-report demographic questionnaire (Appendix F) to determine eligibility along with a private face-to-face interview with the researcher. During the interview, the researcher reviewed the demographic questionnaire with the potential participant. If a potential participant was not eligible for the study, the reason(s) were explained in detail and the participant was not enrolled in the study but was given the option to participate in

the TCE sessions. Eligible participants were asked to read and sign an informed consent (Appendix B). The participants had the option to contact the researcher at any time to discuss any questions or concerns that may have arisen. The contact information for the researcher, the Office of Research and Scholarship and the Institutional Review Board was provided for any questions or comments pertaining to the study.

Attrition rates and reasons were documented by the researcher in the Intervention Log (Appendix G). If a participant missed a session, they were contacted by phone to learn of their concerns or reasons for missing. Other TCE sessions were held during the week if the participant desired to make up a missed session.

Data Collection

The collection of baseline data (including screening measures) took approximately 45 minutes per participant. Post-intervention data took approximately 50 minutes. Table 3, illustrates the breakdown of the measures and the average time to complete. This time varied for each participant and was dependent upon the participant's understanding of the study and data collection tools. The majority of the data collection measurements were self-completed by the individual, however, two individuals required the forms to be read to them by the researcher due to poor eyesight. All but one of the participants completed the pre-intervention data on days different than the TCE intervention, due to the amount of time anticipated for completion. The majority (16) of the participants completed the post-intervention data immediately after the participant's last TCE

session at the 8-week end-point. After the completion of each data collection, the participant was given a \$10 gift card to show appreciation and compensation for their time.

TCE Intervention Protocol

TCE is a simple TC/QG form that was developed by Dr. Roger Jahnke and developed into a standardized research intervention protocol by a team of researchers (Jahnke, Larkey, & Rogers, 2010). It has been used in several prior projects (Larkey, Szalacha, Rogers, Jahnke, & Ainsworth, in press, Dec 2012; Larkey, Jahnke, Etnier, & Gonzalez, 2009) and one recently completed NIH/NCCAM-funded randomized controlled trial (RCT) with breast cancer survivors (U01 AT002706-03: PI Larkey) showing reduction in fatigue and depression, and improved sleep and physical function. The 8-week length of the intervention is based on prior studies examining psychological effects of MM (Mustian et al., 2004; Oh et al., 2010; Tsai et al., 2003; C. Wang et al., 2005; C. Wang et al., 2010).

TCE is led by a practice leader who has completed at least 25 hours of training that consists of studying the Tai Chi Easy Practice Leader Training Manual, in person group classes, and practicing the methods guided by a training DVD. The TCE intervention combines simplified Tai Chi movements with Qigong methods that include gentle flowing movements and slow shifts of body weight while incorporating deep, soothing breathing.

The TCE sessions began with low and natural light when possible rather than bright lights to promote a comfortable atmosphere. Music specifically

designed for meditative movement was used at a low volume. The movements began with a warm up of slow, deep breathing and aligning posture (sitting or standing) for approximately 5 minutes. The TCE movements (as described below) were then repeated for 6-10 repetitions, gradually increasing time as the weeks of TCE group sessions progressed. More movements were added each week so that by week three, all of the TCE movements had been introduced. The variety and combination of the exercises began easy and progressed to more advanced as the study progressed and participants became more experienced and comfortable with the routine. Throughout the exercises, the participants were reminded of correct alignment, continuing slow, deep, breathing, and to relax the mind. The exercises began with the opening sequence that included shifting weight to one foot and taking a step to the side so that feet are shoulder width apart for the majority of participants who chose the standing form of TCE. A few participants chose to complete the exercise in a seated position, or a variety of both. This was dependent upon the participant's fitness and comfort level. The exercise session was concluded with the closing sequence (opposite of the opening sequence with weight shift and the leg brought in toward the other). The descriptions of the exercises have been adapted from Jahnke (2010).

Twisting at the Waist. With feet shoulder width apart, gently twist at the waist from right to left, left to right, and repeat allowing the arms to swing freely. A gentle patting of the back and abdomen are encouraged, as the arms are gently rotate from side to side. Slowing down the movement until the body is no longer twisting and is back to the center position concluded this exercise.

Right and Left Bending of the Spine. Right and left bending of the spine entails gently bending the upper body to the right side while exhaling and allowing the right arm to dangle in front of the body while slow deep breathing continues. This is then repeated to the left side. For participants who feel they need more challenge, the opposite arm can be stretched over the head. This can be performed in the standing opening position or in a seated position.

Flowing motion. Flowing motion encourages slow inhalation and deep breathing while turning palms forward. A gentle forward rocking motion while lifting the body weight onto toes and swinging arms forward and upward, to the maximum height of the shoulders or lower, dependent upon participant comfort with elbows slightly bent is the main motion. Participants are reminded to do this gently and to feel as though they are sinking their body weight down toward the ground.

Front and Back Bending Spine (Crushing Rocks). This movement may be done from the standing opening position or a seated position. Inhalation while raising the hands up with palms up and arms bent at about 90-degree angle. At chest height, palms are at face level and then upward as arms reach up. When arms are above shoulder height the head is tilted upward. During exhalation, the arms move forward and down, palms toward the face. Hands are placed near each other into fists and the whole body is contracted. The head is bent forward as the shoulders are rounded and full exhalation occurs. During this exercise the participant is encouraged to clear and calm their mind, body and spirit and during exhalation everything is contracted.

Gathering Heaven and Earth. With arms in front of the chest open arms to a 45-degree angle, palms facing each other. Bend the knees and lower the arms so that the palms are facing up. Sink down by gradually bending at the knees while making a scooping motion with both hands “gathering Earth” below. Slowly stand up while moving arms up to the sky (Heaven) while looking up. “Gather Heaven” and move the arms downward until palms are facing each other and repeat.

Reaching Upward and Stretching Outward. During inhalation, the fingers are laced together, palms toward body as they are passed in front of the body and face. Palms are rotated downward, then upward and toward the sky as arms are extended up and the participant is encouraged to rise on their toes if able.

Meditation. The participant is encouraged to close their eyes and clear their mind by concentrating on the present moment, including sounds within the room. A reminder that there is “no other place you need to be but right here, right now” was used. Deep breathing and alignment are also part of the focus.

Passing Clouds. Arms are crossed in front of the chest and weight is equally distributed to each foot. Arms are opened out from the center of the body to shoulder height as weight is shifted to the left foot. The right arm is moved down in a scooping arc motion and left hand opens away from the body at about chin level. The movement continues until the right hand reaches the rib cage and the left hand moves with the palm slightly angled down to just above the right hand and weight is shifted to the opposite foot. This movement is continued until the right hand is chin level on right side of the body, palms facing the face. The left hand is waist height with palm angled toward torso, weight on right foot.

Continue this motion and finish by raising arms and crossing in front of the chest.

Cutting the Path to Clarity. With arms crossed after the above "Passing Clouds" is concluded, palms are then placed outward. The hand closest to the heart is then pulled toward the back and the hand farthest from the heart pushes forward. The torso is turned and one hand is pushed forward, leading with the pinky finger as if "cutting air". The opposite hand turns forward and the other hand pulls back. The motion is repeated side to side.

Harmonizing Yin and Yang. In the standing opening position or seated position, hands are raised to the chest level with palms facing the chest, The left hand with palm up is brought across the front of the torso below the right hand, palm down, as to simulate holding a beach ball. Body weight is shifted slightly to the right. The left hand moves to the left, as if serving a tray, palm open and facing up. The right hand drifts toward the right with the palm down. The waist is slightly turned to the left as weight is shifted to the left foot. The right palm floats down toward the hip while left palm faced the chest as if to turn the serving tray over. This motion continues back and forth, making a "ball" on each side of the body while shifting the weight of the body, slowly. Slow, deep, methodical breathing is encouraged as well as reminders of alignment and relaxation.

Brush Knee, Send Qi. This exercise can conclude Harmonizing Yin and Yang by turning the "ball" over and moving hands clockwise so that the left hand is on top and right hand is on the bottom of the "ball". Both hands slowly drop down. The left hand floats across the front of the torso and brushes past the knees. The right hand drops down to the side and rises forward, simulating a swimming

motion. The waist is turned to move the right hand past the ear (sending Qi) and the weight shifts to the side. The motion is repeated. To conclude the exercise the lower hand is brought upward with palm up as weight is shifted equally to both feet. Hands cross as they are raised upward until they are both at the level of the chest.

Meditating Imagery. Participant is encouraged to close the eyes and imagine a scene that invokes comfort, peace, relaxation, and positive thoughts. Examples such as a field of flowers, a beautiful sunset, ocean waves, a mountain view, or a colorful garden are used to help the participant find an image conducive to their personality. Slow deep breathing is encouraged and proper alignment is reinforced.

Tracing of the Channels. Hands are rubbed together to generate heat then directed over the participant's face, head, neck, shoulders, around to the back and down the spine, over the kidneys, down the outside of the legs and bending over to a comfortable level (either standing or sitting) around the legs or feet and up the inside of the legs, over the abdomen, chest, neck. The tracing sequence is then repeated two more times.

Self-Massage. After tracing of the channels, one hand is placed over the shoulder while the opposite hand supports the elbow. Pressure is applied in a self-massaging manner. The participants were encouraged to massage arms, hands, ears, face, legs, abdomen and any part of the body desired.

Spontaneous Qigong. In a seated position or standing at the opening posture, the participant is encouraged to bounce, lifting and dropping heels,

shifting weight from one side of the body to the other. Flopping of the hands or snapping fingers vigorously is next. The neck and head move around and the shoulders are raised and lowered. This is done for a few moments with deep, relaxed breathing and then stopped. The participant is encouraged to notice how they feel and the exercise is repeated.

The TCE sessions were concluded with an opportunity for participants to ask any question (they can ask before or after the session) and a reminder to practice at home, documenting in the Participant Log. Hugs were given to each individual by the researcher (after obtaining the participant's permission) prior to leaving.

The first TCE session was held within a week after baseline data was collected in its entirety at a time and place agreed upon by the participants and the researcher. Participants received verbal general information on how to use TCE safely and the benefits of it. Participants were encouraged to verbalize their questions and concerns regarding TCE and the study. A DVD featuring a set of introductory principles of practice and 10 core exercises (easy to learn within the first 2 weeks) and an additional 7 exercises (for participants who like more variety) was professionally produced and given to each participant to help guide their practice at home. Participants were also given a written instruction manual, so that those who prefer to read rather than “watch and listen” may use this instead. The group sessions were held weekly and home practice of at least twice a week was highly encouraged. Participants were provided with a participant log to track their TCE participation that was collected at the end of week eight. The

first two TCE sessions began with 20 minutes and progressively increased in total time up to 40 minutes. Movements were demonstrated and performed by the researcher with the group. A chair was provided for each participant if they desired to sit during the practice or as a sturdy object during movements that required balance concentration. Participants were observed to ensure correct technique and safety.

Class size for the intervention was limited to a maximum of 10 participants. This was to ensure close observation and supervision from the TCE leader so that individual attention to each participant could be provided. Consistent performance of the movements, observations and reminders of practicing within a safe and comfortable range, and noting any emergent emotional challenges are all better managed with small groups. Further, the emotional release that sometimes occurs with the first stages of relaxation, deep breathing, and the meditative state can be encouraged and 'normalized' by the instructor by noting that it is common to begin to experience a range of emotions and responses during practice, and to let these emotions "flow through". Participants were encouraged to experience their emotions without judgment. This was explained to participants and a plan was agreed upon within the group for particular instances. For instance, a participant was requested to give a "thumbs up" sign if they must leave the room for any reason during a session.

It was stressed that whatever is conveyed during the sessions should remain confidential within the group. Discussions of particular emotions or experiences felt during TCE were discussed at the end of sessions as a debriefing

tool but digressions from the TCE intervention were avoided, to maintain internal validity. Any comments were noted in the Intervention Log (as anonymous) for further analysis that may be important to specific aim 1.

Post-test

Immediately after completing 8-weeks of the intervention, participants were given the Feasibility Questionnaire, HGRC, IDWL, CES-D, RPE, and MMI in person at the same facility as the TCE sessions, if convenient for the participant, and in the same fashion as the measures used at baseline. Participant logs were collected upon completion of the post-tests, and participants were given a \$10 gift card.

Instruments of Measurement

Table 2 provides a list of the instruments used in the study, their provenance, properties, when they were used, for what purpose, and the estimated time for completion. Assessments were administered on paper with the researcher available to answer any questions.

Table 2

Instrument Properties

| Aim | Construct | Instrument quality characteristics | Instrument Name/ Author | Eligibility/ baseline | Pre-test | Post test | Anticipated Time for Participate to Complete |
|------------|--|--|--|-----------------------|----------|-----------|--|
| 1 | Population descriptive | | Demographic | X | | | 10 minutes |
| 2 | Grief | panic behavior .79 personal growth .81 blame/anger .81 detachment .77 disorganization .85 | Hogan Grief Reaction Checklist (HGRC): (Hogan, Greenfield, & Schmidt, 2001) | | X | X | 10 minutes |
| 3 | Loss Orientation and Restoration Orientation Oscillation | $\alpha = .91$ (2-5 months bereaved) $\alpha = .88$ (12-15 months bereaved) | Inventory of Daily Widowed Life (IDWL): (Caserta & Lund, 2007) | X | | X | 10 minutes |
| screening | Complicated Grief | Test-retest = .80 Cronbach's $\alpha = .92$ Validity = .67 & .87 | Inventory of Complicated Grief-Revised (ICG-R) (H. G. Prigerson et al., 2001) | X | | | 5 minutes |
| 2 | Depression | Internal reliability $\alpha = .85$ | CES-D (Radloff, L. S., 1977) | | X | X | 10 minutes |
| 1 | TCE consistent instruction Feasibility Questionnaire | N/A | Instructor Log Participant Log | | | | N/A |
| 1 | Activity Exertion | N/A | Borg Rating of Perceived Exertion (RPE) (63) | | | X | 5 minutes |
| 1 | MM elements | Meditative connection ($\alpha = .90$) Breath focus ($\alpha = .86$) flowing motion ($\alpha = .61$) | Meditative Movement Inventory (MMI) (L. K. Larkey et al., (in press)) | | | X | 5 minutes |
| Total Time | | | | 25 mins. | 20 mins. | 50 mins. | |

Screening Tools

The Inventory of Complicated Grief –Revised (ICG-R) (Prigerson & Jacobs, 2001) The ICG-R is a 19-item self-report questionnaire to measure symptoms of CG. This measure was used pre-intervention to detect any major outliers in within the sample. It was used as an initial screening tool. Examples of the questions included “I feel I cannot accept the death of the person who died”, “I feel drawn to places and things associated with the person who died”, and “I feel disbelief over what happened”. The questions were scored on a 5-point fixed response scale ranging from 0 (never) to 4 (always). The ICG-R yields a continuous CG symptom index, ranging from 0 to 148, and a dichotomous CG diagnosis. The ICG-R and the original ICG have both been found to be highly reliable, with alpha coefficients over .90, and a test-retest reliability coefficient of .80. Research has provided support for the construct and criterion-based validity of the ICG-R 338 (Prigerson et al., 1995; Prigerson & Jacobs, 2001) (Appendix H).

Measurement Tools

Feasibility Questionnaire. The Feasibility Questionnaire was administered at week 8 of the intervention. The majority of questions are on a Likert-scale with the opportunity for the participant to add open-ended answers for more detail (Appendix I). The questions were designed to assess feasibility of the study by looking specifically at acceptability, demand, and implementation. Acceptability (perceptions of participants, satisfaction, adherence to sessions and practice) was explored with questions such as “TCE has made my grieving process easier”, “I

think people who are like me are interested in trying out practices like TCE ” and “I enjoyed practicing TCE”. Demand (expressed interest or intention to use, perceived demand, actual use) was examined with questions such as “I think TCE is helpful after experiencing the loss of a spouse” and “I intend to continue to practice TCE at home”. Implementation (success or failure of execution, amount, type of resources needed to implement, factors affecting implementation ease or difficulty, intervention fidelity), was explored with questions such as “What would have made the TCE home sessions better?” and “What would have made the TCE group sessions better?” All of these questions are designed to assess feasibility as described in specific aim 1. Questions may also be used to examine trends that may result within specific aims 2 and 3. (Appendix I).

The Rating of Perceived Exertion (RPE) (Borg, 1998). The RPE is a subject evaluation tool used for participants to self-rate their exertion level. This is a well-known, widely used and tested scale. The participant is instructed to rate their exertion level on a 1-20 scale (Appendix J).

The Meditative Movement Inventory (MMI) (Larkey, Szalacha, Rogers, Jahnke, & Ainsworth, in press, 2012). The MMI is a tool to validate that participants are implementing the key components (breath focus and meditative connection) of the TCE experience. Questions such as “I was using my breathing to go into a relaxed state” pertain to the breath focus and “I was meditating”, “I was going into a state of reverie” pertain to the meditative connection component. The questions are in a 6-point Likert scale ranging from 1 being “all the time” and 6 as “never” (Appendix K).

Participant Log. The Participant Log is a researcher designed log that was fully explained and given to participants after enrollment to the study. This log was used to record details of TCE practice such as date, time, length of practice and a section for comments was provided. It was explained to the participants that any time TCE is practiced it should be recorded in the log and the comment section is used to record participant mood, suggestions for program improvement, ease or difficulty of practice. The participant log was an integral part of data collection to address specific aim 1 (Appendix L).

Intervention Log. The Intervention Log was designed by the researcher to track each TCE session date, time, participants in attendance, and comments. The comment section consisted of comments made by the participants, observations noted by the researcher, anything the researcher may want to record that was helpful for the study. This log was an integral part of the data needed to address specific aim 1 (Appendix G).

The Hogan Grief Reaction Checklist (HGRC) (Hogan, Greenfield, & Schmidt, 2001) The HGRC is a 30 item Likert-scale (0-5) used to assess grief, including subscales for despair, panic behavior, personal growth, detachment, disorganization, blame and anger. Questions such as “I have learned to cope better with life”, “I feel revengeful”, and “I often have headaches” are utilized. Validity data suggest that the HGRC may be sensitive to affect changes in grievers over the course of the mourning trajectory (Hrykas, Kaunonen, & Paunonen, 1997) (Appendix M).

Inventory of Daily Widowed Life (IDWL) (Caserta & Lund, 2007). The IDWL was developed to assess the oscillation process of the DPM. “The IDWL is a 22-item scale with 11 LO and 11 RO Likert-scale questions ranging from 1 to 4 (almost always). The scale assesses activity with questions such as “Imagining how my spouse would react to my behavior”, “attending to my own health-related needs”, and “yearning for my spouse”. The scoring of the scale involves subtracting the LO score from the RO score and ranges from -33 to +33 (RO focused). A score of 0 indicates a balance of the two dimensions. This measure will address Specific Aim 3 (Appendix N).

Centers for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). The CES-D is a self-rating scale to assess depression symptoms in the general population. This scale was designed to measure components such as mood, feelings of guilt, hopelessness, loss of appetite, and sleep disturbance. The questions were pooled by the author by examination of previously validated scales to measure depression symptomology (e.g., Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Zung, 1965). The scale contains 20 questions that are to be rated within the last week such as “I felt that I was just as good as other people”, “I felt depressed”, and “I thought my life had been a failure”. A choice of rarely (less than 1 a day), some or a little of the time (1-2 days), occasionally or a moderate amount of the time (3-4 days), and most or all of the time (5-7 days) is used. The CES-D has been used in various cultures such as Korean (Cho & Kim, 1998), Armenian (Demirchyan, Petrosyan, & Thompson, 2011), and has been tested with older adults (Haringsma, Engles, Beekman, & Spinhoven, 2004;

Lewinsohn, Seeley, Roberts, & Allen, 1997) including the bereaved population (Radloff, 1977) (Appendix O).

Other scales considered for this study: The Geriatric Depression Scale (GDS) (Sheikh & Yesavage, 1986; Yesavage, Brink, Rose, & Lum, 1983) was considered but due to its “yes” and “no” rating format it was determined that a more detailed rating scale is necessary and the PHQ-9 (Kroenke, Spitzer, & Williams, 2001) was considered but the author did not feel the nine questions were adequate to assess depression symptomology among bereaved participants. Due to the nature of the grief trajectory, a degree of depressive symptoms are expected to be present within the sample.

“I have thoughts about killing myself” was asked at the end of the CES-D to acknowledge suicidal thoughts. Any person not answering “none of the time” on this question was engaged in a private conversation regarding the thoughts of suicide, including any plan, access to any possible items to be used for suicide (e.g. weapons, medications) and a contact person’s name. The individual would be referred to their healthcare provider for further treatment if necessary. If thoughts of attempting suicide existed, a plan between the researcher and potential participant would have been made to remove the means for suicide and a call would have been placed to the contact person (that would include the researcher and the potential participant) to notify them of the seriousness of the suicide ideations. The suicide intervention was designed to immediately keep the individual safe and provide a plan to begin further family/friend and professional intervention. People who express suicide ideations are usually relieved at the

chance to finally tell someone about their thoughts and receive help (LivingWorks Education, 2011). The researcher has been trained in ASIST (applied suicide intervention skills training) and the information described above was gathered from this specialized training.

Data Management

As questionnaire data were collected, it was reviewed for missing data, and participants were given an opportunity to (a) complete questions or pages of the measures that they overlooked or (b) indicate that they would prefer not to answer. All data was identified with a participant number. Names were not on any of the data. The data was collected in paper form and stored in locked file cabinets in a locked room in a secure building. Data was entered into a computer database. The researcher independently verified accuracy of data entry. Computer files were backed up following each use. The database was maintained on a dedicated computer that is not linked to public access servers and was stored in a locked office in a secure building. Access was password protected and maintained behind enterprise-level firewalls and antivirus barriers. Using only aggregate data protected participant anonymity.

Data Analysis Plan

SPSS 20 was used for the statistical analyses. First, descriptive statistics, skewness, kurtosis, p-p plots, and histograms were used for continuous variables and tabulations and cross-tabulations for categorical variables to identify potential data entry errors, outliers, and nonnormally distributed variables.

Second, the original data was re-examined to detect any data entry errors. Third, analyses were conducted for missing data and to investigate significant demographic and conceptual predictors of attrition.

Qualitative data from the Feasibility Questionnaire, Participant Log and Intervention Log was reviewed and coded. Conclusions were made and verified by using the counting method according to the codings as well as noting relations between variables. A logical chain of evidence was mapped out to make conceptual coherence of the data in order to address the feasibility and acceptability of the study as described in specific aim 1 (Miles & Huberman, 1994).

Specific Aim 1. To examine the feasibility of the TCE intervention descriptive statistics and frequency distributions from the feasibility questionnaires were used to determine the rates of acceptability (perceptions of participants, satisfaction, adherence to sessions and practice), demand (expressed interest or intention to use, perceived demand, actual use), and implementation (success or failure of execution, amount, type of resources needed to implement, factors affecting implementation ease or difficulty, and intervention fidelity) of the program. Questions 1-11, 15, 18, 20 address acceptability of the TCE program, questions 2, 6, 7, 10, 11, 15 address the demand for TCE, and questions 4, 5, 6, 16, 17, 19, 20 address implementation of the TCE intervention. Qualitative analysis of the participants' open-ended responses on the Feasibility Questionnaire, Practice Log, and Intervention Log, were conducted. The evaluation of recruitment and retention strategies were examined using the

Intervention Log to track class attendance and the Participant Log to track home practice. Each of these logs also addressed acceptability, demand, and implementation of the TCE intervention. The RPE and MMI were used to examine intervention fidelity.

Specific Aims 2 and 3. The preliminary effects of the intervention were assessed using paired samples *t*-tests to examine whether there were significant differences in grief (HGRC and ICG), change of oscillation within the LO and RO dimensions (IDWL), and depressive symptoms (CES-D) from pre-test to post-test. The results indicate whether or spousally bereaved older adults participating in TCE had improved symptoms of grief and depression, as well as a change from LO activities to RO activities over time. Standard deviations, and correlations from the proposed study will be used to estimate the effect sizes of this novel intervention. The effect sizes generated from this study will be used to calculate the power and sample size for a future large scale randomized controlled trial with an attention control group.

Chapter 4

DATA ANALYSIS AND RESULTS

Demographics

The sample consisted of 21 participants, 19 female and two male, average age of 78.06 years. Ages ranged from 92 to 65 years old. The average time since the death of spouse was 15.1 months. The minimum time from spousal death to the intervention was 6 weeks and the maximum time since spousal death was seven years. Details of the demographics for the study are summarized in Table 3.

Prior to conducting analyses, descriptive statistics, skewness, kurtosis, p-p plots, and histograms were conducted for continuous variables and tabulations and cross-tabulations for categorical variables to identify potential data entry errors, outliers, and nonnormally distributed variables. Skewness of the data was less than 2.5 and kurtosis was below 11 indicating normal distribution of the data. This chapter will present the results of the data analysis.

Table 3

Demographic Data (N=21)

| Demographic variable | N | Percent | Mean | SD | Minimum | Maximum |
|-----------------------------------|----|---------|-------|-------|---------|---------|
| Age (years) | 21 | 100 | 78.06 | 8.84 | 65 | 92.25 |
| Gender | | | | | | |
| Male | 2 | 9.5 | | | | |
| Female | 19 | 90.5 | | | | |
| Race | | | | | | |
| Caucasian | 20 | 95.2 | | | | |
| African American | 1 | 4.8 | | | | |
| Income | | | | | | |
| < \$15,000 | 4 | 19.0 | | | | |
| 15,000-30,000 | 5 | 23.8 | | | | |
| 30,000-75,000 | 8 | 38.1 | | | | |
| 75,000-100,000 | 2 | 9.5 | | | | |
| Did not report | 2 | 9.5 | | | | |
| Time bereaved (months) | 21 | 100 | 15.10 | 20.48 | 1.51 | 87.16 |
| Cause of death | | | | | | |
| Cardiovascular Disease | 8 | 38.1 | | | | |
| Cancer | 5 | 23.8 | | | | |
| Surgical complications | 1 | 4.8 | | | | |
| Alzheimer's Disease | 2 | 9.5 | | | | |
| Stroke | 1 | 4.8 | | | | |
| Pneumonia | 1 | 4.8 | | | | |
| Diabetes | 1 | 4.8 | | | | |
| Multi-organ failure | 1 | 4.8 | | | | |
| Unknown etiology | 1 | 4.8 | | | | |
| Primary Caregiver | 10 | 47.6 | | | | |
| Caregiver length of time (months) | 21 | 100 | 32.30 | 35.04 | 1 | 96 |
| Current MM practice | 6 | 28.6 | | | | |
| Rarely | 2 | 9.5 | | | | |
| Every week | 2 | 9.5 | | | | |
| Three times a week | 2 | 9.5 | | | | |
| History of psychiatric treatment | 7 | 33.3 | | | | |
| Depression | 3 | 14.3 | | | | |
| Depression/Anxiety | 3 | 14.3 | | | | |
| Bipolar | 1 | 4.8 | | | | |
| Current psychiatric medication | 7 | 33.3 | | | | |
| Duloxetine (Cymbalta) | 4 | 19.0 | | | | |
| Venlafaxine (Effexor) | 1 | 4.8 | | | | |
| Lorazepam (Ativan) | 1 | 4.8 | | | | |
| Divalproex sodium (Depakote) | 1 | 4.8 | | | | |

Specific Aim 1- Evaluate the feasibility of the TCE program

Feasibility of the TCE program (acceptance, demand, and implementation) was evaluated by qualitative and quantitative analysis of the participants' responses to the Feasibility Questionnaire, Practice Log, Intervention Log, as well as analysis of recruitment, retention, and attrition of the TCE intervention..

Responses to the Feasibility Questionnaire. The Feasibility Questionnaire was distributed after the week-8 intervention. The most common answer for the majority of the questions was “agree”. Question 13 “I felt connected with group members who were participating in TCE” and question 14 “I enjoyed the social aspects of TCE more than the TCE exercises” received “somewhat agree” from 33.3% (6) of the participants. These questions referred to the social support aspect of the intervention. Questions 16-20 were open-ended questions used to assess various areas of feasibility (Table 7). Acceptability, demand, and implementation are used to examine feasibility of the TCE intervention and were adapted from Bowen et al. (2009).

Acceptability (perceptions of participants, satisfaction, adherence to sessions and practice) was evaluated by questions 1-11, 15, 18, 20, the Intervention Log and Participant Log. Responses to the questions on the Feasibility Questionnaire support a TCE program for spousally bereaved older adults. Specific frequencies regarding the questions pertaining to acceptability are displayed in Table 4. Eight participants continued with TCE sessions conducted by the same researcher after they completed the 8-week study. One participant was recruited from a senior center and traveled to another study site to continue

TCE sessions. Six participants were from the same assisted living facility and the other participant was from another assisted living facility.

Table 4

Feasibility Questionnaire- Acceptability Questions

| Question | Agree % (n) | Somewhat agree % (n) | Neutral % (n) | Somewhat disagree % (n) | Disagree % (n) |
|---|------------------|----------------------------|------------------|-------------------------------|-------------------|
| 1. The people important to me support my learning of TCE (Tai Chi Easy) | 83.3 (15) | 11.1 (2) | 5.6 (1) | 0 | 0 |
| 2. I think that people who are like me are interested in trying out practices like TCE. | 47.8 (11) | 21.7 (5) | 4.3 (1) | 4.3 (1) | 0 |
| 3. I enjoyed practicing TCE. | 77.8 (14) | 11.1 (2) | 11.1 (2) | 0 | 0 |
| 4. The movements in the TCE sessions were easy for me to do. | 72.2 (13) | 22.2 (4) | 5.6 (1) | 0 | 0 |
| 5. The TCE home materials were easy to use. | 50.0 (9) | 27.8 (5) | 5.6 (1) | 11.1 (2) | 5.6 (1) |
| 6. It was easy for me to find time to practice TCE. | 38.9 (7) | 27.8 (5) | 22.2 (4) | 5.6 (1) | 5.6 (1) |
| 7. I feel TCE was appropriate during this time of my mourning process. | 77.8 (14) | 22.2 (4) | 0 | 0 | 0 |
| 8. I feel less sad when I practice TCE. | 72.2 (13) | 16.7 (3) | 11.1 (2) | 0 | 0 |
| 9. I am in better physical shape because of TCE. | 55.6 (10) | 33.3 (6) | 11.1 (2) | 0 | 0 |
| 10. I think TCE is helpful after experiencing the loss of a spouse. | 61.1 (11) | 27.8 (5) | 5.6 (1) | 5.6 (1) | 0 |
| 11. TCE has made my grieving process easier. | 50 (9) | 27.8 (5) | 16.7 (3) | 5.6 (1) | 0 |
| 15. I intend to continue to practice TCE | 72.2 (13) | 22.2 (4) | 5.6 (1) | 0 | 0 |

Note: Most frequent answers are in **boldface**

Demand (expressed interest or intention to use, perceived demand, actual use) was assessed by questions 2, 6, 7, 10, 11, 15, the Intervention Log and the Participant Log. Fourteen participants (77.8%) agreed “TCE was appropriate

during this time of my mourning process.” Eleven participants (61.1%) agreed that “TCE is helpful after experiencing the loss of a spouse” and nine participants (50%) agreed “TCE made their grieving process easier”. Finding time to practice was a challenge for some participants. About 33% of the participants did not answer agree in response to the question, “It was easy for me to find time to practice TCE”. The participant log cited a lack of motivation (8 responses) as the most common reason for participants not to practice away from the group sessions. Other reasons for missing TCE sessions or not practicing were travel (7), schedule conflicts (4), and health issues (4). One participant’s mother died at week three of the intervention and one participant had foot surgery that required an absence from two group TCE sessions. Table 5 provides details regarding the Feasibility Questionnaire responses pertaining to demand of the TCE program.

Table 5

Feasibility Questionnaire- Demand Questions

| Question | Agree % (n) | Somewhat agree % (n) | Neutral % (n) | Somewhat disagree % (n) | Disagree % (n) |
|---|------------------|----------------------------|------------------|-------------------------------|-------------------|
| 2. I think that people who are like me are interested in trying out practices like TCE. | 47.8 (11) | 21.7 (5) | 4.3 (1) | 4.3 (1) | 0 |
| 6. It was easy for me to find time to practice TCE. | 38.9 (7) | 27.8 (5) | 22.2 (4) | 5.6 (1) | 5.6 (1) |
| 7. I feel TCE was appropriate during this time of my mourning process. | 77.8 (14) | 22.2 (4) | 0 | 0 | 0 |
| 10. I think TCE is helpful after experiencing the loss of a spouse. | 61.1 (11) | 27.8 (5) | 5.6 (1) | 5.6 (1) | 0 |
| 11. TCE has made my grieving process easier. | 50 (9) | 27.8 (5) | 16.7 (3) | 5.6 (1) | 0 |
| 15. I intend to continue to practice TCE | 72.2 (13) | 22.2 (4) | 5.6 (1) | 0 | 0 |

TCE session and practice time. The mean TCE session time for all participants was 4 hours and 23 minutes (about 6 sessions) with a minimum of 1 hour and 20 minutes (3 sessions) and a maximum of 5.33 hours (8 sessions). The mean practice time outside of class sessions was 4 hours. The minimum practice time was 0 hours (2 participants did not practice or turn in their practice log) and the maximum practice time was 10 hours and 25 minutes. The Participant Log and Intervention Log were specifically designed with areas for open-ended comments to be recorded. Reasons for missed sessions and comments regarding TCE session time and practice time were recorded.

Implementation (success or failure of execution, amount, type of resources to implement, factors affecting implementation ease or difficulty, intervention fidelity) was assessed by questions 4, 5, 6, 16, 17, 19, 20, the Intervention Log and the Participant Log. A difficulty noted by the researcher regarding implementation was the fact that some communities currently offer MM classes and were not open to offering TCE or both concerned this TCE study would conflict with current classes. Regarding the actual intervention, 13 participants agreed (72.2%) “the movements in the TCE sessions were easy for me to do” however, only seven participants (38.9%) agreed “it was easy for me to find time to practice TCE”. Table 6 illustrates the details regarding implementation.

Table 6

Feasibility Questionnaire- Implementation Questions

| Question | Agree % (n) | Somewhat agree % (n) | Neutral % (n) | Somewhat disagree % (n) | Disagree % (n) |
|--|------------------|----------------------------|------------------|-------------------------------|-------------------|
| 4. The movements in the TCE sessions were easy for me to do. | 72.2 (13) | 22.2 (4) | 5.6 (1) | 0 | 0 |
| 5. The TCE home materials were easy to use. | 50.0 (9) | 27.8 (5) | 5.6 (1) | 11.1 (2) | 5.6 (1) |
| 6. It was easy for me to find time to practice TCE. | 38.9 (7) | 27.8 (5) | 22.2 (4) | 5.6 (1) | 5.6 (1) |

Note: Most frequent answers are in **boldface**

During this study, the cost was kept at a minimum since the space for TCE was offered to the researcher free of charge and the materials (DVD and TCE booklet) were also free to the participants. For participants who traveled to the senior centers, the cost of gas for transportation was the only expense incurred. The researcher traveled to the assisted living communities, therefore, the residents who participated in the study did not incur any costs.

Table 7

Comments for Feasibility Questionnaire 16-21

| |
|--|
| Question 16. What would have made the TCE home sessions better? |
| A little longer |
| A set time |
| A regular time, which I did not do |
| More discipline on my part |
| More motivation on my part. |
| Bring in log for weekly accountability |
| Have a partner or instructor come for practice sessions |
| To have a partner |
| Someone else to do them with |
| Perhaps a list of the movements in order or something to help remember how we transitioned |
| More practice |
| DVD was not useful |
| A video of OUR instructor |
| Include more movements |

| |
|---|
| 17. What would have made the TCE group sessions better? |
| I liked it just as it was |
| I thought they were excellent |
| Nothing. Our instructor was great |
| They were fine |
| They were great! |
| A little longer |
| A little longer |
| Music |
| Word of mouth to others |
| Nothing |
| No comment |
| No suggestions |

| |
|--|
| 18. What did you like about TCE? |
| I enjoyed and profited from being here |
| Music and instructor |
| The calmness of the instructor and music |
| The teacher, other students |
| Wonderful teacher |
| Socializing with others |
| It was just ok |

Table 7. (Continued)

| |
|---|
| 19. What made it difficult to practice? |
| Always seem to find “other things” to do |
| Not designating a specific time to practice |
| I’m lazy, can always think of something else I “need” to do |
| Lazy- stressed |
| My motivation, schedule |
| Doctor appointments or meetings and activities |
| I wasn’t motivated to practice |
| Negligence and lack of focus |
| I have a bad shoulder |

| |
|--|
| 20. Please tell me about your emotional state before and after the TCE program? |
| About the same. Maybe worse because I am also dealing with the death of my mother (occurred after the start of the TCE program) |
| As I had experienced the emotional part of a spouse dealing with Alzheimer’s for 10 years. I was past the “sadness” of losing my spouse (more of a relief than a mourning) |
| I would rather avoid too many people and not talk for awhile, stayed with family |
| Somewhat better now, but not clear if it is due to the exercise or just the passing of 8 more weeks |

Qualitative Analysis. A qualitative approach, content analysis, was also used to examine components of feasibility of the program. Comments from the Participant Logs, Intervention Logs, and open-ended questions 16 - 20 on the Feasibility Questionnaire (Table 7) were examined. Words and phrases that appeared repeatedly were noted, combined based on similar meanings, and named as tentative categories or themes. Then, all of the phrases were organized by using a specific color to code according to the named categories. Any phrases/data that did not fit into one of the frequently occurring codes were then noted and added to the list for a total of seven categories: feeling, mood, emotions, relaxation, breathing, focus, and movement. Next, the number of occurrences within each

code was counted and recorded. Then, relationships between categories/themes that could be logically linked to another category/theme (and the sequence and meaning of these links) were noted as described in Table 8. The most common themes found throughout the logs and questionnaires describing the TCE experience were relaxation, movement, mood/emotion, breathing, and focus. The majority of these themes were expressed in a positive manner (see Table 8). For example, one participant wrote, “Focusing on TCE improves my mood” and “Felt more relaxed after (TCE) practice. Breathing better” in the Participant Log. The question “What did you like about TCE?” from the Feasibility Questionnaire yielded answers such as “Slow movements, breathing practices, meditation aspects” and “Music, smooth movements, not too hard”. Participants also described in the Participant Log negative feelings prior to TCE practice and reported (verbally and written) positive or relaxed states after engaging in TCE. For example, in the Participant Log “Upset and sad but it helped to do TCE movements” and “Sad before; more upbeat after (TCE)” from the Feasibility Questionnaire. The inability to focus or concentrate (e.g., “Hard to concentrate,” and “Difficult to focus”) were also found to be a factor in various Participant Logs within the first few weeks of entries but were not noted after week four of the intervention.

Table 8

Qualitative Analysis Themes and Number of Occurrences per Theme

Mood/Emotion (14)

Mood ok but better after practice (PL)
Focusing on TCE improves my mood (PL)
Better mood after practice (PL)
Before I was depressed, unmotivated and listless. After the TCE program I felt positive, energetic and eager for the next session (FQ)
Before I had a lot of negative feelings about my situation. After I think more of the really happy times we had together (FQ)
Sad before; more upbeat after (TCE) (FQ)
TCE makes me calmer and less anxious (FQ)
I can settle more easily and more readily into ordinary everyday tasks (FQ)
I was very sad and could not stop thinking about the time when my husband was ill and his death. Now I am better able to put it out of my mind when I practice and go to TCE class (FQ)
TCE represents a way to deal with depressing emotions- it breaks the spell- in a very positive way leading to a pleasant frame of mind (FQ)
From feeling many demands to caring for myself (PL)
Enjoy TCE more in class (PL)
Started very tired and got better during and after practice (PL)
Sore and tired, practice helped loosen me up (PL)

Relaxation (10)

Felt more relaxed after practice. Breathing better (PL)
I felt more relaxed after TCE (PL)
Breathing and relaxing (FQ)
TCE was relaxing and helpful (FQ)
Relaxation (FQ)
The intensity level to activity ratio was very soothing and relaxing (FQ)
Before a little on edge mostly because of loneliness. Afterward very relaxing and soothing (FQ)
This has helped me be aware of stress and assisted with relaxing (FQ)
From rushed to relaxed (FQ)
Participant 11 stated blood pressure was decreased at doctor office visit. (Week 4) (IL)

Breathing (5)

I like the new moves and breathing slower (PL)
Participant 4 stated breathing is better since starting TCE. (Week 5) (IL)
Breathing and relaxing (FQ)
Improved my breathing and oxygen level (FQ)
Slow movements, breathing practices, meditation aspects (FQ)

Table 8. (Continued)

| |
|---|
| Focus (6) |
| Hard to concentrate (PL) |
| Difficult to focus (PL) |
| Much more focused after TCE (PL) |
| From busy to focused (PL) |
| Participants commented they like Passing Clouds with music. Felt connection. (Week 1) (IL) |
| Helped stay in present moment (FQ) |
| Movement (10) |
| From pushed to quiet, gentle movements (PL) |
| I like the new moves and breathing slower (PL) |
| Upset and sad but it helped to do TCE movements (PL) |
| Tried to follow DVD, frustrated. Couldn't remember how to do some of the moves like clouds passing (week 1) (PL) |
| Participants commented the moves are getting easier. (Week 3) (IL) |
| Good movement (FQ) |
| Music, smooth movements, not too hard (FQ) |
| Slow movements, breathing practices, meditation aspects (FQ) |
| Learning new movements (FQ) |
| Include more movements (FQ) |

Note: PL= Practice Log, IL= Intervention Log, FQ= Feasibility Questionnaire

Intervention fidelity. Intervention fidelity refers to the degree to which the delivery of an intervention adheres to the original planned program (Mowbray, Holter, Teague, & Bybee, 2003). Time on task, adherence to or deviations from the program, MMI, Borg Perceived Scale of Exertion, observation of verbal and non-verbal communication were used to examine the fidelity of the TCE program.

Time on task. Conversations were kept to a minimum and focused on the TCE sessions and reinforcement or both questions regarding home practice. There were occasional discussions after TCE sessions outside of class among participants. This social support factor may have impacted the effects of the intervention and attempts to evaluate the bearing of social support were examined

by questions on the Feasibility Questionnaire in Table 9. The role of social support within this study is discussed further in Chapter 5.

Table 9

Social Support Questions from Feasibility Questionnaire

| | | | | | |
|--|-----------------|-----------------|----------|----------|----------|
| 12. I discussed the loss of my spouse with other group members. | 27.8 (5) | 16.7 (3) | 11.1 (2) | 22.2 (4) | 22.2 (4) |
| 13. I felt connected with group members who were participating in TCE. | 27.8 (5) | 33.3 (6) | 27.8 (5) | 5.6 (1) | 5.6 (1) |
| 14. I enjoyed the social aspects of TCE more than the TCE exercises | 11.1 (2) | 33.3 (6) | 16.7 (3) | 16.7 (3) | 22.2 (4) |

Note: Most frequent answers are in **boldface**

Interruptions during the TCE sessions were kept to a minimum. One facility had a glass door that presented distractions for the participants due to people passing by. The researcher decided to conduct the class in the opposite direction so that the participants were not facing the glass door for the remaining TCE sessions. Otherwise, interruptions were a participant arriving late for the session or noise from outside of the room that was lessened by closing the door.

Adherence or Deviations to the Program. The initial program length was 12 weeks but due to feedback from community resources (senior center staff and assisted living staff) and lack of recruitment inquiry the program was decreased to 8-weeks. Consequentially, an 8-week program may not have been a long enough time to evaluate the effects of TCE. Even with an 8-week program it was difficult

for participants to attend every session. The most common reasons for missed sessions were planned vacations, out of town visitors, and “not feeling well”.

Observations were made during the delivery of the intervention by the researcher in the Intervention Log (Appendix G). The following are examples of comments that were made before or after the TCE sessions: “I liked the passing clouds with the music, I felt a connection.” “I can really see how this could be helpful, especially in the middle of the night when I wake up thinking about everything”.

There were instances (6) when a participant was enrolled after a TCE group had begun. This did not seem to be an issue except for within one group. A positive comment was made regarding the cohesiveness of a group as the sessions progressed and one participant expressed dissatisfaction with another participant joining the group at week 5.

RPE and MMI Results. Analyses of the RPE were performed by examining frequencies and means (Table 10). The mean group score was 10.95 (SD= 2.29) indicating “fairly light”. Only one participant chose a rating of seven, “very, very light” and one participant (5.6%) chose a rating of 15 “hard”.

Table 10

Borg Rating Scale of Perceived Exertion Frequencies

| Please rate your perceived level of exertion during TCE (scale number) | Percent (n) |
|---|-------------|
| Very, very light (7) | 5.6 (1) |
| Very light (9) | 27.8 (5) |
| Very light (10) | 5.6 (1) |
| Fairly light (11) | 22.2 (4) |
| Fairly light (12) | 16.7 (3) |
| Somewhat hard (13) | 11.1 (2) |
| Hard (15) | 11.1 (2) |

Means, standard deviations, maximum and minimum statistics were analyzed for the subscales of the MMI. Questions 2, 3, 4, 6, and 12 are questions for the breath focus subscale and questions 8, 10, 13, and 17 are part of the meditative connection subscale. The choices for the MMI questions are as follows: 1= all of the time, 2 = very frequently, 3 = occasionally, 4 = rarely, 5 = very rarely, 6 = never. The key component subscales of the MMI breath focus (M = 1.93) and meditative connection (M = 2.61) show that participants were coordinating the core element of breathing “very frequently” and the core element of meditative connection “occasionally” (Table 11).

Table 11

Meditative Movement Inventory Subscale Statistics

| Subscale | Mean (SD) | Maximum | Minimum |
|-----------------------|------------|---------|---------|
| Breath Focus | 1.93 (.70) | 3.60 | 1.00 |
| Meditative Connection | 2.61 (.77) | 4.25 | 1.50 |

Frequencies and descriptive statistics were used to examine the MMI data (Table 12). The desired answer for the MMI is a 1 that equals “all of the time”.

Table 12.

Meditative Movement Inventory Frequencies

| Question | All of the time % (n) | Very frequently % (n) | Occasionally % (n) | Rarely % (n) | Never % (n) |
|---|--------------------------|--------------------------|-----------------------|-----------------|----------------|
| 1. My mind really became quiet | 22.2 (4) | 44.4 (8) | 33.3 (6) | 0 | 0 |
| 2. I was going into a state of relaxation | 16.7 (3) | 38.9 (7) | 38.9 (7) | 4.8 (1) | 0 |
| 3. I was breathing fully and deeply | 33.3 (6) | 50.0 (9) | 16.7 (3) | 0 | 0 |
| 4. I took in deep breaths with the movement | 27.8 (5) | 55.6 (10) | 16.7 (3) | 0 | 0 |
| 5. I was getting addicted to the feeling of inner peace | 16.7 (3) | 38.9 (7) | 22.2 (4) | 16.7 (3) | 5.6 (1) |
| 6. I was using my breathing to go into a relaxed state | 44.4 (8) | 27.8 (5) | 22.2 (4) | 5.6 (1) | 0 |
| 7. I moved in relaxed, fluid motions | 33.0 (6) | 61.1 (11) | 5.6 (1) | 0 | 0 |
| 8. I was connected to something greater than myself | 22.2 (4) | 16.7 (3) | 50.0 (9) | 5.6 (1) | 5.6 (1) |
| 9. I was happy or smiling a little | 27.8 (5) | 50.0 (9) | 22.2 (4) | 0 | 0 |
| 10. I was going into a state of reverie | 5.6 (1) | 50.0 (9) | 27.8 (5) | 16.7 (3) | 0 |
| 11. I was loosening up with the movements | 44.4 (8) | 44.4 (8) | 11.1 (2) | 0 | 0 |
| 12. I was breathing nice and slow | 55.6 (10) | 22.2 (4) | 22.2 (4) | 0 | 0 |
| 13. I was meditating | 11.1 (2) | 38.9 (7) | 33.3 (6) | 11.1 (2) | 0 |
| 14. My mind was clear of all thought | 5.6 (1) | 66.7 (12) | 27.8 (5) | 0 | 0 |
| 15. I was deeply in tune with myself | 16.7 (3) | 38.9 (7) | 44.4 (8) | 0 | 0 |
| 16. My attention was turned inward | 33.3 (6) | 38.9 (7) | 27.8 (5) | 0 | 0 |
| 17. I was in touch with the field of energies around me | 22.2 (4) | 27.8 (5) | 38.9 (7) | 5.6 (1) | 5.6 (1) |

Note: Most frequent answers are in **boldface**

The most frequent answer of “all of the time” was selected for the following questions: “I was using my breathing to go into a relaxed state” (44.4%, n = 8) “I was loosening up with the movements” (44.4%, n =8), and “I was breathing nice and slow” (55.6%, n = 10). “Very frequently” was the most common answer chosen for MMI questions 1, 3, 4, 5, 7, 9, 10, 13, 14, and 16. Three questions, “I was getting addicted to the feeling of inner peace”, “I was connected to something greater than myself”, and “I was in touch with the field of energies around me” were each chosen once (5.6%) for the “never” category.

Observations of verbal and non-verbal behavior. The researcher was unsure of how the participant’s would react to the gentle, slow nature of TCE considering various emotional states that may be present. However, the majority of the participant’s verbalized feeling more calm and relaxed post TCE session and after at home practice. Non-verbal behavior such as smiling and continuing to stay seated or standing with eyes closed after the TCE sessions was noted.

Recruitment, retention, and attrition. Rolling recruitment was ongoing throughout the duration of the study from February 23, 2012 until August 3, 2012 for a total of 23 weeks. Over 60 flyers were disseminated throughout the community: four churches, one senior expo booth, a library, two senior centers, two physician offices, three counseling/bereavement and hospice organizations, and three assisted living communities. Recruitment was conducted by the researcher in collaboration with the staff from the previously mentioned establishments. The majority of potential participants responded to flyers from the Tempe Pyle Multigenerational Center. A press release in a community paper, the

San Tan Sun, with the researcher’s information resulted in two inquiries about the study but no actual study participants. In addition, obituaries were used to contact potential participants. Nineteen names were gleaned from the obituaries and letters were sent through the U. S. mail resulting in four calls, (21% response rate) and one person enrolled in the study (5% participation rate). Further details of recruitment are displayed in Table 13.

Table 13

Details of Recruitment

| Recruitment Type | Total Responses | Eligible Participants | Not eligible for study but participated in TCE sessions | Attrition |
|----------------------------------|-----------------|-----------------------|---|-----------|
| Senior/Multigenerational Centers | 12 | 6 | 1 | 0 |
| Church Organizations | 5 | 0 | 2 | 0 |
| Physician Office | 2 | 0 | 0 | 0 |
| Obituary (19) | 4 | 1 | 1 | 0 |
| Newspaper | 2 | 0 | 0 | 0 |
| Assisted Living Community 1 | 7 | 4 | 1 | 0 |
| Assisted Living Community 2 | 5 | 4 | 0 | 1 |
| Assisted Living Community 3 | 6 | 4 | 2 | 2 |
| Word of Mouth | 7 | 2 | 2 | 0 |
| Total | 50 | 21 | 9 | 3 |

A target number of 30 participants had been established for this study.

This number was not achieved due to various factors including inability of participants to commit to the length of an 8-week program (6), inclusion/exclusion criteria (7), disinterest in the intervention (5), conflicting prior

commitments (7), and pre-existing illness (4) that the potential participants felt would interfere with the TCE.

The attrition rate for this study was 14%. Three participants dropped from the study. The first participant to drop out from the study was during week two of the intervention at assisted living facility two and the participant had attended only the first session. The participant had multiple health conditions and did not feel the intervention was conducive to her schedule. The second participant to drop moved to a new residence and was from assisted living facility three. This participant dropped at week two, after participating in the first TCE session. The third participant to drop from the study was from assisted living three at week two also. This participant was a close friend of the other resident who moved and dropped when the other participant dropped.

Analyses were performed to explore any correlations between participant retention and the study variables at pre-intervention. A separate dichotomous variable, “retention”, was created. Participants who completed data at both pre-intervention and post-intervention time points (retention of 86%) were assigned a number 1 and those who completed only the initial data collection and subsequently dropped out at some point prior to the final session were assigned a 0 in the SPSS database. None of the correlations were significant, although it appears that there was a trend for those who were experiencing panic, disorganization, or greater loss orientation to be more likely to drop out (Table 14).

Table 14

Correlations of Attrition (Retention Value), HGRC, IDWL and CES-D Subscales (n=21)

| | Retention | Despair | Panic | Growth | Anger | Detach | Disorg | LO | RO | CES-D |
|-----------|-----------|---------|--------|--------|--------|--------|--------|-------|-------|-------|
| Retention | 1 | | | | | | | | | |
| Despair | -.233 | 1 | | | | | | | | |
| Panic | -.395 | .596** | 1 | | | | | | | |
| Growth | -.090 | -.472* | -.047 | 1 | | | | | | |
| Anger | -.322 | .545* | .328 | .274 | 1 | | | | | |
| Detach | -.203 | .423 | .443* | .039 | .592** | 1 | | | | |
| Disorg | -.407 | .217 | .446* | .090 | .199 | .664** | 1 | | | |
| LO | -.424 | .710** | .638** | -.299 | .356 | .114 | -.041 | 1 | | |
| RO | -.033 | -.093 | -.107 | .080 | .292 | -.075 | -.414 | .094 | 1 | |
| CES-D | -.288 | .790** | .668** | -.375 | .510* | .449* | .329 | .526* | -.087 | 1 |

Note: ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed)

Specific Aim 2

Evaluate whether the Tai Chi Easy intervention facilitates a positive trend in the grieving process (despair, panic behavior, blame and anger, detachment, disorganization, and personal growth) as measured by the HGRC. The answers for the HGRC scale are as follows: 1 = does not describe me at all, 2 = does not quite describe me, 3 = describes me fairly well, 4 = describes me very well, and 5 = describes me very well. Paired samples *t* tests were calculated to examine the difference between the pre-intervention and post-intervention means on the subscales of the HGRC. The results did not indicate statistical significance, but there were trends noted in a positive direction in all subscales (see Table 15). (The Personal Growth subscale indicated a negative value that is the correct direction for this scale). Effect sizes were calculated using d_z which measures the magnitude of the intervention effects from pre to post-intervention. Faul, Erdfelder, Georg-Lang, & Buchner (2007) defined the effect size index d_z as:

$$d_z = |\mu_x - \mu_y| / \sqrt{(\sigma_x^2 + \sigma_y^2 - 2\rho_{xy} \cdot \sigma_x \cdot \sigma_y)} \quad (1)$$

where μ_x and μ_y denote the population means, σ_x and σ_y denote the standard deviation in either population, and ρ_{xy} denotes the correlation between the two random variables. According to Cohen, (1988) interpretation of effect sizes are as follows: small effects ranged from .20-.49, medium effects ranged from .50-.79, and large effects were greater than or equal to .80. The despair subscale indicated a medium effect size ($d_z = .50$). Panic behavior ($d_z = .43$), personal growth ($d_z = .34$), and disorganization ($d_z = .25$) indicated a small effect size. Paired samples *t*

tests were also performed removing the participants taking medication for depression, anxiety, or bipolar disorder ($n = 7$) and no significant differences in the means were found.

Table 15

HGRC Paired Samples t -Test Results

| Subscale | Pre-intervention mean (SD) | Post-intervention mean (SD) | t-test | p | Effect size (Cohen's d) |
|-----------------|----------------------------|-----------------------------|--------|------|----------------------------|
| Despair | 1.85 (.74) | 1.67 (.61) | 2.05 | .056 | .50 |
| Panic Behavior | 1.77 (.61) | 1.57 (.327) | 1.18 | .253 | .43 |
| Personal Growth | 3.04 (.78) | 3.24 (.79) | -1.44 | .169 | .34 |
| Blame & Anger | 1.29 (.40) | 1.24 (.46) | 0.38 | .708 | 0.07 |
| Detachment | 1.65 (.49) | 1.60 (.59) | 0.31 | .761 | .08 |
| Disorganization | 2.22 (.68) | 2.10 (.77) | 1.11 | .282 | .25 |

Specific Aim 3

Evaluate if a change of focus within the LO dimension as measured by the IDWL was noted from pre-intervention to post-intervention. Paired samples t tests were calculated to examine the means from pre-intervention to post-intervention on the LO subscales of the IDWL. The answers for the IDWL are as follows: 1 = rarely or not at all, 2 = once in a while, 3 = fairly often, 4 = almost always. The average LO post-intervention score ($M = 26.06$) was significantly lower than the average LO pre-intervention score ($M = 28.72$) indicating a change of focus within the LO dimension ($t = 2.13, p = .049$). The RO scores were compared using t -tests but did not reach statistical significance. There was, however, a trend showing that the post-intervention RO scores ($M = 26.06$) were higher than the

pre-intervention RO scores ($M = 28.72$) which is in the predicted direction. Effect sizes were calculated for the IDWL subscales as described for specific aim 2. The LO subscale indicated a medium effect size of .50. Paired samples t tests were also performed after excluding the participants taking medication for depression, anxiety, or bipolar disorder ($n = 7$) and no significant differences in the means were found. Table 16 illustrates the results of the IDWL.

Oscillation balance score is determined by subtracting the LO score from the RO score (Caserta and Lund, 2007). A score of 0 indicates a perfect oscillation balance, a negative score indicates more oscillation within the LO dimension whereas a positive score indicates more oscillation within the RO dimension of the DPM. The pre intervention oscillation score is .84 and post intervention oscillation score is 2.77, indicating a shift more to the RO dimension post intervention.

Table 16

IDWL Paired t-test Results

| Subscale | Pre-intervention mean (SD) | Post-intervention mean (SD) | t -test | p | Effect size (Cohen's d) |
|-------------------------|----------------------------|-----------------------------|-----------|------|----------------------------|
| Loss-orientation | 28.72 (6.52) | 26.06 (7.01) | 2.13 | .049 | .50 |
| Restoration-Orientation | 29.56 (4.66) | 28.83 (4.51) | .68 | .507 | .15 |
| Oscillation Balance | .84 | 2.77 | | | |

Paired samples t tests were calculated to examine the difference between the CES-D to determine any change from pre-intervention to post-intervention

(Table 17). The scale for the answers of the CES-D are as follows: 0= rarely (less than 1 a day), 1 = some or a little of the time (1-2 days), 2 = occasionally or a moderate amount of the time (3-4 days), and 3 = most or all of the time (5-7 days). The answers for questions 4, 8, 12, and 16 were appropriately reversed using SPSS prior to the analysis. The average score post-intervention score ($M = 17.33$) was lower than the average CES-D pre-intervention score ($M = 19.61$) but did not reach statistical significance ($t = 2.28, p = .237$). Cohen's d indicated a small effect size ($d_z = .34$) for this scale. The CES-D scores range from 0 to 60 with higher scores indicating more depressive symptoms. Past literature has considered a score of 16-26 as mild depression and scores of 27 indicating major depression (Zich, Attkisson, & Greenfield, 1990). Upon entry to the study the CES-D scores ranged from 4 to 46. Nine participants had scores between 16-26 and five participants had scores between 27-46. At the 8-week data collection point CES-D scores ranged from 6 to 27. Nine participants had scores between 16 and 26 and only one participant had a score of 27. Paired samples t -tests were also performed excluding participants taking medication for depression, anxiety, or bipolar disorder ($n = 7$) and no significant differences in the means were found.

Table 17
CES-D Paired Samples t-test Results

| | Pre-intervention mean (SD) | Post-intervention mean (SD) | t-test | p | Effect size |
|-------|----------------------------|-----------------------------|--------|------|-------------|
| Score | 19.61 (10.49) | 17.33 (5.98) | 2.28 | .237 | 0.34 |

Exploratory correlations were performed to further examine the results between the following variables: TCE session time, TCE practice time, and the subscales of the MMI, HGRC, IDWL, and CES-D. There were no significant correlations between variables noted.

The study data has been qualitatively and quantitatively explored in various aspects. Statistically significant results as well as a medium effect size for the LO subscale of the IDWL were noted as well as a medium effect size for the despair subscale of the HGRC. All other measures indicated a shift within the positive direction of improvement and, although not statistically significant, are noteworthy results. An in depth discussion regarding the results and possible explanations are discussed in the following chapter.

Chapter 5

DISCUSSION

The primary aim of this feasibility study was to test a physical activity program, TCE, with spousally bereaved older adults. Acceptability, demand, implementation, recruitment, retention, and attrition of the program were examined to determine the feasibility of the program. Preliminary effects of the TCE intervention on grief and depression were also examined using the HGRC, IDWL, and the CES-D. This chapter discusses interpretation of the findings and how the results relate to the theoretical underpinnings and empirical evidence as well as future implications, strengths, and limitations.

Summary of Findings

Demographics. Twenty-one participants (19 females and two males) enrolled in the study. Three female participants did not complete the study. Therefore, pre-post data analyses were performed from 16 females and two males (n=18). Statistical analyses of demographics and pre-intervention data did not reveal any significant correlations between these variables and participant retention (see Table 3 for analyses details). The mean age of the study was 78.06 and the mean time from loss of spouse to the intervention was 15.1 months. The majority of the sample was Caucasian and one participant was African American.

Specific Aim 1- Evaluate the feasibility of the TCE program

Responses to the Feasibility Questionnaire. The acceptability, demand, and implementation of the program were explored with the qualitative and

quantitative results of the Feasibility Questionnaire, Participant Logs, and Intervention Log. Recruitment and retention strategies indicated that TCE is a feasible exercise for spousally bereaved older adults. The cooperation of local senior centers and assisted living communities were of utmost importance to the success of the program.

Acceptability (perceptions of participants, satisfaction, adherence to sessions and practice) was evaluated by questions 1-11, 15, 18, 20, the Intervention Log and Participant Log. The positive feedback from the feasibility questionnaire also provides acceptability of TCE with this particular population as well as the evidence that eight participants continued with TCE sessions after they completed the intervention demonstrates acceptability of the intervention.

Demand (expressed interest or intention to use, perceived demand, actual use) was assessed by questions 2, 6, 7, 10, 11, 15, the Intervention Log and the Participant Log. Fourteen participants (77.8%) agreed “TCE was appropriate during this time of my mourning process.” Eleven participants (61.1%) agreed that “TCE is helpful after experiencing the loss of a spouse” and nine participants (50%) agreed “TCE made their grieving process easier”. The varied responses regarding demand of the intervention may merit more investigation. It is highly possible that TCE may be a successful adjunct to traditional types of bereavement support.

A lack of motivation (8 responses) was cited as the most common reason for participants not to practice away from the group sessions. Considering mean

depression score of the sample was mildly depressed and the nature of the grief process, this is not an unexpected report from this sample.

Implementation (success or failure of execution, amount, type of resources needed to implement, factors affecting implementation ease or difficulty, intervention fidelity) was assessed by questions 4, 5, 6, 16, 17, 19, 20, the Intervention Log and the Participant Log. Thirteen participants (72.2%) agreed, “The movements in the TCE sessions were easy for me to do” however, only seven participants (38.9%) agreed, “It was easy for me to find time to practice TCE”. The mean TCE session time for all participants was 4 hours and 23 minutes (about 6 sessions) with a minimum of 1 hour and 20 minutes (3 sessions) and a maximum of 5.33 hours (8 sessions). The mean practice time outside of class sessions was 4 hours. The minimum practice time was 0 hours (2 participants did not practice or turn in their practice log) and the maximum practice time was 10 hours and 25 minutes. Based on these numbers, a program of longer duration may elicit more powerful results with an increase in the dosage of the intervention. A meta-analysis of Tai Chi and Qigong studies examining well-being found a wide variety from 20 minutes to 60 minutes in duration per session and 5 weeks to 1 year in frequency (C. Wang et al., 2010). The possibility of booster sessions or follow up of participants for a future study may provide more substantial results.

The Intervention Log was used to track attendance and any verbal comments from the participants or observations noted by the researcher. One

participant stated they liked the DVD while four participants stated they did not like the instructional manner of the video and the fact that the video was not of the actual instructor (researcher). One group suggested a video of the researcher be made if possible. One participant audio recorded the sessions to use for practice at home. This participant also made compact disc copies of the sessions and distributed it to other participants at the next session for home practice use. Although this may have compromised the intervention fidelity of the study, this is an important aspect to consider for future studies of a similar nature.

A positive observation noted by the researcher was the focus and change of pace within the participants during and after the TCE sessions. Participants were noted to have their eyes closed and smiles on their faces during and at the end of TCE sessions. Comments such as “this is so relaxing” and words of praise and thanks to the researcher were also noted.

Qualitative analysis. Qualitative data analysis involves defining concepts, finding associations between experiences and attitudes as well as developing new ideas (Huberman & Miles, 2002). Written and verbal comments collected throughout the study were analyzed (i.e., Participant Log, Intervention Log, and Feasibility Questionnaire questions 16-20). The most common themes gleaned from this data were relaxation, movement, mood, breathing, and focus. This information may indicate that study participants were deriving the essential core elements of TCE and a trend toward efficacy of the intervention. Another observation made during qualitative examination found some participants

reported an inability to achieve and maintain focus during the first four weeks of the intervention but as the intervention progressed this no longer seemed to exist. As with any new exercise, it takes time and practice to grasp the concepts.

Exploration of the data also indicated a change from negative mood prior to the TCE session or practice to a positive mood after. A review by (Stathopoulou & Powers, 2006) discusses the concept that performing regular exercise may have effects similar to behavioral activation treatment used for depression. Adaptive positive activities are the focus of behavioral activation treatment with the intention of reducing the effects of depression (e.g., inactivity, withdrawal, and isolation). “TCE represents a way to deal with depressing emotions- it breaks the spell- in a very positive way leading to a pleasant frame of mind” was a comment made by a participant on the Feasibility Questionnaire post-intervention and provides support for the behavioral activation idea. A question on the Feasibility Questionnaire stated, “What did you like about TCE?” and a participant commented, “Classes- getting out for planned activity” thus supporting the idea of increasing activity and decreasing withdrawal and isolation. Another participant reported, “I was very sad and could not stop thinking about the time when my husband was ill and his death. Now I am better able to put it out of my mind when I practice and go to TCE class” adding support for the use of TCE specifically for spousal bereavement. A measurement tool to explore mood status may benefit a future study of similar nature.

The qualitative data enriches the findings of the quantitative results. For instance, the MMI quantifies the breath focus and meditative connection aspects of TCE whereas the comments and observations gleaned from the study in a qualitative manner specifically mention these areas. When the participants were asked about emotional states before and after the TCE program (question 20 on the Feasibility Questionnaire) responses such as, “Before (TCE) I had negative feelings about my situation. After (TCE) I think more of the really happy times we had together” and “I was very sad and could not stop thinking about the time when my husband was ill and his death. Now I am better able to put it out of my mind when I practice and go to TCE class” as well as “I can settle more easily and more readily into ordinary everyday tasks” attest to the statistically significant results of the LO subscale of the IDWL as well as transitions from negative ruminations to more positive ruminations.

RPE and MMI Results. The RPE showed a mean 10.95 (11= fairly light) on a scale of 1-20. The scores indicate that although TCE is not an extreme rigorous aerobic exercise, it requires effort and is not categorized as a very, very light activity for the majority of the participants. A detailed explanation will be discussed in a subsequent section.

The MMI subscale scores indicated breath focus (e.g. “I was using my breath to go into a relaxed state”) was used “very frequently” with a mean score of 1.93 (SD = .70). The meditative connection subscale (e.g., “I was meditating”) indicated a mean of 2.62 (SD = .77) with an answer of “occasionally”. The MMI

provides evidence that the participants were performing TCE as instructed although the ultimate intention is to achieve high levels (i.e. an answer of “all of the time”) of both breath focus and meditative connection. Reasons for the mid range score of the meditative connection may be related to a number of factors: 1) the participant’s current emotional state of having lost a spouse and the associated stressors; 2) the fact that the researcher was a novice TCE practice leader; 3) the population may have had different levels of acceptance of the MM practice that were unknown. Less than 30% of the study population had current MM experience. Although the MMI was tested with a similar population (87 post-menopausal Stage I-III fatigued breast cancer survivors with a mean age 59) this may still be a factor. Conversely, a population familiar with and able to adapt quickly to the movements of the TCE intervention may be able to reap more benefits. Beginning any new exercise presents varied challenges. Specifically, during TCE the focus on physical movements possibly interfered with the meditation aspect, decreasing the meditative connection (and subsequently MMI scores). In the first weeks of the intervention a participant commented that it was difficult to “clear the mind” because he/she was focused on performing the movements correctly and watching the practice leader (researcher). Alternatively, this finding may provide support for a lengthier meditative movement intervention for a future larger scale study.

Recruitment. The most successful forms of recruitment were flyers posted at a senior center and word of mouth. In the assisted living communities, the

activity directors were a great asset to recruitment by informing the residents about the program and informing the researcher of potential participants. A major benefit to the residents was the fact that the TCE sessions were held within their community, eliminating any travel for the participants.

Retention and attrition. Three of the enrolled female participants did not complete the 8-week TCE program. The attrition rate was 14%, lower than initially anticipated (20%). The three participants who did not complete the program attended only the first TCE session. The reasons for not completing the program included chronic health issues and relocation. None of the enrolled participants who dropped from the study expressed a lack of interest with the TCE intervention or the concept of the study being focused on spousally bereaved older adults. This may add validation to the acceptability of a TCE program with this particular population.

Specific Aims 2 and 3

HGRC, IDWL, and CES-D Results. *T*-test analyses showed trends in the positive direction for the subscales of the HGRC, CES-D and a statistically significant change within the LO dimension of the IDWL ($t = 2.13, p = .049$). A medium effect size ($d_z = .50$) was indicated for the despair subscale of the HGRC and the LO subscale of the IDWL. The IDWL showed the largest change within the LO subscale from pre-intervention ($M = 28.72$) to post-intervention ($M = 26.06$) providing evidence that a meditative movement program, specifically TCE, may be a useful exercise particularly for older adults who have lost a

spouse. Stroebe and Schut's Dual Process Model of Coping with Bereavement (1999; 2001) theorizes that as the process of bereavement progresses, the activities of the bereaved oscillate between loss-orientated (e.g. reminiscing of the deceased, event interpretation, wishful thinking) and restoration-orientated (e.g. maintenance of household/financial duties, new relationships). The use of Caserta and Lund's IDWL provides results that a shift from LO to RO occurred during the 8 weeks (.84 to 2.77). When the dimensions are broken down, a statistically significant change in the LO is noted but not for the RO subscale. One explanation for the non-significant RO finding may lie within the study sample in that 76% were from an assisted living community and all participants were retired. Activities such as household maintenance, cleaning, and meal preparation were managed by the assisted living community staff and financial responsibilities were often managed by a relative (usually son or daughter). Therefore, question 14 (dealing with financial matters), 17 (engaging in employment or volunteer activities), 19 (attending to legal, insurance, or property matters), and 20 (maintenance of household or automobile issues) did not always pertain to this older adult sample. According to the CES-D scores, nine participants were mildly depressed (16-26) at the initial data collection and after the 8-week intervention. Five participants had a CES-D score greater than 26 at the initial data collection indicating major depression and only one participant had a score of 27 post-intervention. In a future larger study the effects of the intervention on changes in minor and major depression scores may merit further

exploration that could have significant clinical implications. Another possible explanation for the statistically non-significant results of the HGRC and CES-D may have been the small sample size (n=18) that did not elicit enough power to produce statistically significant results.

Summary

Strengths. Strengths of this study include the originality of the concept. Published studies examining exercise and bereavement among spousally bereaved older adults have not been examined and this feasibility study provides evidence and improvement strategies for a larger randomized study of similar nature.

The theoretical underpinning of this study utilizes resources from nursing, psychology, and physical exercise, examining views that may help explain various angles of the results. Orem's Self-Care Deficit Theory (2001) provides a framework for how a nurse led TCE intervention provides information to help the bereaved individual learn healthy self-care behaviors. It was noted in the Intervention Log, "Participant 14 is a Registered Nurse and stated, 'I can see how this (TCE) relates to the Self Care Theory by Orem'". Another participant wrote in the Participant Log, "From feeling many demands to caring for myself" substantiating the concept that TCE practice promotes individual self-centered and self-nurturing behavior. The mental and physical benefits were proposed to ease, relieve, or prevent stressors that may arise after the loss of a spouse. Results from this study support a trend in the positive direction. One participant who had a history of psychiatric treatment (including medication) traveled to two different

study sites and continued to participate in TCE sessions on a regular basis after completing the 8-week study. This participant wrote the comments “I need this” as well as “from rushed to peaceful” in the Feasibility Questionnaire and Participant Log (respectively). This participant adapted TCE to her life and shared it with her daughter who is mentally disabled and resides with her for physical and psychological assistance. This example illustrates how a nursing intervention involving exercise led to positive self-care behaviors for this participant as well as extending to the participant’s home life with her daughter. TCE is focused on exercise in a holistic nature that incorporates self-care. In line with Orem’s Self-Care Deficit Theory, this is an important aspect for bereaved spouses considering that spousal loss has been linked to higher institutionalization rates, cognitive decline, increased depression and anxiety as well as poor physical health (Aartsen, Van Tilburg, Smits, Comijs, & Knipscheer, 2005; Bruce, Kim, Leaf, & Jacobs, 1990; Nihtila & Martikainen, 2008; M. S. Stroebe, Hansson, Schut, & Stroebe, 2008). The concept of self-care was emphasized during the intervention. For example, during self massage the researcher made statements such as “this is your time”, “you deserve this”, “you are taking care of your mind and your body by being here today”, “thank you for being here and thank yourself for being here”. Reminders to “clear your mind”, “keep your focus on right here, right now”, “you are feeling positive and peaceful” were infused during the TCE sessions. Positive observations were noted verbally and nonverbally. Smiles, head nodding, relaxed and calm postures as well as positive affirmations of relaxation,

positive attitudes and comments, and expressions of gratitude were noted among the participants and researcher. As a nurse led intervention utilizing the Self-Care Deficit Theory, it is important to increase the participant's knowledge of self-care and the prevention of poor health. One participant's health interfered with TCE class time but the condition existed prior to beginning the intervention and required surgery (foot) that was also known prior to the intervention. Otherwise, all of the participants were generally in a good state of health throughout the intervention.

The IDWL LO statistically significant change in this study supports the DPM concept. It is purported that oscillation within the LO and RO dimensions change as the grieving process evolves. Data from this study indicated a shift in oscillation balance from .84 pre-intervention to 2.77 post-intervention indicating an increase in oscillation within the RO dimension and less oscillation within the LO dimension. The LO side refers to grief work, ruminating about the deceased, denial or avoidance of changes during mourning. The RO side involves distraction from grief, doing new things, identifying with new roles and relationships and attending to changes in life. As discussed previously, the data from the IDWL supports a significant change in the LO dimension, suggesting less focus on activities revolving around spousal loss. This finding is congruent with the hypotheses suggesting that TCE clears the mind, possibly decreasing oscillation within the negative aspects of the LO dimension.

Peter Salmon's Unifying Theory proposes exercise: 1) induces enjoyable properties as time exercising increases, 2) has antidepressive and anxiolytic effects and 3) promotes stress reduction properties. The positive trend results of reported measurements, as well as participant feedback of this study provide support for the potential of this meditative movement type of exercise to pattern with physical exercise response and benefits in general. The Unifying Theory is based on evidence from high-impact exercise. However, the RPE mean score of 10.95 (11=fairly light) in this study reinforces that although TCE is not a high-intensity activity, the same principles may exist. One of the participants declared that he/she purposely did not engage in exercise because he/she did not enjoy it. This participant enrolled in the study with skepticism only to find he/she enjoyed TCE, reporting great benefits from the stress reduction properties along with other positive benefits. This participant successfully completed the intervention, including practicing away from the group TCE sessions.

Limitations. This was a feasibility study led by a single researcher. A team focused on recruitment and data collection may have increased the participant rate, thus increasing the power of the sample. This was also the researcher's first experience with the majority of the older adult community resources utilized in this study. Establishing contact and ongoing relationships with community resources such as senior centers and assisted living communities might enhance the recruitment and options for a future program of similar nature.

A mental screening test may have been useful; some of the participants did not practice and some were reminded by other participants to attend sessions. It was unclear whether the participants who did not practice forgot or did not have a genuine interest in practicing away from the TCE sessions. A “buddy system” may have been helpful and was suggested by multiple participants on the Feasibility Questionnaire. This idea may increase the TCE practice time but may also have the possibility of confounding the bereavement metrics due to the social support aspect.

Social support established among the participants may have confounded the study results, although likely beneficial to the participants. Questions on the feasibility questionnaire were used to assess social support that may have impacted outcome measures. The question “I discussed the loss of my spouse with other group members” 35% of the sample agreed or somewhat agreed whereas 44% of the participants disagreed or somewhat disagreed. The question “I felt connected with group members who were participating in TCE”, had a 60% agree or somewhat agree rate and the question “I enjoyed the social aspects of TCE more than the TCE exercises” 44% of the sample agreed or somewhat agreed whereas 39% disagreed or somewhat disagreed. Past literature examining psychosocial aspects of Tai Chi show increase in self-esteem measurements (Mustian et al., 2004; Taylor-Piliae, Haskell, Waters, & Froelicher, 2006). A randomized controlled trial utilizing Tai Chi by Cho (2008) showed that a change in depression scores were significant but when changes of social support were

controlled for, this effect disappeared indicating that the social support nature of Tai Chi may be responsible for the effects of Tai Chi on depressive symptoms. This wide range of answers suggests a future study may utilize a measurement tool to further investigate social support aspects of TCE with this population.

One participant commented on the calming effect of TCE, in particular, during disrupted nighttime sleep. A measure to examine sleep patterns/quality may help produce more information about the effects of TCE in a larger scale study of similar nature among spousally bereaved older adults. Positive results involving MM and sleep have been found in various studies (Frye, Scheinthal, Kemarskaya, & Pruchno, 2007; M. Irwin, Olmstead, & Motivala, 2008; Sarris & Byrne, 2011) and may prove beneficial to the spousally bereaved population as well.

Coping styles are very individualistic and may have a bearing on bereavement study results that were not accounted for in this study. A study by Ott, Lueger, Kelber and Prigerson (2007) examined patterns of grieving and identified clusters as “common” (elevated levels of grief and depression that decreased over time), “resilient” (lowest grief and depression levels with highest quality of life), and “chronic” (highest levels of grief and depression, more sudden deaths, lowest self-esteem and the highest marital dependency). Future bereavement studies may benefit from an inquiry into this topic in order to enhance the meaning of empirical findings.

Another limitation of this study is the ratio of females to males (19:2). This is a greater ratio than the number of older adults females compared to older adults males in the U.S. population. In 2010, the U.S. reported 23 million females aged 65 or older and 17.5 million males aged 65 or older (U.S. Department of Health and Human Services, 2011). By increasing the enrollment of male participants, a sample more representative of the current population would benefit a future study of similar nature.

As previously discussed, time is a confounding factor in interventional bereavement studies. The Feasibility Questionnaire inquired about emotional state pre and post-intervention and one participant commented, “somewhat better now, but not clear if it is due to the exercise or just the passing of 8 more weeks”. The use of a control group may produce even more meaningful results, possibly reducing confusion from the confounding factor of time.

Conclusions

This is the first study known to the researcher that examines exercise and bereavement with an older adult population. This feasibility study suggests encouraging results for a TCE program with spousally bereaved older adults. Recruitment and retention strategies were successful and many improvement suggestions for a larger scale study evolved from the observations and results of this study. The IDWL pre to post-intervention means indicated a medium effect size ($d_z = .50$) and statistically significant change ($t = 2.13, p = .049$) within the LO dimension indicating a decrease in grief related thinking and activities. The

mean group scores of the HGRC subscales showed that despair, panic behavior, detachment, disorganization and blame and anger all decreased from pre-intervention to post-intervention including an increase in the personal growth subscale, as anticipated, and the despair subscale indicating a medium effect size ($d_z = .50$). The group means of the CES-D demonstrated a decrease in depression scores from pre-intervention to post-intervention although not statistically significant with the small sample size.

Although the study showed limited results, with only one outcome, LO, yielding a statistically significant result, the clinical implications of this study are noteworthy. Even with small numbers of participants limiting power, the small to moderate effect sizes provide indication of potential efficacy on LO, and aspects of grief. Further, numerous conversations between the researcher and the participants regarding the TCE intervention provided positive feedback. The effects of TCE practice within the lives of the participants and their families were told in stories and expressions of gratitude. Many participants expressed a desire to continue the TCE practice for the emotional and physical health benefits they experienced.

Implications for Future Research and Practice

The acceptability, recruitment, and retention strategies in this study were evaluated to refine the research protocol in preparation for a future larger scale study. Recommendations for a future study are as follows: 1) the inclusion of a control group, 2) more than one researcher to conduct recruitment and data

collection, 3) a meditative movement intervention longer than 8-weeks, 4) increased number of participants of various gender and ethnic backgrounds, 5) use of a pre-intervention measurement tool to assess coping style, mood, sleep quality, social support, and possibly cognitive status, 6) a DVD of the meditative movement leader with the session movements in the order as the class session, 7) regular encouragement, reminders, or both practice with a partner, friend, or family member to increase practice time at home, 8) booster sessions or follow up of participants may provide more substantial results.

As the older adult population and health care costs increase, health promotion is of utmost importance. The use of TCE is a cost-effective example of how to encourage positive health behaviors during what may be an extremely stressful period of time. TCE may be effective by itself or as an adjunct therapy to traditional grief interventions. Empirical as well as clinical evidence from this study suggests meditative movement, specifically TCE, is an innovative, acceptable, practical, and effective intervention for spousally bereaved older adults.

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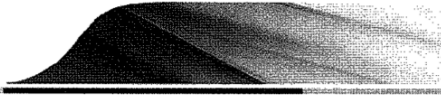
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
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APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL



To: Linda Larkey
Campus: NH

From: Mark Roosa, Chair 
Soc Beh IRB

Date: 02/23/2012

Committee Action: Expedited Approval

Approval Date: 02/23/2012

Review Type: Expedited F4 F7

IRB Protocol #: 1202007426

Study Title: A Feasibility Study of Tai Chi Easy for Spousally Bereaved Older Adults

Expiration Date: 02/22/2013

The above-referenced protocol was approved following expedited review by the Institutional Review Board.

It is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date. You may not continue any research activity beyond the expiration date without approval by the Institutional Review Board.

Adverse Reactions: If any untoward incidents or severe reactions should develop as a result of this study, you are required to notify the Soc Beh IRB immediately. If necessary a member of the IRB will be assigned to look into the matter. If the problem is serious, approval may be withdrawn pending IRB review.

Amendments: If you wish to change any aspect of this study, such as the procedures, the consent forms, or the investigators, please communicate your requested changes to the Soc Beh IRB. The new procedure is not to be initiated until the IRB approval has been given.

Please retain a copy of this letter with your approved protocol.

APPENDIX B
CONSENT FORM

CONSENT FORM

A FEASIBILITY STUDY OF TAI CHI EASY FOR SPOUSALLY BEREAVED OLDER ADULTS

INTRODUCTION

The purposes of this form are to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research and to record the consent of those who agree to be involved in the study.

RESEARCHERS

Dr. Linda Larkey, Profession at Arizona State University College of Nursing and Health Innovation and Stacey Nseir, RN, at Arizona State University College of Nursing and Health Innovation has invited your participation in a research study.

STUDY PURPOSE

Several studies have been conducted looking into the subject of spousal bereavement in the older adult however; Tai Chi Easy has not been studied with spousally bereaved older adults.

DESCRIPTION OF RESEARCH STUDY

If you decide to participate, then you will join a study involving research of a meditative movement called Tai Chi Easy. Tai Chi Easy is a simplified form of Tai Chi and involves a concentration on deep breathing, and meditation combined with a gentle flowing movement within a small group setting of other spousally bereaved older adults. All of the participants in this research study will all receive the same TCE program and will be asked to fill out surveys before the beginning and after completion (8-weeks) of the entire program. You have the option to skip any questions on a survey.

The aims of this research are to look at the feasibility (timing, format, and length of the program), demand, and implementation (proposed changes for a future program) and acceptability (participant perception of the program, adherence to Tai Chi Easy classes and home practice. This study is also exploring the impact Tai Chi Easy may have on the grieving process.

If you say YES, then your participation will last for 8-weeks at a local senior center or facility with adequate space for the Tai Chi Easy classes of up to 10 participants. You will be asked to physically participate in the guided Tai Chi Easy group sessions once a week and given a DVD and booklet to practice Tai Chi Easy at least twice a week at home You will be asked to keep track of your practice times in a log provided to you during this study. Approximately 30

people will be participating in this study within the surrounding Phoenix-Metropolitan area.

RISKS

There are no known risks from taking part in this study, but in any research, there is some possibility that you may be subject to risks that have not yet been identified. The topic of loss may be emotionally distressing at times.

BENEFITS

The possible/main benefits of your participation in the research are learning a low-impact, gentle form of exercise that has been shown in past studies to reduce stress, anxiety, and depression as well as improve balance, flexibility and overall well-being. Participation in the research may help you identify further ways to seek support during this time of grieving as well as help others (the bereaved, their families, and health care professionals) to better understand the topic of spousal loss and gain insight to the possibility of new coping strategies.

CONFIDENTIALITY

All information obtained in this study is strictly confidential. The results of this research study may be used in reports, presentations, and publications, but the researchers will not identify you. In order to maintain confidentiality of your records, name of investigator will assign you a participant number and all information will be kept in a locked file in the desk of Stacey Nseir. Data will be kept for one year after the completion of the Tai Chi Easy program and only Dr. Linda Larkey and Stacey Nseir will have access to names of the participants in the study. The results of this research study may be used in a dissertation, reports, presentations, and publications, but the researchers will not identify you.

WITHDRAWAL PRIVILEGE

Participation in this study is completely voluntary. It is ok for you to say no. Even if you say yes now, you are free to say no later, and withdraw from the study at any time.

If you do decide to withdraw from the study, the investigator may request that you provide information about your experience since this is a major factor of this study. This is completely voluntary.

COSTS AND PAYMENTS

The researchers want your decision about participating in the study to be absolutely voluntary.

Yet they recognize that your participation may pose some inconvenience and transportation cost. In order to help defray your costs you may receive a \$10 gift card at each data collection point (before and after the Tai Chi Easy sessions). If you withdraw from the study the second \$10 gift card will not be provided.

VOLUNTARY CONSENT

Any questions you have concerning the research study or your participation in the study, before or after your consent, will be answered by Stacey Nseir either by email at Jmady3@cox.net or telephone (480) 980-6441 or Linda Larkey (602) 496-1266.

If you have questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk; you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 480-965 6788.

This form explains the nature, demands, benefits and any risk of the project. By signing this form you agree knowingly to assume any risks involved. Remember, your participation is voluntary. You may choose not to participate or to withdraw your consent and discontinue participation at any time without penalty or loss of benefit. In signing this consent form, you are not waiving any legal claims, rights, or remedies. A copy of this consent form will be given (offered) to you.

Your signature below indicates that you consent to participate in the above study.

| | | |
|--|--------------|-------|
| _____ | _____ | _____ |
| Participant Signature | Printed Name | Date |
| _____ | _____ | _____ |
| Legal Authorized Representative (if applicable) | Printed Name | Date |

INVESTIGATOR'S STATEMENT

"I certify that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature. These elements of Informed Consent conform to the Assurance given by Arizona State University to the Office for Human Research Protections to protect the rights of human subjects. I have provided (offered) the subject/participant a copy of this signed consent document."

Signature of Investigator _____
Date _____

APPENDIX C

HEALTHCARE PROVIDER FORM

Healthcare Provider Form

Your patient, _____, has expressed interest in participating in “A Feasibility Study of Tai Chi Easy for Spousally Bereaved Older Adults”. This is a dissertation study conducted by Stacey Nseir, RN, PhD-C under the supervision of Professor Dr. Linda Larkey, at Arizona State University College of Nursing and Health Innovation.

Tai Chi Easy combines simplified Tai Chi movements with Qigong methods that include gentle flowing movements and slow shifts of body weight while incorporating deep, soothing breathing. This study will evaluate the feasibility of Tai Chi Easy and the effect it has on grief and depression among community dwelling adults 65 years and older who have lost a significant other.

We would appreciate your medical clearance for _____ participation in this study. If you feel that this individual might benefit from participation in this study, we would greatly appreciate your endorsement of his or her participation.

Please indicate your signature below that your patient is medically cleared to participate in the previously described study. Please call Stacey Nseir at 480 980-6441 if you have any questions or concerns regarding this matter.

Signature of Healthcare Provider _____ _____
Print name of Healthcare Provider Date

APPENDIX D
RECRUITMENT LETTER

A Feasibility Study of Tai Chi Easy for Spousally Bereaved Older Adults

Recruitment Letter

(Items in red font will not appear on the actual letter)

Dear _____,

I would like to express my condolences regarding the loss of your spouse. I know this is a difficult time in your life. I am a registered nurse and doctoral student under the supervision of Dr. Linda Larkey in the College of Nursing and Health Innovation at Arizona State University. I am conducting a research study involving exercise after the loss of a spouse. This study will gather information to help other people in the future who have suffered the loss of a loved one.

Volunteers must be 65 years of age or older, widowed at least 6 weeks but no longer than 2 years. If you are interested in participating I am more than happy to answer any questions or comments at (480) 980- 6441.

Best regards,

Stacey Nseir, RN, PhD-C

APPENDIX E
RECRUITMENT FLYER

Are you 65 or older?

Have you experienced the
death of a spouse?

Arizona State University is conducting a study
involving individuals who have lost a spouse.

If you are interested in participating in this study
please call

Stacey Nseir, RN at (480) 980-6441

for more information

APPENDIX F
DEMOGRAPHICS

Demographics

This form will be used to collect demographic data as part of the eligibility process. All information will be confidential. For this purposed you will be identified by a number. Please either circle the answer or fill in the blank. Please do not skip any questions.

1. Date of Birth _____
2. Male or Female (circle one)
3. Ethnicity: African American Asian American Indian
Hispanic Caucasian Middle Eastern Indian Other _____
4. Income: less than \$15,000/year \$15,000-30,000
30,000-75,000 \$75,000-100,000 100,00-150,000
more than \$150,000/year
5. Date your spouse died _____
6. How did your spouse die? (e.g. cancer, heart attack, auto accident, suicide)

7. Were you a primary caregiver for your spouse? Yes No
If yes, for how long did you care for your spouse? _____
8. Have you remarried since the loss of your spouse? Yes No
9. Do you currently practice any kind of meditative movement? (e.g., yoga,

Tai Chi, Meditation) If so what type? -

If so, how often? (circle one)

Rarely Every week 3 times a week Daily

10. Have you been treated for any psychiatric issues? Yes No

If yes, please describe

If yes, how long ago?

Are you on any medication for a psychiatric issue? Yes No

If so, what are the medication names?

APPENDIX G
INTERVENTION LOG

| Date and Time | Participants | Length of Practice (mins) | Comments (e.g., comments from participants, withdraws, etc.) |
|----------------------|---------------------|----------------------------------|---|
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APPENDIX H

INVENTORY OF COMPLICATED GRIEF

Inventory of Complicated Grief

Please circle the answer that best describes how you feel right now:

| | | | | | |
|---|-------|--------|-----------|-------|--------|
| 1. I think about this person so much that it's hard for me to do the things I normally do.... | never | rarely | sometimes | often | always |
| 2. Memories of the person who died upset me... | never | rarely | sometimes | often | always |
| 3. I feel I cannot accept the death of the person who died... | never | rarely | sometimes | often | always |
| 4. I feel myself longing for the person who died... | never | rarely | sometimes | often | always |
| 5. I feel drawn to places and things associated with the person who died... | never | rarely | sometimes | often | always |
| 6. I can't help feeling angry about his/her death... | never | rarely | sometimes | often | always |
| 7. I feel disbelief over what happened... | never | rarely | sometimes | often | always |
| 8. I feel stunned or dazed over what happened... | never | rarely | sometimes | often | always |
| 9. Ever since she/he died it is hard for me to trust people... | never | rarely | sometimes | often | always |
| 10. Ever since she/he died I feel like I have lost the ability to care about other people or I feel distant from people I care about... | never | rarely | sometimes | often | always |
| 11. I have pain in the same area of my body or have some of the same symptoms as the person who died... | never | rarely | sometimes | often | always |
| 12. I go out of my way to avoid reminders of the person who died... | never | rarely | sometimes | often | always |
| 13. I feel that life is empty without the person who died... | never | rarely | sometimes | often | always |
| 14. I hear the voice of the person who died speak to me... | never | rarely | sometimes | often | always |
| 15. I see the person who died stand before me... | never | rarely | sometimes | often | always |
| 16. I feel that it is unfair that I should live when this person died... | never | rarely | sometimes | often | always |
| 17. I feel bitter over this person's death... | never | rarely | sometimes | often | always |
| 18. I feel envious of others who have not lost someone close... | never | rarely | sometimes | often | always |
| 19. I feel lonely a great deal of the time ever since she/he died... | never | rarely | sometimes | often | always |

Source: Prigerson, H., Miller, M., Reynolds, C. F., Frank, E. (1995). An inventory of complicated grief: A scale to measure maladaptive symptoms of grief. *Psychiatric Research*, 59, 65-79.

APPENDIX I
FEASIBILITY QUESTIONNAIRE

FEASIBILITY QUESTIONNAIRE

Please read each statement carefully, and choose the number that best describes your experience from this study and circle the number/choice after the statement that best describes you.

Please add any comments you may have for any question at the end.

Please do not skip any items.

1. Agree
2. Somewhat agree
3. Neutral
4. Somewhat disagree
5. Disagree

1. The people important to me support my learning of TCE (Tai Chi Easy). 1 2 3 4 5
2. I think that people who are like me are interested in trying out practices like TCE. 1 2 3 4 5
3. I enjoyed practicing TCE. 1 2 3 4 5
4. The movements in the TCE sessions were easy for me to do. 1 2 3 4 5
5. The TCE home materials were easy to use. 1 2 3 4 5
6. It was easy for me to find time to practice TCE. 1 2 3 4 5
7. I feel TCE was appropriate during this time of my mourning process. 1 2 3 4 5
8. I feel less sad when I practice TCE. 1 2 3 4 5
9. I am in better physical shape because of TCE. 1 2 3 4 5
10. I think TCE is helpful after experiencing the loss of a spouse. 1 2 3 4 5
11. TCE has made my grieving process easier. 1 2 3 4 5
12. I discussed the loss of my spouse with other group members. 1 2 3 4 5
13. I felt connected with group members who were participating in TCE. 1 2 3 4 5

14. I enjoyed the social aspects of TCE more than the TCE exercises. 1 2 3 4 5

15. I intend to continue to practice TCE 1 2 3 4 5

16. What would have made the TCE home sessions better?

17. What would have made the TCE group sessions better?

18. What did you like about TCE?

19. What made it difficult to practice?

20. Please tell me about your emotional state **before** and **after** the Tai Chi Easy program.

21. Please use this section to write any other comments or suggestions that you may have.

Feasibility Questionnaire Scoring (not to be provided to the participant)

| Area of focus | Questions that address area of focus |
|----------------|--|
| Acceptability | 1-11, 15, 18, 20 Intervention Log Participant Log |
| Demand | 2,6,7,10,11,15,20 Intervention Log Participant Log |
| Implementation | 4,5,6,16,17,19,20 Intervention Log Participant Log |
| Social Support | 12,13,14 |

APPENDIX J

BORG RATING OF PERCEIVED EXERTION (RPE)

Borg Rating Scale of Perceived Exertion (RPE)

Please rate your perceived level of exertion during TCE practice by circling the appropriate number on the scale below.

- 1
- 2
- 3
- 4
- 5
- 6
- 7 Very, very light
- 8
- 9 Very light
- 10
- 11 Fairly light
- 12
- 13 Somewhat hard
- 14
- 15 Hard
- 16
- 17 Very hard
- 18
- 19 Very, very hard
- 20

APPENDIX K
MEDITATIVE MOVEMENT INVENTORY

Meditative Movement Inventory (MMI)

We are interested in finding out more about your experience with doing Tai Chi

Easy. Please circle your responses below. Please do not skip any questions.

When I was doing the Tai Chi Easy exercises, I felt like....

| Question | All of the time | Very Frequently | Occasionally | Rarely | Very Rarely | Never |
|---|-----------------------|--------------------|--------------|--------|----------------|-------|
| 1. My mind really became quiet | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. I was going into a state of relaxation | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. I was breathing fully and deeply | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. I took in deep breaths with the movements | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. I was getting addicted to the feeling of inner peace | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. I was using my breathing to go into a relaxed state | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. I moved in relaxed, fluid motions | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I was connected to something greater than myself | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. I was happy or smiling a little | 1 | 2 | 3 | 4 | 5 | 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10. I was going into a state of reverie | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. I was loosening up with the movements | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. I was breathing nice and slow | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. I was meditating | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. My mind was clear of all thought | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. I was deeply in tune with myself | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. My attention was turned inward | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. I was in touch with the field of energies around me | 1 | 2 | 3 | 4 | 5 | 6 |

Please feel free to add any comments you may have regarding your Tai Chi Easy experience:

APPENDIX L
PARTICIPANT LOG

Participant Log

Participant Number _____

This log is to help you keep track of your Tai Chi Easy practice. **Please be sure to record all practice sessions no matter how long or short.** You may also add notes as to how you were feeling before and after the practice session.

This log will be collected at the end of the study (week 12). Everything in the log will remain confidential as to your identity. You will be identified only by your participant number.

| Date and Time | Length of Practice (mins) | Comments (e.g., mood before and after practice, feelings during practice, ease/difficulty of practice, suggestions for improvement, etc.) |
|----------------------|----------------------------------|--|
| | | |
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APPENDIX M

HOGAN GRIEF REACTION CHECKLIST

HOGAN GRIEF REACTION CHECKLIST

*This questionnaire consists of a list of thoughts and feelings that you may have had **since** your loved one died. Please read each statement carefully, and choose the number that best describes the way you have been feelings during the **past two weeks, including today**. Circle the number beside the statement that best describes you. Please do not skip any items. Please add any comments you feel necessary at the bottom of this form.*

- | | | | |
|---|-----------------------------|---|------------------------|
| 1 | Does not describe me at all | 4 | Describes me well |
| 2 | Does not quite describe me | 5 | Describes me very well |
| 3 | Describes me fairly well | | |

| | | | | | |
|--|---|---|---|---|---|
| 1. My hopes are shattered | 1 | 2 | 3 | 4 | 5 |
| 2. I have learned to cope better with life | 1 | 2 | 3 | 4 | 5 |
| 3. I have little control over my sadness | 1 | 2 | 3 | 4 | 5 |
| 4. I worry excessively | 1 | 2 | 3 | 4 | 5 |
| 5. I frequently feel bitter | 1 | 2 | 3 | 4 | 5 |
| 6. I feel like I am in shock | 1 | 2 | 3 | 4 | 5 |
| 7. Sometimes my heart beats faster than it normally does for no reason | 1 | 2 | 3 | 4 | 5 |
| 8. I am resentful | 1 | 2 | 3 | 4 | 5 |
| 9. I am preoccupied with feeling worthless | 1 | 2 | 3 | 4 | 5 |
| 10. I feel as though I am a better person | 1 | 2 | 3 | 4 | 5 |
| 11. I believe I should have died and he or she should have lived | 1 | 2 | 3 | 4 | 5 |
| 12. I have a better outlook on life | 1 | 2 | 3 | 4 | 5 |
| 13. I often have headaches | 1 | 2 | 3 | 4 | 5 |
| 14. I feel a heaviness in my heart | 1 | 2 | 3 | 4 | 5 |
| 15. I feel revengeful | 1 | 2 | 3 | 4 | 5 |
| 16. I have burning in my stomach | 1 | 2 | 3 | 4 | 5 |
| 17. I want to die to be with him or her | 1 | 2 | 3 | 4 | 5 |
| 18. I frequently have muscle tension | 1 | 2 | 3 | 4 | 5 |
| 19. I have more compassion for others | 1 | 2 | 3 | 4 | 5 |
| 20. I forget things easily, e.g. names, telephone numbers | 1 | 2 | 3 | 4 | 5 |
| 21. I feel shaky | 1 | 2 | 3 | 4 | 5 |
| 22. I am confused about who I am | 1 | 2 | 3 | 4 | 5 |
| 23. I have lost my confidence | 1 | 2 | 3 | 4 | 5 |
| 24. I am stronger because of the grief I have experienced | 1 | 2 | 3 | 4 | 5 |
| 25. I don't believe I will ever be happy again | 1 | 2 | 3 | 4 | 5 |
| 26. I have difficulty remembering things from the | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| past | | | | | |
| 27. I frequently feel frightened | 1 | 2 | 3 | 4 | 5 |
| 28. I feel unable to cope | 1 | 2 | 3 | 4 | 5 |
| 29. I agonize over his or her death | 1 | 2 | 3 | 4 | 5 |
| 30. I am a more forgiving person | 1 | 2 | 3 | 4 | 5 |
| 31. I have panic attacks over nothing | 1 | 2 | 3 | 4 | 5 |
| 32. I have difficulty concentrating | 1 | 2 | 3 | 4 | 5 |
| 33. I feel like I am walking in my sleep | 1 | 2 | 3 | 4 | 5 |
| 34. I have shortness of breath | 1 | 2 | 3 | 4 | 5 |
| 35. I avoid tenderness | 1 | 2 | 3 | 4 | 5 |
| 36. I am more tolerant of myself | 1 | 2 | 3 | 4 | 5 |
| 37. I have hostile feelings | 1 | 2 | 3 | 4 | 5 |
| 38. I am experiencing periods of dizziness | 1 | 2 | 3 | 4 | 5 |
| 39. I have difficulty learning new things | 1 | 2 | 3 | 4 | 5 |
| 40. I have difficulty accepting the permanence of the death | 1 | 2 | 3 | 4 | 5 |
| 41. I am more tolerant of others | 1 | 2 | 3 | 4 | 5 |
| 42. I blame others | 1 | 2 | 3 | 4 | 5 |
| 43. I feel like I don't know myself | 1 | 2 | 3 | 4 | 5 |
| 44. I am frequently fatigued | 1 | 2 | 3 | 4 | 5 |
| 45. I have hope for the future | 1 | 2 | 3 | 4 | 5 |
| 46. I have difficulty with abstract thinking | 1 | 2 | 3 | 4 | 5 |
| 47. I feel hopeless | 1 | 2 | 3 | 4 | 5 |
| 48. I want to harm others | 1 | 2 | 3 | 4 | 5 |
| 49. I have difficulty remembering new information | 1 | 2 | 3 | 4 | 5 |
| 50. I feel sick more often | 1 | 2 | 3 | 4 | 5 |
| 51. I reached a turning point where I began to let go of some of my grief | 1 | 2 | 3 | 4 | 5 |
| 52. I often have back pain | 1 | 2 | 3 | 4 | 5 |
| 53. I am afraid that I will lose control | 1 | 2 | 3 | 4 | 5 |
| 54. I feel detached from others | 1 | 2 | 3 | 4 | 5 |
| 55. I frequently cry | 1 | 2 | 3 | 4 | 5 |
| 56. I startle easily | 1 | 2 | 3 | 4 | 5 |
| 57. Tasks seem insurmountable | 1 | 2 | 3 | 4 | 5 |
| 58. I get angry often | 1 | 2 | 3 | 4 | 5 |
| 59. I ache with loneliness | 1 | 2 | 3 | 4 | 5 |
| 60. I am having more good days than bad | 1 | 2 | 3 | 4 | 5 |
| 61. I care more deeply for others | 1 | 2 | 3 | 4 | 5 |

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Please add additional information you feel is necessary regarding your answers to this scale

Factor Structure for

HOGAN GRIEF REACTION CHECKLIST
(NOT TO BE GIVEN TO PARTICIPANT)

Factor 1 – DESPAIR

1. My hopes are shattered
3. I have little control over my sadness
6. I feel like I am in shock
11. I believe I should have died and he or she should have lived
14. I feel heaviness in my heart
17. I want to die to be with him or her
25. I don't believe I will ever be happy again
29. I agonize over his or her death
33. I feel like I am walking in my sleep
40. I have difficulty accepting the permanence of the death
47. I feel hopeless
55. I frequently cry
59. I ache with loneliness

Factor 2 – PANIC BEHAVIOR

4. I worry excessively
7. Sometimes my heart beats faster than it normally does for no reason
13. I often have headaches
16. I have burning in my stomach
18. I frequently have muscle tension
21. I feel shaky
27. I frequently feel frightened
31. I have panic attacks over nothing
34. I have shortness of breath
38. I am experiencing periods of dizziness
44. I am frequently fatigued
50. I feel sick more often
52. I often have back pain
56. I startle easily

Factor 3 – PERSONAL GROWTH

2. I have learned to cope better with life
10. I feel as though I am a better person
12. I have a better outlook on life
19. I have more compassion for others
24. I am stronger because of the grief I have experienced
30. I am a more forgiving person

Factor 3 - Personal Growth, continued

- 36. I am more tolerant of myself
- 41. I am more tolerant of others
- 45. I have hope for the future
- 51. I reached a turning point where I began to let go of some of my grief
- 60. I am having more good days than bad
- 61. I care more deeply for others

Factor 4 – BLAME AND ANGER

- 5. I frequently feel bitter
- 8. I am resentful
- 15. I feel revengeful
- 37. I have hostile feelings
- 42. I blame others
- 48. I want to harm others
- 58. I get angry often

Factor 5 - DETACHMENT

- 9. I am preoccupied with feeling worthless
- 22. I am confused about who I am
- 23. I have lost my confidence
- 28. I feel unable to cope
- 35. I avoid tenderness
- 43. I feel like I don't know myself
- 53. I am afraid that I will lose control
- 54. I feel detached from others

Factor 6 - DISORGANIZATION

- 20. I forget things easily, e.g. names, telephone numbers
- 26. I have difficulty remembering things from the past
- 32. I have difficulty concentrating
- 39. I have difficulty learning new things
- 46. I have difficulty with abstract thinking
- 49. I have difficulty remembering new information
- 57. Tasks seem insurmountable

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APPENDIX N
INVENTORY OF DAILY WIDOWED LIFE (IDWL)

Inventory of Daily Widowed Life (IDWL)

Below is a list of activities, tasks, or issues that widows and widowers sometimes need to confront or do in their daily lives. For each item, please indicate how much time you have spent on it during the past week.

| Activity | Rarely or not at all | Once in a while | Fairly often | Almost always |
|--|----------------------|-----------------|--------------|---------------|
| 1. Thinking about how much I miss my spouse. | 1 | 2 | 3 | 4 |
| 2. Thinking about the circumstances or events associated with my spouse's death. | 1 | 2 | 3 | 4 |
| 3. Yearning for my spouse. | 1 | 2 | 3 | 4 |
| 4. Looking at old photographs and other reminders of my spouse. | 1 | 2 | 3 | 4 |
| 5. Imagining how my spouse would react to my behavior. | 1 | 2 | 3 | 4 |
| 6. Imagining how my spouse would react to the way I handled tasks or problems I faced. | 1 | 2 | 3 | 4 |
| 7. Crying or feeling sad about the death of my spouse. | 1 | 2 | 3 | 4 |
| 8. Being preoccupied with my situation. | 1 | 2 | 3 | 4 |
| 9. Engaging in fond or happy memories about my spouse. | 1 | 2 | 3 | 4 |
| 10. Feeling a bond with my spouse. | 1 | 2 | 3 | 4 |
| 11. Feeling lonely. | 1 | 2 | 3 | 4 |
| 12. Visiting or doing things with others. | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| | | | | |
| 13. Finding ways to keep busy or occupied. | 1 | 2 | 3 | 4 |
| 14. Dealing with financial matters. | 1 | 2 | 3 | 4 |
| 15. Engaging in leisure activities (hobbies, recreation, physical activity etc.). | 1 | 2 | 3 | 4 |
| 16. Attending to my own health-related needs. | 1 | 2 | 3 | 4 |
| 17. Engaging in employment or volunteer work. | 1 | 2 | 3 | 4 |
| 18. Watching TV, listening to music, listening to the radio, reading. | 1 | 2 | 3 | 4 |
| 19. Attending to legal, insurance or property matters. | 1 | 2 | 3 | 4 |
| 20. Attending to the maintenance of my household or automobile. | 1 | 2 | 3 | 4 |
| 21. Focusing less on my grief. | 1 | 2 | 3 | 4 |
| 22. Learning to do new things. | 1 | 2 | 3 | 4 |

Scale from (Caserta & Lund, 2007)

Permission to use IDWL from M. Caserta on November 8, 2011

Scoring Instructions for the IDWL (NOT to be given to participant)

LO Subscale Score = Sum of items 1 through 11 (Possible range = 11[Low] to 44[High])

RO Subscale Score = Sum of items 12 through 22 (Possible range = 11[Low] to 44[High])

Oscillation Balance = RO score minus LO score (Possible range = -33 [Exclusively Loss-oriented] to +33 [Exclusively Restoration-oriented]).

A score equal to zero (0) indicates perfect oscillation balance.

APPENDIX O

CENTER FOR EPIDEMIOLOGIC STUDIES- DEPRESSION SCALE

CES-D Scale

Instructions for questions: Below is a list of the ways you might have felt or behaved. Please circle how often you have felt this way during the past week:

During the **past week**:

| | | | | |
|--|--|---|--|------------------------------------|
| 1. I was bothered by things that usually don't bother me. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 2. I did not feel like eating: my appetite was poor. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 3. I felt that I could not shake off the blues even with help from family or friends. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 4. I felt that I was just as good as other people. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 5. I had trouble keeping my mind on what I was doing. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 6. I felt depressed. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 7. I felt that everything I did was an effort. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 8. I felt hopeful about the future. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |

| | | | | |
|---|--|---|--|------------------------------------|
| 9. I thought my life had been a failure. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 10. I felt fearful. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 11. My sleep was restless. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 12. I was happy. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 13. I talked less than usual. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 14. I felt lonely. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 15. People were unfriendly. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 16. I enjoyed life. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 17. I had crying spells. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |

| | | | | |
|---|--|---|--|------------------------------------|
| 18. I felt sad. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 19. I felt that people dislike me. | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
| 20. I could not get "going". | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |

Source: Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.

| | | | | |
|--|-------------------|---|--|------------------------------------|
| 21. I have thoughts about killing myself. | None of the time. | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
|--|-------------------|---|--|------------------------------------|