

The Potential Role of Drama Therapy in the Prevention and Delay of Alzheimer's Disease and
Dementia: A Bibliographical Research Paper

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ABSTRACT

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Alzheimer's disease and dementia are chronic diseases that are having a significant impact both in terms of the number of individuals effected and the cost to the healthcare system (Alzheimer's Society of Canada, 2016). Given the increase longevity of individuals in society, the number of Alzheimer's disease and dementia cases are predicted to increase dramatically. The medical profession has recently changed its approach to Alzheimer's disease and dementia from treatment to placing more emphasis on its prevention. The biomedical approach suggests that for individual's at-risk, interventions of increased physical exercise, better nutrition, and cognitive stimulation should be introduced. This research study has proposed a hypothesis that drama therapy, as an intervention for at-risk individuals, will increase the prevention or delay of Alzheimer's disease and dementia. The hypothesis has been justified because drama therapy incorporates physical movement and cognitive stimulations through such techniques as role play and improvisation. Drama therapy can be implemented both as an individual or group therapy. If a group therapy method is applied, then the social factor believed to be an important element for the prevention or delay of Alzheimer's disease and dementia can be addressed. In addition, the therapeutic component of drama therapy can address stress and anxiety which are considered to be contributing factors to the prevalence of cardiovascular disease, type 2 diabetes, and obesity. The prevalence of these diseases increases the risk of developing Alzheimer's disease and dementia.

Dedication

I dedicate this research paper to the memory of my father

Michael C. O'Rourke

And to every person living with Alzheimer's disease and dementia

*Gratias vobis agimus, o duces ingeniosi. Usus vestri et fortitudo et sapientia et pro societate
magnae operae non e memoria nostra umquam excident.*

Table of Contents

ABSTRACT	iii
Dedication	iv
List of Tables	vi
Chapter 1. Introduction: A Paradigm Shift	1
THE OLD PARADIGM	3
THE NEW PARADIGM	4
THE BRAIN.....	5
OTHER MEDICAL DIMENSIONS	6
CHARACTERISTICS OF THE NEW PARADIGM.....	8
SYSTEMS APPROACH TO MEDICAL RESEARCH.....	9
PROBLEM STATEMENT	15
OBJECTIVES	15
Chapter 2. Method	17
ETHICAL	18
DATA COLLECTION	18
STEPS IN PROCEDURE.....	19
SEARCH TERMS AND DATABASES	19
INCLUSION AND EXCLUSION CRITERIA	19
DATA EXTRACTION AND SYNTHESIS.....	20
ARTICLES SELECTED.....	20
Chapter 3. Drama Therapy and Alzheimer’s Disease	30
DIFFERENT APPROACHES TO ADDRESSING CHRONIC DISEASE	30
SYSTEMATIC LITERATURE REVIEWS, META ANALYSES AND CREATIVE ARTS THERAPIES	33
DRAMA INTERVENTIONS AND COGNITIVE EFFECTS ON HEALTHY ELDERLY INDIVIDUALS	36
PSYCHOLOGICAL WELL-BEING.....	39
RESEARCH-BASED THEATER AND NEUROLOGICAL DISORDERS.....	39
DRAMA THERAPY INTERVENTIONS AND NEURODEGENERATIVE DISEASE	40
Chapter 4. Hypothesis and Treatment Design	46
PREVENTION PROGRAM DESIGN	46
HYPOTHESIS.....	47
DRAMA THERAPY INTERVENTION	48
PHYSICAL AND COGNITIVE DIMENSIONS OF DRAMA THERAPY	49
DRAMA THERAPY METHODS AND PHYSICAL EXERCISE.....	50
DRAMA THERAPY METHODS AND COGNITIVE STIMULATION	53
DRAMA THERAPY METHODS AND THE SOCIAL DIMENSION.....	54
DRAMA THERAPY AND THE MULTIFACTORIAL DIMENSIONS OF STRESS & ANXIETY.....	58
FUTURE DRAMA THERAPY PREVENTION STUDY DESIGN.....	61
Chapter 5. Conclusion	63
References	65

List of Tables

Table 1. Erikson's Eight Psychosocial Stages of Life	11
Table 2. Individual Drama Therapy Study Characteristics: 16 Articles in Alphabetical Order	22

Chapter 1. Introduction: A Paradigm Shift

We must stand up against old age and make up for its drawbacks by taking pains. We must fight it as we should an illness. We must look after our health, use moderate exercise, take just enough food and drink to recruit, but not to overload, our strength. Nor is it the body alone that must be supported, but the intellect and soul much more. (Cicero, c. 44 B.C./1909, para. 24)

Marcus Tullius Cicero's (c. 44 B.C./1909) description of the aging process presents an image of an individual's experience as they transition to the mature stage in human development. This Roman philosopher wrote in his letters the important position and value the elderly should hold in society (Cicero, c. 44 B.C./1909). The author described the value in the experiences, wisdom, and contributions the "old" provide to society and to the younger generation. This philosopher also emphasised the importance of living a physically, psychologically, cognitively, emotionally, and spiritually healthy and active life in order to age well. The idea of how an individual views and prepares for old age can affect their psychological and physical well-being, especially as they enter into this mature phase of their development. He wrote about the significance of an individual's lived experiences and to remain physically and cognitively stimulated as they age. "But what makes me capable of doing this is my past life. For a man who is always living in the midst of these studies and labours does not perceive when old age creeps upon him..." (Cicero, c. 44 B.C./1909, para. 24).

In today's world, the reality of an aging population dominating the landscape is the norm. The fact that the elderly population will outnumber the younger generation is partially a result of advances in medical research. However, with longevity of life comes new health challenges for this older population, such as chronic disease. An example of this phenomena is the prevalence of the chronic, neurodegenerative disease of Alzheimer's disease and dementia. As a result, a refocus on disease prevention must be addressed in order to try and manage this overwhelming reality. A paradigm shift in healthcare has moved from treating to preventing this chronic disease. This opens up a novel way of thinking about healthcare, making room for alternative, creative, and experiential interventions such as drama therapy. By adding drama therapy

interventions to this preventative approach to healthcare provides an alternative to the biomedical methods traditionally applied to health.

Landy (2003) describes the arts-based field of drama therapy as being in its infancy stage, that is still developing and finding its place in research. Although there have been some leaders in the field who have undertaken empirical research, the majority of the research has been “descriptive, theoretical, and qualitatively based” (p. 20). Thus, the research needs to be improved and sustained in order for the field of drama therapy to be an important contributor to healthcare. However, most of the drama therapy research has looked at treatment, assessment, and clinical case studies, not at an empirical prevention research study for at-risk healthy individuals (Landy, 2003). This is the focus of this research paper, to adopt drama therapy as a novel approach to healthcare and apply this insightful and creative approach to Alzheimer’s disease and dementia prevention research.

Alzheimer’s disease (AD) is a degenerative brain disease and represents over half the cases of dementia. The brain in a person with Alzheimer’s disease is effected by plaques, tangles, and a loss of connections between the neurons, causing the neurons to die (Alzheimer’s Society of Canada, 2016). Morrison (2014) states that other medical disorders can imitate AD, however, these conditions can be rejected once a diagnosis of neurocognitive disorder (NCD) has been confirmed. NCD is said to be the result of Alzheimer’s disease. Presently, science has not determined the cause or discovered a cure for Alzheimer’s disease (Morrison, 2014). Early onset AD is thought to be the result of genetics whereas late-onset AD is understood to be a combination of genetic, environmental, and lifestyle factors (U.S. Department of Health and Human Services, 2015). The three stages of Alzheimer’s disease are the following: early-stage (mild), middle-stage (moderate), and late-stage (severe). The impact these stages have on the individual is specific to each case. Persons living with AD experience changes in their cognitive and functional abilities, mood and emotions, and physical capabilities. Alzheimer’s disease slowly destroys the individual’s memory. AD and dementia has been described as a loss in cognitive functioning interfering with the individual’s ability to think, remember, and reason. In addition, the individual will experience behavioral deficits which compromise their ability to perform daily living skills. In the preclinical period of the disease, brain changes occur and can lie dormant for up to 25 years prior to AD symptoms becoming apparent. The average life expectancy for an individual living with AD is four to eight years, however, this time frame is

specific to the individual (Alzheimer's Society of Canada, 2016; Morrison, 2014; U.S. Department of Health and Human Services, 2015).

Several studies (Barnes & Yaffe, 2011; Brookmeyer, Johnson, Ziegler-Graham, & Arrighi, 2007; Prince et al., 2013; Rolandi, E., Frisoni, G. B., & Cavado, E., 2016) report that as the world's population ages, and with no effective treatment for AD, the prevalence of Alzheimer's disease will increase dramatically world-wide. This reality will result in a global economic and healthcare crisis by the year 2050. This world-wide forecast predicts an increase in AD cases ranging from over 26.6 million in 2007 to 115.4 million by 2050. In addition, this global estimate of AD cases indicates that half of these individuals would require acute long-term care. The most adversely effected by this global crisis will be the low and middle income countries (Barnes & Yaffe, 2011; Brookmeyer et al., 2007; Prince et al., 2013; Rolandi, E. et al., 2016).

Alzheimer's Society of Canada (2016) estimated that in 2011, approximately 15% of Canadians, or 747,000 individuals aged 65 years and older, lived with AD and other related dementias. The Canadian projection of individuals living with Alzheimer's disease and other dementias, by the year 2031, is expected to rise to 1.4 million. The incidence of Alzheimer's disease has both a direct cost in terms of the medical expenses and an indirect cost with regards to the lost earnings of the primary caregiver for the individual living with AD. It has been estimated that this cost will be 33 billion dollars per year (Alzheimer's Society of Canada, 2016). In December 2013, health ministers from the G8 countries convened to discuss the AD global crisis and to find alternative ways of dealing with this widespread problem (U.K. Department of Health, 2013).

The Old Paradigm

In the past Alzheimer's disease research has focussed on treating the disease with the emphasis placed on pharmacological development and on genetic studies. The pharmacological research was conducted in four areas: precursor loading, stimulation of transmitter release, slowing of transmitter degradation, and muscarinic agonists (Gauthier, 2001). Specific drugs were developed in each of these four areas as an attempt to slow the degeneration of mental capacity of individuals with mild, moderate, and severe Alzheimer's disease. The research indicates that the best results were found by using pharmaceutical drugs to slow the transmitter degradation (Gauthier, 2001). Cummings et al. (1998) ran a clinical trial on the use of the drug

metrifonate, which slowed the transmitter degradation with individuals diagnosed with mild to moderate Alzheimer's diseases. They found that metrifonate significantly improved cognitive ability and enhanced global function (Cummings et al., 1998).

The genetic studies on Alzheimer's disease have concentrated on the apolipoprotein E (APOE) gene, and its APOE*4 allele, to be an important genetic marker that can lead to the development of Alzheimer's disease. The research indicates that this genetic marker, along with other genetic and environmental elements, can be major factors in developing Alzheimer's disease (Kamboh, Sanghera, Ferrell, & DeKosky, 1995, p. 486).

The New Paradigm

There has been a recent paradigm shift in the medical literature modifying the research focus from treating Alzheimer's disease to concentrating on research investigating the prevention or delay of cognitive impairment caused by the disease (Fernandez, 2010; Imtiaz, Tolppanen, Kivipelto, & Soininen, 2014; Kivipelto et al., 2013; Solomon et al., 2014). In an attempt to circumvent this world-wide healthcare and economic emergency, a medical and research concept is emerging that focuses on implementing global strategies to find ways to prevent, delay, and slow the progression of AD. Presently, with no effective medical and pharmacological treatment for AD, embracing a preventative approach in the preclinical stage of the disease is considered to be a prudent plan of action. Preventative measures, such as encouraging a cognitively healthy aging population to adopt a wholesome lifestyle, can theoretically reduce their chances of developing AD. Potentially, three million cases of AD could be prevented by eliminating 10-15% of the disease's primary risk factors. Therefore, more therapeutic and preventative interventions to delay the onset and slow the progression of AD are recommended. Improving an individual's quality of life by adopting a healthy lifestyle and strengthening society's economic and healthcare policies are required if this global crisis is to be averted (Barnes & Yaffe, 2011; Brookmeyer et al. 2007; Prince et al., 2007; Rolandi, E. et al., 2016).

Solomon et al. (2014) state that a shift in AD research that looks at the pre-symptomatic and pre-dementia stages of the disease, has resulted in bridging the prevention and treatment trials in AD research. The authors point to the difficulty AD research encounters when determining the risk factors of the disease. Neuropathological and cognitive features can present differently in each individual. However, from a clinical perspective, cognitive deficits are easier to define and therefore should be considered to be a significant part of the prevention focus.

Alzheimer's disease treatment research has focused on preventing dementia in late-stage cognitive impairment as opposed to milder forms of cognitive impairment. The authors recognize there are multiple factors that can contribute to an individual's cognitive impairment besides Alzheimer's disease and that these causes should be included in the prevention criteria (Solomon et al., 2014).

The Brain

Several studies (Schöll et al., 2016; Snowden et al., 1997; Sperling, Mormino & Johnson, 2014; Spires-Jones & Hyman, 2014) identify the existence of an accumulation of the amyloid beta and tau proteins in the brain that can result in cognitive degeneration. Plaques are caused by β -amyloid (A β) and the tangles are caused by tau. The combination and build-up of these proteins cause the deterioration of the neurons, synapses, and neural networks. The resulting cognitive degeneration is the hallmark of Alzheimer's disease. Spires-Jones and Hyman (2014) argue that the disease may originate in the synapses and spread throughout the brain.

Alzheimer's disease will impact an individual's memory a decade prior to clinical presentation (Lazarov & Hollands, 2016; Sperling et al., 2014). The normal aging process results in a decrease in neurogenesis which impacts the ability of the hippocampus to function adequately. The outcome is memory loss and cognitive decline. In addition, the size of the hippocampus will decrease as well as the number of neurons and neural networks. Lazarov and Hollands (2016) suggest that changes in lifestyle, such as learning and exercise, can increase the size of the hippocampus and is a factor in maintaining brain plasticity. Stern (2009) developed the concept of a brain reserve and a cognitive reserve. The brain reserve is a build-up of neurons and greater synaptic density that allows the brain to continue to function normally, even with an accumulation of plaques and tangles, e.g., amyloid beta and tau proteins. Cognitive reserve is having alternative neural networks or cognitive strategies to address cognitive problems associated with plaques and tangles. Sperling et al. (2014) describe how both reserves are enhanced with brain stimulating activities and higher socioeconomic status. Increasing these reserves allows an individual to delay the onset of the AD pathology (Sperling et al., 2014). These researchers suggest that applying a pharmacological approach, i.e. drugs and vaccines, is a possible means to decrease the accumulation of plaques and tangles in the brain.

Snowden et al. (1997) investigated the possible relationship between severe brain damage, i.e. infarction, and the diagnosis of Alzheimer's disease. This study, known as the Nun

Study, included functional tests, i.e. memory, concentration and language, which were undertaken on an annual basis as well as a brain analysis after death. The researchers found that individual's with lower cognitive function and dementia had more brain infarcts, which included increased levels of amyloid beta and tau proteins. Brain infarcts are often the result of cerebrovascular disease such as atherosclerosis. Factors that influence atherosclerosis is hypertension brought on by poor diet, lack of exercise, anxiety, and cholesterol (Snowden et al., 1997).

Other Medical Dimensions

Qiu, Kivipelto, and von Strauss (2009) provide a review of the risk and protective factors for Alzheimer's disease. These risk factors include: genetic susceptibility, vascular problems, psychosocial factors, nutritional factors, and other risk factors. The genetic risk component associated with Alzheimer's disease is a function of whether or not it is early-onset familial or late on-set type AD. The U.S. Department of Health and Human Services (2015) identifies two forms of Alzheimer's disease, early on-set and late on-set AD. Early on-set AD occurs between the ages of 30 and 60, and its main cause is the result of an inherited mutated gene from one parent. Early on-set AD contributes to less than 5% of this effected population. Late on-set AD occurs in individuals who are 60 years old and older. The factors that influence late on-set AD are a combination of genetic, lifestyle and other environmental factors. The genetic component is a genetic variation that can increase or decrease the risk of getting this disease (U.S. Department of Health and Human Services, 2015). Three forms of the APOE gene have been identified and influence late on-set AD. These forms are: APOE ϵ 2, which is a rare variation and tends to protect against AD, APOE ϵ 3 is neutral, and APOE ϵ 4 increases the risk of AD (Kamboh et al., 1995; U.S. Department of Health and Human Services, 2015).

Qiu et al. (2009) identified a number of vascular risk factors and vascular morbidity that influenced the probability of developing AD. The identified vascular risk factors include: tobacco use, alcohol consumption, overweight and obesity, blood pressure, and high serum cholesterol levels. They found that smoking cigarettes resulted in an increased risk of developing Alzheimer's disease, especially for individuals who did not have the APOE ϵ 4 gene. Similarly, excessive use of alcohol, especially in mid-life, can result in tripling the likelihood of an individual developing AD in later life. Chronic alcohol abuse can lead to alcohol dementia. However, mild to moderate alcohol consumption has been shown to decrease the occurrence of

Alzheimer's disease (Qiu et al., 2009). The authors identified that a high body mass index (BMI) increases the risk of developing AD and dementia. They found that a high BMI at the age of fifty tended to result in an increased risk of AD twenty to twenty-five years later. It was also reported that an accelerated decrease in BMI in old age increased the risk of AD within ten years. The authors also reported that high blood pressure and high serum cholesterol at midlife tended to increase the risk of late-life AD. The authors also reported that there were mixed results concerning diet and a decreased risk of developing AD. Some studies found that increased consumption of antioxidants; e.g. vitamins E and C, were found to decrease the risk of AD, however, some negative results were also found. Similarly, there were mixed results in terms of decreasing the risk of AD with the Mediterranean diet, which included increased consumption of fish and vegetables (Qiu et al., 2009).

In Qiu et al. (2009) review article, the authors identify diabetes and cardiovascular disease as increasing the risk of AD and dementia. Diabetes results in high blood sugar levels because the body cannot produce enough insulin or cannot use insulin to decrease the level of blood sugar (Canadian Diabetes Association, 2016). High blood sugar; i.e. hyperglycemia, can result in neurodegenerative impacts on the brain that increase the risk of AD and dementia. The authors noted that cardiovascular disease can include strokes, brain infarcts, arterial disease, atrial fibrillation, and atherosclerosis, can all result in increased risk of AD and dementia (Qiu et al., 2009).

The authors (Qiu et al., 2009) reported that psychosocial factors had moderate or sufficient epidemiologic evidence to support a relationship between these factors and the risk of AD and dementia. The psychosocial factors that are believed to protect an individual from AD and dementia are: educational attainment, mental stimulation, social activity and social network, and physical activity. Educational attainment is thought to increase neural and cognitive reserves and thus delay the onset of Alzheimer's disease and dementia. Increased education is also related to improved socioeconomic status that can also be a factor that decreases the risk of AD and dementia. Mental stimulation is another factor that impacts an individual's risk of AD and dementia. Increasing mental stimulation through games and other activities that require information processing was seen to reduce AD and dementia. This mental stimulation can also be found in work and can be a factor that decreases the risks of AD and dementia. Longitudinal studies indicate that the lack of a social network or social engagement will increase an

individual's risk of developing AD and dementia. This increased risk is often seen in the elderly if they become socially isolated. An individual's social network can be a protective factor to guard against Alzheimer's disease and dementia. A large social network can provide mental stimulation to improve cognitive function by developing and strengthening behavioural, psychological, and physiological networks (Qiu et al., 2009). Another protective factor that reduces the risk of AD and dementia is regular physical exercise. Regular physical activity in midlife and beyond offers benefits to cognitive function. The greatest benefit to physical activity appears to occur when the activity is done on a regular basis. Regular physical activity is beneficial by increasing vascular health, promoting weight loss, mental stimulation, and expands brain plasticity (Qiu et al., 2009).

Characteristics of the New Paradigm

Baumgart et al. (2015) completed a review for the Alzheimer's Association on the risk factors associated with Alzheimer's disease and dementia. They concluded that regular physical activity and management of cardiovascular risk factors could result in a reduction of cognitive decline and might reduce the risk of developing dementia. In addition, the report suggested that the risk factors leading to cognitive degeneration could be prevented if an individual modified their lifestyle choices and expanded their educational opportunities (Baumgart et al., 2015).

Tolppanen et al. (2015) investigated the relationship between physical activity, body mass index, and the risk of dementia. The results indicated that physical exercise and a lower body mass index were associated with lowering the risk of developing dementia and Alzheimer's disease. The results also implied that the benefits of physical activity can occur in midlife and old age (Tolppanen et al., 2015).

Dehnel (2013) suggests there is a need for randomized controlled trials to look at ways of delaying or preventing Alzheimer's disease and dementia. However, there are several problems with undertaking such complex studies. Some of the obstacles include: the interventions to be introduced, when they should be introduced (at what chronological age), and the long term nature of the study (both in terms of cost and the difficulty in following individuals over time). To address this issue, a team of researchers from across Europe have collaborated to navigate through this daunting research process. This research team is called the European Dementia Prevention Initiative (EDPI) composed of four randomized controlled trials that include; Prevention of Dementia by Intensive Vascular Care (preDIVA), the Finnish Geriatric

Intervention Study to Prevent Cognitive Impairment and Disability (FINGER), the Multidomain Alzheimer Prevention Trial (MAPT), and the Healthy Aging Through Internet Counselling in the Elderly (HATICE) (Dehnel, 2013).

One of the largest, long term studies in the EDPI is the FINGER study. In this study individuals who are at-risk of developing AD and dementia are identified (Dehnel, 2013; Kivipelto et al., 2013). The three interventions that were incorporated into the FINGER study were exercise, nutrition, and cognitive stimulation. Ngandu et al., (2015) reported that the FINGER study duration will be seven years. Early results after two years of the study intervention have been reported. Using a randomized control trial methodology, the intervention group received nutrition, exercise, and cognitive stimulation while the control group received basic health information. The results indicated that the multidomain approach taken in the intervention group had a positive statistically significant impact on improving or maintaining cognitive functioning (Ngandu et al., 2015).

Imtiaz et al. (2014) reviewed the genetic environmental and lifestyle risk factors that can be modified and have the potential of decreasing the onset of AD and dementia. The genetic and environmental risk factors include: being a carrier of APOE ϵ 4, cardiovascular risk factors such as hypertension, cholesterol, body mass index, and diabetes. The lifestyle risk factors include: lower education, lack of physical activity, smoking and alcohol abuse, unhealthy dietary patterns, and social characteristics.

Another factor that might contribute to AD is cardiovascular disease (CVD) (Baumgart et al., 2015; Kivipelto et al., 2013). Many of the risk factors associated with CVD can be modified with changes in lifestyle. The modifiable risk factors include: hypertension (high blood pressure), tobacco use, diabetes, physical inactivity, unhealthy diet, overweight and obesity, and cholesterol (World Heart Federation, 2016). A change in lifestyle can modify these risk factors, decrease the prevalence of CVD which could decrease the prevalence of AD.

Systems Approach to Medical Research

This paradigm shift in healthcare to the prevention and delay of Alzheimer's disease has placed its focus on the pathological perspective of the disease. This pathological focus is achieved by concentrating and improving the physical, cognitive, and nutritional components of the life of the individual who is at risk of developing AD. The biological theories of aging correspond well with this pathological approach emphasized in the current Alzheimer's disease

prevention research. Donatelle and Thompson (2011) list the biological theories of aging as the wear-and tear theory, cellular theory, autoimmune theory, and the genetic mutation theory (pp. 414-415). However, besides addressing the biological components in an individual's development throughout their lifespan, other elements to consider should also include socioemotional and cognitive factors. All three of these lifespan elements are interrelated and will change and shift during the course of an individual's lifetime and development.

Donatelle and Thompson (2011) describe the importance and effect the psychosocial elements have on an individual's development throughout their lifetime. Psychosocial is defined as the following: "1: involving both psychological and social aspects; 2: relating social conditions to mental health" (Psychosocial, n.d.). Donatelle and Thompson (2011) explain how these psychological and social dimensions can influence how well a person adapts and adjusts to the changes in their life as they age. The authors describe the psychosocial theory and its relationship and influence on an individual's developing personality. They explain how an individual's early life experiences can determine how well an individual copes and adjusts to life's challenges in the later phases of their lifespan (Donatelle & Thompson, 2011).

Several authors (McLeod, 2013; Stassen Berger, 2011) describe the psychosocial developmental theory which is based on Erik Erikson's eight lifespan developmental stages. Erikson (1982) concentrated on the developing ego's connection to culture and society and its ability to resolve social crisis. The authors (Erikson, 1982; McLeod, 2013; Stassen Berger, 2011) describe the psychosocial theory's process of considering the conflicts between the psychological needs (psycho) of the individual and the needs of society (social), and how they impact personality development. Erikson (1982) believed that the eight, predetermined, distinct stages were influenced by social experiences with the aim of developing a balance within every stage. Prior to moving into the next phase of development that he called the *epigenetic* principle, a balance between the two conflicts would have to be met in order to experience the resulting virtues needed to live a healthy, fulfilled life. One stage that Erikson noted as being especially significant for personality development was the adolescent stage, however, each developmental stage comes with its own virtues as a result of the ego's ability to resolve a crisis. An underdeveloped stage could lead to an unhealthy personality further impeding on and contributing to a fragile sense of self (Erikson 1982; McLeod, 2013; Stassen Berger, 2011).

Erikson’s (1982) eight psychosocial developmental stages and their corresponding virtues, ages, and crisis are given below (see Table 1).

Table 1

Erikson's Eight Psychosocial Stages of Life

Stage	Psychosocial Crisis	Basic Virtue	Age
1	Trust vs. Mistrust	Hope	Infancy (Birth to 1 year)
2	Autonomy vs. Shame and Doubt	Will	Early Childhood (1 to 3 years)
3	Initiative vs. Guilt	Purpose	Play Age (3 to 6 years)
4	Industry vs. Inferiority	Competency	School Age (6 to 12 years)
5	Ego Identity vs. Role Confusion	Fidelity	Adolescence (12 to 18 years)
6	Intimacy vs. Isolation	Love	Young Adult (18 to 40 years)
7	Generativity vs. Stagnation	Care	Adulthood (40-65 years)
8	Ego Integrity vs. Despair	Wisdom	Maturity (65 plus)

Note. (Erikson, 1982, pp. 56-57; Stassen Berger, 2011, p. 19; McLeod, 2013, p. 1)

Erikson’s (1982) eight stages of development are: (1) Trust vs. Mistrust, which determines how well the infant views their world based on their early attachment to their primary caregiver, e.g. attachment theory. The second stage, Autonomy vs. Shame and Doubt, occurs when the child is becoming physically more adept and desires greater independence from their primary caregiver to explore their environment. Stage three, Initiative vs. Guilt, is a time when the child begins to play with other children and will use this structure to assert their needs in a more robust way. The fourth stage, Industry vs. Inferiority, is where the child expands and challenges their academic abilities, thus, their teacher and peer group begin to have the greatest influence on the child and their developing self-esteem. The fifth stage, Identity vs. Role Confusion, is an important transitional time in the child’s life; where childhood terminates and adulthood begins. The sixth stage, Intimacy vs. Isolation, deepens meaningful, intimate relationships with other individuals other than their immediate family members. The final two

stages: Generativity vs. Stagnation and Ego Integrity vs. Despair, are the two stages that are most relevant for this research.

Generativity vs. Stagnation is considered a time in the individual's life when they are building their careers, families, and taking the time to be more involved in their community. If the individual does not thrive at this time in their development they will feel ineffective and stuck. The final stage; Ego Integrity vs. Despair, is the stage in life where the individual is growing old and reflects back on what they have achieved. The wisdom that they have cultivated by living a fulfilled life provides them with the necessary strength needed when end of life is near. Hopelessness and fear could lead to depression if the individual at this stage of their life remains unfulfilled (Erikson, 1982; McLeod, 2013, pp. 1-4; Stassen Berger, 2011, pp. 19 & 456). Stassen Berger (2011) states that Erikson believed as an individual matured and aged, their earlier childhood experiences and crisis continue to influence and affect the person's life. Erikson (1982) stated that genetics and biological impulses were significantly influenced and impacted by the individual's social environment, in other words the individual's psychosocial virtues could be developed in childhood (Erikson, 1982; Reinstein, 2002; Stassen Berger, 2011, pp. 19 & 456).

Several authors (Feil, 1992; Feil & de Klerk-Rubin, 2012) discuss a ninth stage, called Resolution vs. Vegetation, which Feil developed to expand on Erikson's eight stage model. Feil added this ninth stage to address the needs of people who are living longer, in part because of better living conditions and medical advances. This stage of life is entered by older individuals; i.e. "old-old", who are often disoriented. The guiding principles of this stage are: (1) that individual's physical attributes; e.g. eye-sight, hearing; are deteriorating, and (2) individuals try to resolve problems or in-balances from previous life stages. This second principle recognizes that unresolved life tasks that are carried over into this final life stage are more difficult to resolve with a deteriorating body and mind, resulting in negative emotional and behavioral expression. The inability of the "old-old" individual to reconcile emotional burdens from their past can inhibit a peaceful death.

Feil (1992) developed the validation method as a means to help "old-old" disoriented individuals resolve their unfinished business. This method is person-centered, nonjudgmental, and accepts the individual in the here-and-now. The method has been designed so that caregivers can learn the techniques to empathetically communicate with the "old-old"

disoriented individual. Feil and de Klerk-Rubin (2012) identify four phases of Resolution: malorientation, time confusion, repetitive motion, and vegetation. The individual's physical and psychological decline goes as follows: malorientation the individual expresses concerns in an indirect way, time confusion is the beginning of emotional withdrawal, repetitive motion results in less verbal communication and more physical communication of emotions, and vegetation is a non-verbal phase with little acknowledgement of their environment. In each of the four phases there is a gradual deterioration of the individual's physical and psychological abilities. With this decline the individual will begin to retreat inward, thus, making communication difficult (Feil & de Klerk-Rubin, 2012, pp.24-27).

Donatelle and Thompson (2011) state that the lifespan developmental theory explains how an individual's attitudes, beliefs, and behaviors are influenced and formed by the type of experiences they encounter during the earlier stages in their development. If there are deficits in these early stages of development, instability in midlife and old age will become apparent. Donatelle and Thompson (2011) consider lifespan development stages as transitional and overlapping, and not to be viewed as a systematic progression and restrictive process. The authors state that this flexibility provides an individual the ability to revisit these multidimensional and multidirectional stages that need modification in order to create a more balanced, healthier life. Donatelle and Thompson (2011) recognize individuals are heterogeneous and should continue to be regarded as such throughout every stage of their life, especially when they are elderly. They conclude in order to age successfully, society must consider the biological, psychosocial, and environmental influences that will determine if an individual's aging process will be a positive experience (Donatelle & Thompson, 2011).

Several authors (Donatelle and Thompson, 2011; Reinstein, 2002) propose that if a society is to develop a more positive perspective towards their elderly and the normal aging process, the focus must include the following: biological, psychosocial, and environmental factors. To nurture this positive attitude, a society must look beyond what an individual has lost and see the maturing individual's potential and achievements (Donatelle & Thompson, 2011, p. 412; Reinstein, 2002).

Qiu et al. (2009) refers to certain psychosocial factors thought to protect an individual from developing Alzheimer's disease and dementia by building their cognitive and neural reserves. Some of these psychosocial factors are having an education beyond a certain level,

staying physically and mentally active, and remaining socially engaged by maintaining a healthy social network (Qiu et al., 2009).

Zhang, Wan Ho, and Fung (2015) describe how research into Alzheimer's disease has focused on the individual's cognitive impairments and deficits without recognizing the individual's preserved capacity and functioning ability. The author's found that there has been a shift from looking at the deficits that are associated with aging to focusing on the benefits and gains of growing old. Researchers are now considering what the psychological processes of aging well are and have come up with three key factors: (1) no disability and/or disease; (2) having healthy cognitive and physical abilities; and (3) being socially engaged/active (Zhang et al., 2015, p. 208). The question that arises is how these psychological processes apply to positive aging for an individual with Alzheimer's disease. Zhang et al. (2015) described individuals with early Alzheimer's disease as having the ability to perform certain types of emotional regulation in addition to showing a positive effect in emotional recognition and emotional memory. The researchers believe that if the individual living with AD can optimize this emotional-based capacity they increase their positive emotions and increase and maintain their socio-emotional functioning. Their ability to preserve and increase positive emotions could counteract the negative effects that are normally associated with a diagnosis of Alzheimer's disease. The authors' state if an individual with AD maintains a positive emotional function it can lead to an increased resiliency, have a positive effect on their physical and emotional healing, increase psychological resources, and expand their coping repertoires (Zhang et al., 2015, p.210). It has been found that the individual with early on-set AD will respond to and recognize more positive emotions than negative ones. It is suggested that they have a positive bias towards positive social interactions. Emotion and how it is perceived is the bases for communication and quality of life (p.211). The authors' suggest moving the focus away from what living with AD takes away from the individual to shifting what the individual maintains. The individual with AD maintains their emotional capacity and therefore strategies to enhance, maximize, and preserve their emotional capacities would improve their quality of life (Zhang et al., 2015, p. 212).

For an individual to have quality of life, it is important to value and nurture all aspects of their life such as their psychological, emotional, physical, spiritual, and cognitive well-being. Having met and overcome life's challenges to achieve personal goals and desires, further

enhances one's quality of life. Adopting a systems approach to the prevention of AD research could potentially benefit the participants and the research by effecting greater individual participation and satisfaction. By respecting and regarding the person as heterogeneous, a more personal component should be incorporated into the prevention and delay of Alzheimer's disease research. In addition, addressing the individual's psychosocial issues could intercept any potential problems these concerns may cause to negatively affect the research. For example, if an individual has maladaptive coping strategies, due to deficits in their early stages of development, a person-centered approach will be able to address and revisit these issues as they arise. The psychosocial lifespan development theory describes the process needed to achieve the virtues that produce a balanced, healthier life. Drawing from this lifespan developmental method, creating a balance between the reductionist, biomedical model in healthcare to include the social, psychological, and behavioral dimension is required to foster a healthier approach to the prevention and delay of Alzheimer's disease and dementia.

Problem statement

This research paper will investigate the potential for drama therapy to be used in the prevention or delay in AD and dementia. The shift in paradigm in the medical field to include prevention as opposed to only focusing on treatment has created an opportunity to determine if drama therapy could be used to supplement and/or augment the prevention programs being investigated in the medical area.

Objectives

The following objectives have been identified:

1. Review of the literature on the use of drama therapy in the prevention and treatment of AD and dementia.
2. Identify the drama therapy interventions that have been used in the prevention or treatment of AD and dementia.
3. Develop a testable hypothesis for the use of drama therapy in the prevention and delay of AD and dementia.

The remaining structure of the research paper is as follows. Chapter two outlines the methodology used to identify the literature on the use of drama therapy for the prevention and treatment of AD and dementia. Chapter 3 reports on how drama therapy and other interventions have been used in relation to AD and dementia. Chapter four outlines how drama therapy could

be used in the prevention or delay of AD and dementia. Included in this chapter is a testable hypothesis which would determine if drama therapy can be beneficial in the prevention or delay of Alzheimer's disease and dementia. Chapter five ends with a conclusion.

Chapter 2. Method

“Now, old age is, as it were, the playing out of the drama....” (Cicero, c. 44 B.C./1909, para. 56)

A theoretical research approach was undertaken to investigate this research topic. This approach entailed a synthesis of the literature on the use of drama therapy for the possible prevention of AD and dementia in at-risk individuals. Several studies (Beard, 2011; Stuckey & Nobel, 2010; Cowl & Gaugler, 2014) have used a systematic literature review to investigate various elements of creative arts therapies and Alzheimer’s disease and public health. Beard (2011) looked at creative arts therapies studies for the treatment of Alzheimer’s disease from 1990 to 2010 to make suggestions on how to strengthen this research. Beard (2011) found a number of shortcomings in the studies including: (1) inadequate descriptions of the methods used in the studies; (2) poor measurement tools; (3) focus on biomedical results; and (4) inadequate data analysis. Beard (2011) made several recommendations on how to improve creative arts therapies studies after reviewing the literature.

Cowl and Gaugler (2014) undertook a systematic review of the literature to investigate the impact of creative arts therapies on persons with memory loss and the effect this had on their caregivers. The authors analyzed 112 peer reviewed journal articles to identify patterns or commonalities amongst the published research. They concluded that the behavioral and emotional challenges presented in an individual living with Alzheimer’s disease showed improvement after participating in a creative arts therapies program, but they also found that the creative arts therapies did not improve the individual’s cognitive decline caused by the disease. However, several weaknesses in the studies, including sample size, time over which the observations were taken, made drawing conclusions on the effectiveness difficult.

Stuckey and Nobel (2010) reviewed the literature to investigate whether or not there was a relationship between the use of creative arts therapies and public health. They concluded that there was some evidence to support the relationship between creative arts therapies and improved physiological and psychological results. However, the extent of the impact on health was unclear.

Each of the studies above used a systematic literature review to identify the relationship between creative arts therapies and health. These studies address the use of the creative arts therapies and its potential benefits in the treatment of AD and dementia. This study used a

similar approach but concentrated on the relationship between drama therapy and the possible prevention or delay of Alzheimer's disease and AD dementia.

This research is important because it will address the individual's emotional well-being in relation to brain health as an added component to the biological studies on the possible prevention and delay of AD and dementia in at-risk individuals. The gap in the research is to incorporate drama therapy into the prevention process to show the possible effects drama therapy may have on at-risk individual's emotional component of brain health. Tracy (2010) describes the ability of the researcher to make a significant contribution to their field as one criteria for using qualitative research. She states that to be theoretically significant, the researcher can explore and build on existing research to further promote growth and create opportunities for future researchers (Tracy, 2010, pp. 845-846).

This research paper will attempt to illustrate how drama therapy interventions might affect the emotional health of at-risk individuals in the hope of improving their brain health for the possible prevention and/or delay of AD and dementia. This research is important because it considers how drama therapy can be used in the possible prevention of this chronic disease, thus, broadening the research for drama therapy being used in the treatment of this chronic disease.

Ethical

Tracy (2010) discusses the ethical issues that can have an effect on the quality of the qualitative research. The author discusses the importance of being mindful of how researchers transmit their findings (Tracy, 2010, p. 847). This research does not imply that AD and dementia is a disease that is to be prevented or delayed because the individual living with AD disease is not valued for their contribution to society. Also, this research does not want to exploit at-risk individuals by giving false hope that drama therapy interventions can prevent and/or delay AD or dementia. This research is intended to use a philosophical exploration to compare, analyze, and argue about different AD studies on the prevention of the disease in at-risk individuals by adding a more systems approach to the prevention studies. It is anticipated that by adding a drama therapy component to this preventative research plan a more holistic methodology to the research will be developed.

Data Collection

The data used in the analysis was published articles from peer-reviewed journals. The data collected from the studies included: authors, year of study, study design, number of

participants, study population, variables measured, creative arts therapies, intervention, duration of intervention, type of data, length of follow up, findings (Stuckey & Nobel, 2010; Cowl & Gaugler, 2014). The data was rated in terms of high or low quality. High quality studies were those that use random control trials (RTC) and provide statistical estimates, while low quality data were qualitative studies with small sample sizes.

Steps in Procedure

The following steps were undertaken: (1) search terms and databases were identified; (2) inclusion and exclusion criteria were determined; and (3) data extraction and synthesis was undertaken (Cowl & Gaugler, 2014). Each of the steps are outlined below.

Search Terms and Databases

A number of different journals and databases were used in this study. These included: *PubMed*; *PsycINFO*, *CINAHL*, *ALOIS*, *Proquest*, *Cochrane Library*, and selective journals in the Creative Arts Therapies (CATs) field. The following CATs journals were included: *Dramatherapy*, *The American Journal of Art Therapy*, *Drama Therapy Review*, *American Journal of Dance Therapy*, *Journal of Music Therapy*, *Arts & Health: An International Journal for Research, Policy and Practice*, and *The Arts in Psychotherapy*.

A series of search terms were used to identify articles in the databases. Boolean statements were used to help narrow down the search. The search terms included: “drama therapy” and “prevention” and “Alzheimer’s”; “drama therapy” and “treatment” and “Alzheimer’s”; “drama therapy” and “prevention”; “drama therapy” and “treatment.”

Inclusion and Exclusion Criteria

The inclusion criteria were: (1) peer reviewed journal articles, (2) articles had to be written in English; (3) the studies were from industrialized countries such as Canada, USA, Europe, Japan, Australia and New Zealand; and (4) the studies were published between the years 2000-2015. The exclusion criteria were: (1) articles that are opinion pieces; (2) art education or career development articles; (3) drama therapy had to be a modality reported on in the article, and (4) studies whose subjects have major mental illness (Stuckey & Nobel, 2010; Cowl & Gaugler, 2014).

Validity and reliability was taken into account by only including peer-reviewed journal articles. Peer review, by definition, provides a validity and reliability test because the articles have been reviewed by a third party to judge their quality. The inclusion and exclusion criteria

that was defined beforehand provided an unbiased criteria for including or excluding journal articles.

Data Extraction and Synthesis

Journal articles were identified using the key words then were extracted and placed in a data table. The information in the data table were used to judge whether or not the study was included in the analysis. The inclusion and exclusion criteria were used to determine the suitability for the data analysis.

Articles Selected

A total of 4,151 articles were identified in the initial search. This number was decreased to 1,496 articles after eliminating other creative art therapies that did not include drama therapy, duplicates, books and book chapters. A total of 16 journal articles fulfilled the inclusion and exclusion criteria as outlined above (see Table 2).

The journal articles did not deal directly with the use of drama therapy as a means of preventing or delaying Alzheimer's disease and dementia. In these articles, drama therapy was used as part of the treatment for Alzheimer's disease and or dementia or as an activity for older individuals to address quality of life or creativity issues. Some of the studies included both the individual living with AD and dementia and their caregiver.

Most of the articles indicated that drama and drama therapy had a positive effect on the lives of both the elderly and their caregivers. Drama therapy seemed to provide cognitive stimulation for older adults. It also tended to decrease isolation and depression which improved the overall quality of life of the individuals. Drama therapy also increased emotional connections, creativity, and enhanced their communication skills. It also appeared that drama therapy validated the whole person and fostered their sense of community and belonging.

There were several limitations to the studies that were undertaken. Many of these studies had very small sample sizes and as a result it was difficult to estimate statistical significance of the intervention. Many of the studies were qualitative in nature. As a result these did not have a measurable component. In addition, there were little follow-up to substantiate the study's findings and to determine whether or not the intervention had lasting impacts on the individuals. Many of the findings tended to be anecdotal in nature and therefore difficult to validate.

Table 2

Individual Drama Therapy Study Characteristics: 16 Articles in Alphabetical Order

Author and Year	Therapy Type	Study Design	Type of Data	Number of observations	Demographics	Outcomes	Duration of Intervention
Basting, A. D. (2001).	Time Slips	Story telling	Qualitative	NA	People with Alzheimer's disease and dementia.	6 Time Slip stories were made into play; 70 minutes discussion after play.	60 min/week; 2 Groups; 18 weeks in Milwaukee and 9 weeks in New York
Beard, R.L. (2012).	Drama, Music, Visual Art, and Dance/Movement.	Systematic Literature Review	Journal Articles (qualitative & quantitative).	134 articles	Persons living with Alzheimer's disease.	Scarce details on study design, procedures, and measurement.	NA

Cowl, A.L., & Gaugler, J.E. (2014).	Creative arts therapies	Systematic Literature Review	Journal Articles (qualitative & quantitative measures).	112 articles	Person with memory loss and their providers.	Creative arts therapies seem to be effective for behaviour and emotional issues but the small sample sizes was small.	NA
Flood, M., & Scharer, K. (2006).	Brainstorming, reminiscence, storytelling, role play, poetry, and bibliotherapy.	Pretest - post-test design.	Survey data	57 observations	65-84 years old, Caucasian or African American.	Pilot study intervention showed significant results for creativity enhancement.	60 min./week; for 8 weeks

Flood, M., & Phillips, K.D. (2007).	Creative Arts Therapies (theater, dance, storytelling).	Literature review	Journal articles (qualitative & quantitative).	NA	Older adults	Creativity opportunities for older adults provide physiological and mental health benefits.	NA
Fenech, A. (2009).	Interactive drama project.	Mix methods design	Survey data	74 residents and 27 staff	Long term care residents with complex neurological disorders and staff.	Interactive drama provided residences with a positive experience that increased achievement, enjoyment and challenge.	Nine, 60 minute rehearsals and then a play.

	Hannemann, B. T. (2006).	Creativity, Creative Arts Therapies	Literature review	Journal Articles	NA	NA	Creative Arts Therapies for older individuals reduced depression, isolation, and improved emotional awareness.	NA
25	Hough, B.H., & Hough, S. (2012).	Drama, Music, Visual Art, and Dance/Movement.	Synthesis of research articles and books.	Articles	NA	NA	Drama increases brain activity but more empirical studies are needed.	NA

Jaaniste, J., Linnell, S., Ollerton, R. L., & Slewa- Younan, S. (2015).	Drama Therapy	Mix methods design; pilot study.	Mixed methods	13	Age 61-88 years; mild to moderate dementia.	Participants in the drama therapy group increased their quality of life but it was not statistically significant.	1.5 hours per session for a total of 16 sessions.
Jennings, S. E. (2006).	Drama Therapy	Literature review	Journal articles	NA	Elderly population	Physical and creative activities can reduce depression and stimulate memory.	NA

Kontos P.C., Mitchell, G.J., Mistry, B., & Ballon, B. (2010).	Drama based educational intervention.	Focus groups and semi-structured interviews with healthcare practitioners.	Qualitative	24 healthcare practitioners	NA	Drama improved the quality of care of residents by changing healthcare practitioners' perspective of patients with dementia.	2 hours per session for a period of 12 weeks.
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27

Noice, H., & Noice, T. (2006).	Theatrically based intervention, acting instruction.	One group pretest-post-test with double pretest design.	Mixed methods	21 residents participated in the first pretest; 18 participants remained and completed the post-test.	Old-olds adults; most individual's had varying degrees of physical challenges.	Theatrical training provided a significant improvement in word recall and problem-solving ability.	The intervention was for 4 weeks, with twice weekly sessions, that lasted for 1 hour each.
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Price, K. A., & Tinker A. M. (2014).	Creative art therapies	Systematic literature review of quantitative and qualitative studies	Journal articles and grey literature.	NA	Participants mainly over the age of 65.	Creative art therapies increased social interaction, cognitive stimulation, and individual self-worth, and decreased depression.	NA
Reinstein, M. (2002).	Drama Therapy using Lahad's Six Part Story Method (e.g. dramatic play, fairy tale).	Research paper	Qualitative	NA	Functional elderly individuals, 65 years or older, experiencing a range of mental health issues (e.g. depression).	Drama therapy encourages social interaction, develop deep connections and empathy for others.	NA

van Dijk, A. M., van Weert, J. C., & Dröes, R. M. (2012).	"Veder method" a communication training method for caregivers for individual's living with dementia (e.g. theatrical techniques).	Exploratory study; research project.	Quasi-experimental three-group design.	151	Older individuals with a diagnosis of dementia.	Theater activity improved the behaviour, mood, and quality of life of client with dementia.	NA
Yuen, H. K., Mueller, K., Mayor, E., & Azuero, A. (2011).	Acting class and performance.	Mixed methods.	Qualitative and quantitative.	12	Older adults with chronic conditions.	Participants reported a significant increase in physical and overall well-being.	A 6 week acting class for 2 hour per week.

Chapter 3. Drama Therapy and Alzheimer's Disease

“But, it is said, memory dwindles. No doubt, unless you keep it in practice....”

(Cicero, c. 44 B.C./1909, para. 16)

Different Approaches to Addressing Chronic Disease

The medical approach for the prevention and delay of Alzheimer's disease has predominantly concentrated on the biological risk factors of this chronic disease, i.e. physical dimensions, such as cardiovascular disease and genetics. Over the centuries, the science of medicine has evolved and adapted in order to meet its populations health issues and needs which were particular to that era. Certain eras saw an epidemic of infectious diseases, therefore, the focus on the biomedical model (e.g. biological factors) grew in importance to meet the health demands of the population. For example, in the 19th century, some of the prominent infectious diseases of this period were cholera, typhus, and smallpox, all of which needed a biological approach to manage or eradicate these contagious diseases. As a result of concentrating on the biomedical component in healthcare, the discovery and introduction of vaccines, antibiotics, and other medical advances has managed to contain or eradicate certain infectious diseases (Havelka, Despot Lučanin, & Lučanin, 2009). However, with these biological advances in science and a decrease in infectious diseases, the incidence of individual's living with chronic diseases has become more apparent. As a population ages, chronic diseases, like Alzheimer's disease, have become more prevalent and managing or eradicating these chronic diseases is presently proving to be problematic for the biomedical model. Presently, there is no cure for Alzheimer's disease and the pharmacological approach is proving ineffective in the long-term treatment of this disease. The definition for the word chronic is as follows: “1 a: marked by long duration or frequent recurrence; b: suffering from chronic disease” (Chronic, n.d.). Until medical science finds a cure for Alzheimer's disease, incorporating a systems approach to the prevention and treatment of AD should be explored. The creative arts therapies can be integrated in this all-encompassing approach to healthcare for the prevention and treatment of Alzheimer's disease. Including creative arts therapies in the healthcare plan addresses all the needs of the affected individual by considering the whole person, not just the disease. Several authors (Price and Tinker, 2014; van Dijk, van Weert, & Dröes, 2012; Yuen, Mueller, Mayor, & Azuero, 2011)

have identified that the creative arts therapies, drama, in particular, have increased the quality of life and have provided cognitive stimulation for older individuals.

Several authors (Borrell-Carrió, Suchman, & Epstein, 2004; Engel, 1977; Havelka et al., 2009) have suggested that the model for prevention of chronic disease should change from the biomedical model to the biopsychosocial model. The biopsychosocial model has been described as a systems approach to the practice of healthcare. Havelka et al. (2009) state that the biopsychosocial method is a more effective healthcare approach for the prevention and treatment of chronic diseases such as Alzheimer's disease. Using only the biomedical approach for Alzheimer's disease prevention research could potentially compromise the success in preventing or delaying of chronic disease (Havelka et al., 2009).

The biopsychosocial model is a more general approach to healthcare interventions (Borrell-Carrió et al., 2004; Engel, 1977; Havelka et al., 2009). These authors argue that the biopsychosocial approach includes biological, psychological, behavioral, and social factors in their analysis. This approach provides a more robust and human dimension to the field of medicine. The biopsychosocial method considers that all of these factors affect an individual's health and should be included in the healthcare intervention (e.g. assessing, diagnosing, and treating the patient) (Borrell-Carrió et al., 2004; Engel, 1977; Havelka et al., 2009).

Engel (1977) introduced the biopsychosocial method in the 1970. He argued that the connection and communication between the doctor and the patient was an integral part of the diagnostic process. Engel (1977) believed that healthcare would improve if science remembered to treat the person first and not focus only on the disease. This dehumanises the art of medicine if the doctor only viewed the individual as an object. Therefore, building a trusting and supportive dialogue would enrich the communication considered to be an integral part of the assessment, diagnostic, and treatment process in healthcare. He believed to achieve this strong medical relationship, both the patient and doctor must remain intuitive and understand their own sense of self (Engel, 1977).

Borrell-Carrió et al. (2004) noted that the biopsychosocial method uses a system approach to healthcare. The biopsychosocial method moves away from the linear reductionist approach used in the biomedical approach to medicine to a more complex systems approach. This complex system approach is based on feedback loops that will impact the outcome of the disease.

Borrell-Carrió et al. (2004) argue that adopting the biopsychosocial model would change the way clinical practice would be undertaken within the medical profession. They identify seven particular areas: (1) calibrating the physician, (2) creating trust, (3) cultivating curiosity, (4) recognizing bias, (5) education the emotions, (6) using informed intuition, and (7) communicating clinical evidence (Borrell-Carrió et al., 2004, pp. 580-581). Calibrating the physician requires the physician to expand their skillset to include psychosocial aspects of a patient's behavior in order to promote health and well-being and to avoid simple solutions of providing medication. It is imperative that the ethical component of addressing psychosocial behavior is at the forefront of physician interventions. The authors emphasise "mindfulness" for the physician as a way to monitor their own behavior while fostering empathy and compassion for their patients. Creating trust refers to the ability of both the physician and the patient to determine what emotions are their own and how these emotions influence the relationship. In this regard, creating mutual trust takes into account transference and countertransference that could impact the therapeutic alliance. Cultivating curiosity means that the clinician should be viewing their patient with an open mind. Remaining open-minded, the physician remains empathetic and curious towards the patient, thus, allowing room for surprise in their present and future interactions. The here-and-now approach adopted by the physician provides space for them to "expect the unexpected" when interacting with their patient. The authors recognize that bias can enter the medical decisions with regards to the patient. They acknowledge that medical evidence and the physician's experience are used to make medical decisions. Bias can enter the decision making process with regards to the treatment of their patient. Examples of bias can include: race, sex, socioeconomic status, and the complexity of the problem being presented. Informed intuition is tacit knowledge that can be combined with explicit knowledge in order to provide a better diagnosis of the patient. Often intuition is disregarded by the physician because it cannot be explicitly documented. Intuition will often pick up subtle gestures or statements from the patient that become important tacit knowledge in a diagnosis. The final area is the communication of clinical evidence to the patient. Information provided to the patient should be at a level and quantity so the patient can comprehend what is being said. Providing too much evidence in a complex format can reduce the patient's understanding and can create emotional stress that is unhealthy for the patient. The point of providing information to the patient is to

promote understanding of the situation and thus the information presented must be tailored to the situation of the patient (Borrell-Carrió et al., 2004, pp. 579-581).

Havelka et al. (2009) utilized the biopsychosocial model to illustrate the importance of psychological stress on the development of somatic diseases. Psychological stress has been shown to impact single organs, functioning systems of organs, and even risky behavior. The biopsychosocial model has influenced the development of medical psychology. Some of the newer areas of medical psychology include: “application of techniques modifying risk health behaviour...application of anti-stress programs for patients at risk...evaluation of efficacy of individual psychological techniques in the prevention and treatment of illness...identification of individuals at high risk of getting a disease” (Havelka et al., 2009, p. 308). The new areas in medical psychology are emphasizing the effect psychological stress has on disease, therefore, finding avenues to reduce psychological stress can improve an individual’s health.

Whitehouse (2014) suggests that a broader framework than the biopsychosocial approach is required to investigate Alzheimer’s disease and dementia. This framework would include a more holistic approach to the treatment of AD and dementia which the author refers to as “ecopsychosocial” (Whitehouse, 2014, p. 677). Whitehouse (2014) argues that this new anthropological approach to healthcare is necessary in order to gain a deeper understanding of the disease and how it has evolved over time. The evolution of both genetics and environment must be considered as a potentially integrated process to fully appreciate the nature of the disease (p. 677). He identifies education and arts-based programs as being beneficial to improve the quality of life and assist in disease management.

Systematic Literature Reviews, Meta Analyses and Creative Arts Therapies

Stuckey and Nobel (2010) undertook a systematic literature review of creative arts therapies and AD. Their review included literature from North America and Europe of published studies done in the creative arts therapies. The researchers found that artistic engagement had a positive impact on health, however, many of the studies had severe limitations that prevented a broad generalization of their finding. Some of the limitations include: problems with the control groups, lack of standardization of variables, a large number of studies were done in institutionalized settings and not in the community, and several of the studies did not have quantifiable and/or statistical measures. The authors suggest that the creative process as found in the creative arts therapies can decrease stress, anxiety, and mood disturbances. Stuckey and

Nobel (2010) state that the arts, bring an emotional and spiritual dimension to healing, incorporates a holistic nature of the person. The researchers argue that in order to appreciate the therapeutic benefits of the arts one must understand the relationship between creativity and the curative power of the arts (Stuckey & Nobel, 2010, p. 261).

Cowl and Gaugler (2014) undertook a systematic literature review that investigated the literature related to the efficacy and benefits of using creative arts therapies in the treatment of AD and dementia. The authors concluded that the creative art therapies used for the treatment of Alzheimer's disease and dementia have shown to have positive outcomes in reducing problematic behaviors; i.e. emotional and behavioral. However, the creative art therapies had no effect on the reversal of the physical deterioration of Alzheimer's disease and dementia. The researchers recommended that the creative art therapies should supplement current medical treatments (Cowl & Gaugler, 2014).

Beard (2011) provided a systematic review of the use of creative art therapies in the treatment of dementia of the Alzheimer's type (DAT). The author focussed on four questions: (1) what type of empirical research supports the use of the creative arts therapies for treating dementia caused by Alzheimer's disease; (2) what type of study designs and evaluations have been used; (3) what are the results; and (4) the potential impact of the creative arts therapies have to improve the quality of life for individuals living with DAT (Beard, 2011, p. 633). In terms of research studies using the creative arts therapies, drama therapy had the lowest representation and the least amount of quantitative measurements. The author noted similar weaknesses in creative art therapies studies that other reviewers had found and included: (1) incomplete description of the study design; (2) assessment tools were not well defined; (3) studies focused on the clinical outcomes of the disease and were not person centered; and (4) there was a lack of statistical data analysis (Beard, 2011, p. 644). Beard (2011) noted that there is a bias towards clinical outcomes that are difficult to replicate and tended to focus on individuals experiencing the late stages of dementia. The author calls for a reframing of how society views dementia. She states that dementia should be regarded as an individual living with a disability as opposed to an individual who is in the process of dying (Beard, 2011).

Woods, Aguirre, Spencer, and Orrell (2012) undertook a meta-analysis to investigate the impact of cognitive stimulation on individuals living with dementia. Meta-analysis is a statistical method that allows for the results of various studies to be combined and analyzed in order to

increase the precision of whether a treatment or risk factor has an effect. The authors selected randomized controlled trials where the intervention was cognitive stimulation and the control was standard care and each of the studies had to include a measure of cognitive change. The authors concluded that cognitive stimulation resulted in a cognitive benefit for individuals with mild to moderate dementia. The authors did note, however, that the studies included in the meta-analysis varied in quality because of the sample size and the randomization used in the studies (Woods et. al., 2012).

Knocker (2001) recognized the differences between old and new cultures of care for individuals living with dementia. The old culture thought of dementia as an incurable disease, while the new culture views dementia more as a disability. The new culture relies less on medical intervention and supports more of the creative expressive interventions that will improve the well-being of the affected individual. Knocker (2001) uses antidotes found in practice to emphasise the importance of drama therapy techniques of play and metaphor to achieve positive results. The author argues that drama therapy can be used as a creative process that is therapeutic for people living with dementia (Knocker, 2001).

Jennings (2006) recognizes brain development and growth continues into old age. The author argues that creative stimulation allows the brain to remain more flexible and provides the opportunity for further growth. Physical activity and mental stimulation are contributors to brain development and growth. Jennings's (2006) concept of "creative aging" recommends that older adults should be engaged in the following: (1) personal relationships; (2) artistic activities such as theater; and (3) creative arts therapies to address problems with depression, bereavement, and dementia (p. 30). The author concludes that as we age, our brains require more stimulation, e.g. physical and creative activities, in order for the brain to increase and maintain its function and growth (Jennings, 2006).

Sandel and Johnson (2012) discuss how creative arts therapies, specifically Drama Therapy and Dance Movement Therapy, can have a positive effect in long-term care facilities. The creative arts therapies encourage active participation that involves the persons living with dementia to develop all of their senses. The traditional activities in long-term centers usually center on more passive participation (e.g. movie watching). Sandel and Johnson (2012) discuss five ways that drama therapy contributes to the health of the elderly person: (1) provides an interpersonal environment that stimulates the senses; (2) enhances the process of reminiscing

which deepens the ability to discover deeper memories; (3) enables the persons living with dementia to discover a deeper meaning of the self while accepting their limitations and strengths; (4) develops deep and meaningful interpersonal relationships; and (5) creates a sense of community (Sandel & Johnson, 2012).

Drama Interventions and Cognitive Effects on Healthy Elderly Individuals

The process of lifespan development brings inevitable age-related changes. These age-related changes is a reality of human development of which cognitive decline is one aspect of this evolution. Usually, cognitive decline becomes most apparent when the individual is in the developmental stage of maturity. Some cultures have become preoccupied with maintaining and improving brain health in the elderly by using brain exercises to keep the brain fit, such as brain games like puzzles and computer activities. However, these types of brain exercise activities can become routine and boring, therefore, becoming less effective. An alternative approach to the brain fitness exercises would be to introduce an interactive activity, such as drama, that could circumvent the boredom to promote stronger commitment to participating in cognitive stimulating activities (B. Hough & Hough, 2012).

B. Hough and Hough (2012) state that drama can benefit health, learning, personal growth, and improve brain function. The process of learning causes neurons and additional dendrite branches to grow, potentially leading to cognitive and emotional growth. Drama provides a novel stimulus that can enhance the growth of new neurons in the brain. Currently, companies are creating simulation games to keep the brain “fit” and to increase brain plasticity. The authors state that participating in theatre keeps the brain active and fit which in turn decreases the risk of developing brain related diseases in the future. The act of participating in theatre and drama stimulates the brain’s temporal lobe that is responsible for memory (e.g. hippocampus and new memories). The authors state that participating in a drama program could provide a preventative element and improve brain health by reversing cognitive decline and brain impairment (B. Hough & Hough, 2012).

H. Noice, Noice, and Staines (2004) undertook a study to investigate the impact of a short-term intervention on the cognitive abilities of community-dwelling healthy aging individuals. The study included a comparison of three groups of individuals each with different interventions. The first group undertook a four week drama course that included nine, ninety minute sessions over a one month period. The second group participated in a visual arts course

that included nine, ninety minute sessions over a one month period. The third group was the control group and received no treatment and met only to take a pre-test at the start of the month and a post-test at the end of the month. The authors hypothesized that the theater intervention would provide the greatest impact because acting requires the involvement of cognitive, emotional, and physiological components.

A total of 124 adults participated in the three groups. Their ages ranged from 60-86 years, with the average age being 73.7 years. Forty-four individuals were assigned to the drama group, forty-four individuals were assigned to the visual arts group, and thirty-six individuals were assigned to the control group. The theater group intervention concentrated on practicing the core acting skills, which included getting so involved in the dramatic situation that they altered their cognitive, affective, and physiological behavior. The visual art intervention included discussing the intention of the artist and interpreting ambiguous art work. A pre-test and post-test instrument was used to measure changes in cognitive performance and mental health. The cognitive performance test included: word recall, listening span, and problem solving. The mental health tests included self-esteem and psychological well-being. All of these tests are standard instruments that are recognized for their measurement capacity.

Comparing the theater group to the control group, the theater group scored higher than the control group on all three of the cognitive measures. The theater group had a statistically significant increase on word recall and problem solving as compared to the control group. The theater group also scored statistically significantly higher than the visual arts group on problem solving. The theater group scored statistically significantly higher than the control and visual arts groups on the psychological well-being test. There was no statistical difference between the three groups on the self-esteem measure. The theater group was re-tested four months after the completion of the theater intervention. The results from this latter test indicated that the theater group had maintained their problem solving and memory span performance, and their recall performance had increased. The theater group also maintained their mental health scores in this final post-test (H. Noice et al., 2004).

H. Noice and Noice (2006) used the same rationale as in their 2004 theater study, but applied it to an older population. The difference in this 2006 theatre study was the age and living conditions of the participants. The 18 participants in this 2006 theater study were asked by the researchers to commit to the month-long theater. The participants mean age was 82.33 years,

they all lived in a retirement facility, each requiring different degrees of assistance for their daily living skills, and some of the participants had physical challenges, e.g. mobility deficits, hearing loss, etc. An assessment was used to measure the participant's cognitive abilities to determine if there were signs of mental impairment. The results showed no significant diminishing mental function although the majority of the participants had expressed concerns about their mental abilities, e.g. short-term memory challenges. The participants were given two pre-tests, one given a month before the second pre-test which was just prior to the theater training, and a post-test after the month training period. The test included a cognitive battery that consisted of: word recall, listening span, and problem solving. In addition, psychological well-being tests that measured: self-esteem, self-reported psychological health, and memory controllability index (MCI) were also undertaken (H. Noice & Noice, 2006). The theater training took place twice a week for an hour each session. The theater training used short phrases to convey a situation in a way that the participants would become cognitively, emotionally, and physiologically involved in the dramatic scene. The initial pre-test was considered the control group in this experiment. The results indicated that on the recall test there was a significant increase from pre-test two to post-test but not between pre-test one and pre-test two. There was also a significant change in problem solving between pre-test two and the intervention, but there was also a significant increase between the two pre-tests. In terms of working memory there was a small increase between pre-test one and pre-test two and there was a slightly larger increase between pre-test two and post-test. In terms of the psychological functioning, there was no increase in self-esteem between pre-test one and pre-test two, but there was an increase between pre-test two and post-test. There was no difference in quality of life measures within the control group or the pre-test two and the post-test measures.

The results indicated that the theatre intervention for this at-risk population showed a significant improvement in two of the three cognitive tests, which would support the hypothesis that theatre training improves cognitive function. The theatre intervention was an enjoyable, interactive, and social activity that was not overwhelming, boring, or stagnant and could be undertaken by an old-old population who had mobility and physical challenges. The authors noted that the psychological concept of mindfulness is associated with increased mental alertness and is similar to the theater concept of being in the moment. The attributes of cognitive, emotional, and physiological efforts are required in the core acting activity that was needed for

the theater intervention implemented in this study. The authors stated that the theater intervention supported healthy aging because it stimulated and required multiple mental faculties (H. Noice & Noice, 2006).

Jones (2011) states that drama and theatre provide an opportunity for an individual to actively participate in real life issues and potentially has the ability to resolve these issues (p.3). Drama therapy uses drama and theatre processes in order to facilitate change in individual behavior (Emunah, 2009, p. 3). Drama therapy differs from drama and theatre in that the primary goal is for individual healing and psychological growth.

Psychological Well-Being

Freidman (2014) states that one approach to cultivating an individual's psychological well-being and to improve their quality of life is through creative efforts. The author describes how creativity can inspire the individual to discover new skills, gain a deeper understanding of self and others by emotional connections, and learn to appreciate the beauty and meaningful experiences within their environment (Friedman, 2014, p. 41). He argues that the arts can improve the well-being of people with dementia because it provides them the opportunity to experience positive emotions, be engaged, stay connected, and to feel a sense of purpose and accomplishment. A person living with dementia lives in the here-and-now, and the arts can facilitate this reality by using the artistic medium to improve the individual's quality of life (Friedman, 2014).

A recent study by George and Whitehouse (2010) investigated the impact on individuals with mild to moderate dementia volunteering at an elementary school. The authors measured psychometric variables such as the individual's cognitive function, stress, depression, sense of purpose, and sense of usefulness (George & Whitehouse, 2010, p. 796). The researchers found that the individual's quality of life improved as compared to the control group who did not volunteer. In particular, they found that the individuals in the treatment group had a reduction in their stress levels.

Research-Based Theater and Neurological Disorders

Kontos et al. (2012) state that performing drama can stimulate imagination and develop empathy based on its ability to replicate life's challenges and rewards. The authors reported that an individual benefits on an intrapersonal and interpersonal level by both participating and witnessing a dramatic performance. Although, research is needed to determine if the dramatic

arts has any significant effect in relation to healthcare issues, this method of practice does show promise in moving the healthcare system closer to being a client-centered approach. Drama techniques have the ability to replicate real life events, thus, focusing on the experience of the individual. The results showed that in order to foster a deeper understanding of issues by invoking and evoking shared emotions (Kontos et al., 2012, p. 1627).

Drama Therapy Interventions and Neurodegenerative Disease

Gottlieb-Tanaka, Small, and Yassi (2003) developed a programme where each creative activity included the physical, emotional, and cognitive abilities of seniors as well as their life history and social context. The participants included 5-10 seniors with moderate to severe dementia. The program was designed to provide individuals the space to develop and exercise their autonomy. The aesthetics and the final product that was developed was less important than the creative process that was undertaken. Participants were encouraged to share and contribute to the creative process. Qualitative assessments were undertaken through observations by the staff and administrators. The following conclusions were made from these observations: (1) seniors living with dementia were able to use their abilities to enhance self-actualization; (2) seniors living with mild to moderate dementia, although requiring more time, undertook similar creative activities as healthy seniors; (3) engaging in creative activities improves self-regulation, self-esteem, and satisfaction; and (4) the staff recognized the role the arts can play in the healing process and maintaining the quality of life of seniors with dementia (Gottlieb-Tanaka et al., 2003, pp. 130-131).

Borglin, Edberg, and Hallberg (2005) state that the definition of quality of life (QOL) for an individual changes over time, therefore, the means of measurement would also need to be modified. The authors noted that the traditional measurements of QOL focused on health-related issues and on the individual's ability to undertake daily living activities. However, the research indicated that as a person ages, in particular when reaching the "old" and "old-old" stages of life, their interpretation of QOL changes and becomes more complex. QOL for this population is their ability to adjust to the many physical, emotional, and cognitive changes as they age, while preserving their sense of self and maintaining a meaningful existence, i.e. existential issues (Borglin et al., 2005).

Zeltzer, Stanley, Melo, and LaPorte (2003) introduced dance movement, art, and theater (drama) therapies, to an assisted living facility in Rhode Island. The study looked at ways to

improve the quality of life for individuals living with psychological and physical challenges. The pilot study investigated whether these different therapies could improve and maintain the mental and physical health of these individuals. The intervention included 15 participants, who ranged in age from 78-93 years, living with various levels of mobility challenges, depression, and dementia (e.g. mild, moderate, and advanced). The intervention program consisted of four weekly sessions, lasting the duration of 16 weeks. The nursing director developed a baseline survey of the participants' lifestyle patterns. The lifestyle patterns measured in the survey included: daily living activities, behavior, and cognition. The participants were monitored before, during, and after the intervention. The results indicated that participation in these various therapies improved the individual's overall lifestyle patterns. The individuals showing the greatest level of lifestyle pattern change were those individuals who actively participated in these therapies. There are multiple benefits to introducing creative therapy programs for individuals living with psychological and physical challenges, such as dementia and depression. Some examples of the benefits of creative therapies are: (1) they are a non-pharmaceutical and non-medical interventions that can support the individual; (2) these modalities can increase individual well-being; (3) they are easily adaptable for all ages and abilities; and (4) they decrease isolation and promote a sense of community and belonging (Zeltzer et al., 2003, p. 12).

Several authors (Gersie & King, 1990; Landy, 1994; Pearson, Smail & Watts, 2013) describe how myth, fairy-tale, and other stories, used as an educational and therapeutic method, can provide a sense of well-being for both the storyteller and witness/listener. Both the storyteller and witness/listener become active and engaged in the storytelling by stimulating their imagination and creativity. The result of their storytelling experiences can provide clarity of issues by deepening their connections to self and others, therefore, providing them the opportunity to live a more effective and balanced life. Storytelling is adaptable to all ages and is conducive for group participation while at the same time addressing individual experiences. Using myth and fairy-tale, or stories passed down from generations, can potentially transform an individual's past, present, and future experiences (Gersie & King, 1990; Landy, 1994; Pearson et al., 2013). Pearson (2013) describes the possible effect storytelling can have on an individual: "They embody states of being that most of us have experienced in the ordinary struggles in our lives. Entering into the stories, we engage playfully, at one remove, in adventures that resonate with our strongest fears, ambitions and longings" (p. 49).

Several studies (Basting, 2001; Fritsch et al., 2009; George & Houser, 2014; George, Stuckey, & Whitehead, 2014) have used TimeSlips (TS) as a creative expression when working with persons living with dementia. TimeSlips is a storytelling program where the emphasis is on creating a story in the here-and-now (Basting, 2001). The use of TimeSlips to improve the awareness of the whole person has been applied with medical students, nursing staff, and other staff members who are involved with individuals living with dementia.

George et al. (2014) used a mixed methods approach to study how creative arts can be used to educate medical students on how to interact with the geriatric population in a more humanistic way. The researchers used TS to evaluate if this type of experiential learning would improve the medical students attitudes towards working with the geriatric population. Pre-test and post- test scores were taken from 22 fourth year medical students. The students were asked to reflect upon their attitudes towards individuals with dementia. The authors identified four themes as a result of the study: (1) the students felt fear and discomfort prior to the storytelling; (2) storytelling provided comfortable experiences; (3) storytelling allowed for creativity and openness; and (4) storytelling brought a humanistic perspective during the interaction which could be brought to future care treatment with the geriatric population (George et al., 2014).

The study was conducted in partnership with Penn State College of Medicine and a long-term care facility. There were 20 participants with dementia living in a locked unit at the retirement home. These participants joined the medical students in the month-long TS storytelling program. George et al. (2014) collected data from a survey. The results of the study found that non-clinical experiences, like the TS experience, can enhance and improve the medical students training and attitudes towards the geriatric population. Four insights were shown to be possible reasons for the change in attitude towards this specific population. The storytelling experiential learning provided the students the opportunity to view this population with dementia in a humanistic and person-centered way. By providing the students the opportunity to interact with this population in a non-clinical environment removed the stigma associated with dementia often associated with this geriatric population (George et al., 2014).

Fritsch et al. (2009) undertook an observational study using an experimental design to look at the effects a TS group storytelling program had on persons living with dementia. They randomly assigned staff and residence of a long-term care facility to a control and treatment groups. Two methodologies were used to assess the impact of TS program on staff and

residents: (1) observation and coding of staff interaction and residents engagement; and (2) a survey of staff inquiring about their job satisfaction. TimeSlips training was provided over a ten week period and the experimental design covered twenty nursing centres across two states in the U.S. After two weeks of implementing the TS program, a time-sampling approach using staff and residents was observed over a four day period. TimeSlips storytelling had 10-12 participants who met for one hour on a weekly basis, for a duration of 10 weeks. The facilitators assisted in the development of the stories. To gather time-sampling information, 2,088 observations were collected by eight trained research assistants. They observed the staff-resident interactions on four different days for the duration of two weeks. Resident engagement and affects were observed. In addition, staff-initiated interactions with residents, attitudes towards individuals living with dementia, job satisfaction, burnout, and staff demographic characteristics, were also collected (Fritsch et al., 2009). The results showed that the residents in the TS intervention appeared to be more alert and engaged as compared to the control group facilities without a TS program. The staff at the TS facilities developed a more positive regard for the residents living with dementia. It appears that a TS program would benefit the care of the person living with dementia as well as enhance the working and living environment (Fritsch et al., 2009).

The authors found that there was a decrease in depression and anxiety related behaviors as a result of the TS intervention. The TS program is an inexpensive yet effective technique for individuals living with Alzheimer's disease and other dementias. It provides this population with the opportunity to express themselves in a creative and non-threatening way. The authors describe the TS program as providing the individual living with dementia an opportunity to draw on their own "preserved abilities" (Fritsch et al., 2009).

George and Houser (2014) applied the TS method to the nursing staff and other staff members in two special care units (SCU) for individuals living with dementia in Pennsylvania. They used a qualitative methods approach to investigate the subjective experience of both the staff and the persons living with dementia participating in a TS program. They had a control group of 10 individuals and a treatment group of 10 individuals. The treatment group received a one hour TS program, twice a week for the duration of six weeks. The treatment group contained 20 Caucasian women whose average age was 85.5 years. The qualitative data was analyzed using thematic analysis. The results of the research were that the treatment group received benefits in the following three areas: residents, staff, and community. The benefits to

residents included improved quality of life with increased liveliness and laughter. In addition, for individuals living with dementia who were non-verbal, they showed increased outward behavior, such as smiling and increased attention. The residents reported feeling part of a collective group who had contributed to the story, thus improving their self-worth. Staff benefited from the TS program in four ways: (1) they learned a new technique on how to interact with individuals living with dementia; (2) the activity provided them with a new perspective towards individuals living with dementia and the staff began to see the person not the disease; (3) the staff found the TS program to be a meaningful activity for themselves and for the person living with dementia; and (4) the TS intervention provided a novel and creative way to address challenges that are associated with dementia. The final benefit of the TS program was felt by the overall community (e.g. staff and residents) by increasing their interactions and improving communication and the general atmosphere on the unit (George & Houser, 2014).

Jaaniste, Linnell, Ollerton, and Slewa-Younan (2015) undertook a pilot study to evaluate the effects of drama therapy on the quality of life of individuals living with mild to moderate dementia. The authors used the 2010 Alzheimer's Society's report's definition of QOL for individuals living with dementia for their study. The methodology used was a mixed methods approach that included both quantitative and qualitative measures. The study included 13 participants (1 female, 12 males) whose ages ranged between 61-85 years, and had mild to moderate dementia. All participants were Australian of European decent (generation history unspecified) and lived in the community. The participants were divided into two groups: the drama therapy group (treatment group) and the movie group (control group). The drama therapy intervention lasted for 1.5 hours, once a week, for two, eight week blocks. The blocks were separated by a three-week period. The movie group lasted for 1.5 hours per week, for two, eight week blocks separated by a three-week period. The drama therapy sessions had the same structure as a standard drama therapy group session which included: group contract, warm-up, main activity based on participants' input and themes, de-roling, and closure. To promote a no fail experience every session maintained the same ritual; e.g. closing song. Part of the drama therapy interventions included Developmental Transformations and story making techniques. The average age of the drama therapy participants was 70.5 years, and consisted of 3 males and 1 female. The movie group included 9 males with an average age of 74 years. The quantitative analysis indicated that there was no statistical difference between the groups with respect to age,

gender, education, type of dementia, and baseline quality of life scores. There was no statistical difference between the two interventions which is not surprising given the small sample size. However, it was interesting to note that the drama therapy group's average QOL and Alzheimer's disease (QOL-AD) scores increased while the movie groups QOL-AD scores decreased. The findings, however, suggest that a larger study is warranted. The qualitative analysis used phenomenological methods to undertake their analysis. The themes that emerged from the drama therapy group included: anger and frustration, family members, dementia and memory loss, and grief. The authors concluded that drama therapy was an appropriate intervention to improve the QOL of individuals who had mild to moderate dementia. The authors also suggested that further research should be undertaken using drama therapy with individuals with dementia and that more mixed method approaches should be undertaken and a larger sample size should be used (Jaaniste et al., 2015).

Chapter 4. Hypothesis and Treatment Design

“You should use what you have, and whatever you may chance to be doing, do it with all of your might.” (Cicero, c. 44 B.C./1909, para. 21)

Prevention Program Design

This research study will purpose a new prevention strategy to address the problem of an increase in the number of Alzheimer’s disease and dementia cases. The proposed prevention strategy will build on the strategy developed in the FINGER’s study (Ngandu et al., 2015; Kivipelto et al., 2013). The FINGER’s study is a randomly controlled trial that compares a controlled group that received standard medical and health information about Alzheimer’s disease, with a treatment group that received this information plus additional support in the areas of physical exercise, nutritional information and support, and cognitive stimulation exercises. The physical exercise component of the treatment included meeting a physiotherapist and designing individual programs to increase muscle strength (1-3 times weekly) and aerobic exercises (2-5 times weekly). The nutritional component was based on the Finnish nutritional recommendations and included three individual sessions and seven to nine group sessions with a nutritionist. The cognitive training component included 10 group sessions and two individual sessions of computer based training. Standard medical measurements were taken at pre-screening, baseline, and at six, twelve and twenty-four months for both the control and treatment groups. Additional monitoring of the treatment group was undertaken for the aerobic exercising and cognitive stimulation exercises (Ngandu et al., 2015; Kivipelto et al., 2013).

This paper is proposing that the FINGER’s study, or a similar type study, should include two additional treatments. The first treatment group, called drama therapy treatment group 1, would include individuals at risk of developing Alzheimer’s disease and dementia, who would undertake the exercise, nutrition, and cognitive stimulation exercises, as well as undertaking a drama therapy intervention. This drama therapy treatment group 1 would be compared to the control group, and the treatment group that only includes exercise, nutrition, and cognitive stimulation exercises.

The second treatment group will be called the drama therapy treatment group 2. This group would include individuals who are at risk of developing Alzheimer’s disease and dementia and would receive the basic health information, similar to the FINGER’s control group, plus a

drama therapy intervention. Drama therapy treatment group 2 would be compared to the control group, the FINGER treatment group, and drama therapy group 1.

Hypothesis

The following hypothesis is proposed: Drama therapy interventions will increase the prevention and delay of Alzheimer's disease and dementia for at-risk individuals. To test this hypothesis the number of cases of AD and dementia will be compared between the treatment group that receives drama therapy and the control group.

The medical literature (Baumgart et al., 2015; Dehnel, 2013; Fernandez, 2010; Imtiaz et al., 2014; Kivipelto et al., 2013; Ngandu et al, 2015; Norton et al., 2015; Qiu et al., 2009; Solomon et al., 2014) recognizes that physical exercise, cognitive stimulation games, and nutrition all play a role in the prevention and delay of Alzheimer's disease and dementia. The reasons for this is multifaceted. Exercise tends to be a new activity that stimulates the brain and increases the size of the hippocampus. Increasing the size of the hippocampus enhances brain health and memory. Activities that have a physical/exercise dimension have the potential to increase the hippocampus and therefore improve brain health.

Cognitive games have also been shown to improve brain health (Baumgart et al., 2015; Dehnel, 2013; Fernandez, 2010; Imtiaz et al., 2014; Kivipelto et al., 2013; Ngandu et al, 2015; Norton et al., 2015; Qiu et al., 2009; Solomon et al., 2014). The theory behind this is that neurological stimulation can increase the number of neurons in the brain and/or the brain's dendrite network. Increasing the number of neurons and dendrite network increases the brain reserve. Expanding the brain reserve improves brain health and potentially can prevent or delay Alzheimer's disease and dementia.

It has been shown that the dietary habits of individuals can influence the development of Alzheimer's disease and dementia (Baumgart et al., 2015; Dehnel, 2013; Fernandez, 2010; Imtiaz et al., 2014; Kivipelto et al., 2013; Ngandu et al, 2015; Norton et al., 2015; Qiu et al., 2009; Solomon et al., 2014). This is the reason why nutritional counselling is provided to the participants in the FINGER's study. Diets that are high in fruits, vegetables, and fish protein, and lower in saturated fats, provide an additional level of protection against diseases believed to contribute to Alzheimer's disease and dementia.

Drama Therapy Intervention

Drama therapy can be a viable option and addition to the traditional biomedical model presently adopted in the Alzheimer's disease and dementia prevention research. Intercepting possible obstacles, that might hinder the results in the AD prevention research, could potentially be achieved by embracing the biopsychosocial model that includes drama therapy. In this prevention study of Alzheimer's disease and dementia, adopting an all-encompassing intervention method (e.g. biopsychosocial with drama therapy) creates an atmosphere of success that brings the humanistic approach to health and research. For example, this approach reminds the researcher that the participant is a multifaceted "individual" living in the here-and-now (e.g. physical, psychological, emotional, social, and spiritual being) by shifting the researcher's focus away from only regarding the participant as an "object" and "chronic disease" (e.g. Alzheimer's research participant).

Drama therapy is an adaptable technique that is well suited to meet the research criteria required by the biomedical model (e.g. exercise, nutrition, and cognitive stimulation) and the psychosocial model (e.g. psychological and social) by using methods that address the specific needs of both these healthcare approaches. The biopsychosocial model uses a systems approach to healthcare, thus, providing drama therapy the space and opportunity to be part of this AD prevention research. The modality of drama therapy can be used to integrate all of the participant's human dimensions, such as their physical, psychological, emotional, social, and spiritual attributes, thus, deepening their experience, knowledge, and participation in the prevention research. Incorporating drama therapy into the research intervention is a novel approach to AD and dementia prevention that has the added potential to enrich the experience for both the participant and the researcher (e.g. clarity in communication). The inclusion of this modality could make the researcher aware of any unexpected issues that may not be obvious to them or verbally expressed by the participant. Drama therapy provides distancing techniques to safely explore psychological and physical concerns that could affect an individual's behavior and overall health.

Drama therapy as a treatment brings a number of key elements that can potentially increase the prevention and delay of Alzheimer's disease and dementia. Drama therapy provides the participant a novel way to experience and participate in the Alzheimer's disease and dementia prevention research by adding the creative dimension and more humanistic approach to

the intervention. Johnson (2009a) describes the history and development of drama therapy and the different drama therapy approaches adopted by its practitioners. The author explains how the diverse, multifaceted drama therapy methods that could be employed will depend on whether past or present needs of the client and society are being addressed.

Johnson (2009a) states that in order for drama therapy to remain relevant in this technological world it must develop creative approaches that can be integrated into this new reality. The author encourages a collaborative approach within the profession to further develop and secure drama therapy's place in this fast paced technological world. Johnson (2009a) explains how drama therapy interventions address interpersonal and intrapersonal qualities that can develop and enrich personal and global perspectives (p. 32).

The current research in the prevention and delay of Alzheimer's disease and dementia addresses the personal and global concerns of society. The medical paradigm shift from treatment to prevention of Alzheimer's disease and dementia is where drama therapy can think "creatively" and immerse itself in prevention research. As Johnson (2009a) states, the world is changing, therefore, drama therapy must adapt their methods to keep up with these global demands (p. 32). The movement of drama therapy into the area of prevention in healthcare shifts its focus from the traditional treatment approach to health. Drama therapy's integration in this paradigm shift in healthcare will enable the field of drama therapy to remain current while balancing their humanistic values to promote the well-being of the individual.

Physical and Cognitive Dimensions of Drama Therapy

For drama therapy to evolve to address current and future concerns, it must be able to adapt its processes to take these new issues into account. In order for drama therapy to play a role in the prevention and delay of Alzheimer's disease and dementia, it must identify areas where the drama therapy process can enhance or become a substitute for the biomedical dimensions of the health problem. For example, the biomedical model for the prevention of Alzheimer's disease and dementia suggests that physical exercise and cognitive stimulating games play a role in this prevention. Frydman (2016) presents a theoretical model that shows the interconnection between drama therapy and cognitive neuropsychology. He suggests that Landy's role theory has a direct counterpart to executive functioning in neuropsychology. Where executive functioning is higher order cognitive processes such as working memory, attention, and cognitive control (Frydman, 2016, p .41). Drama therapy can emphasize the

physical and cognitive stimulation components in its therapeutic approach. In this way, participants in this prevention research will receive the required physical exercise and cognitive stimulation in conjunction with drama therapy techniques to enhance the research intervention.

Jones (2011) notes that in drama the actor uses their body as a means of expression and a way to project ideas. The actor in a dramatic performance will use their voice, hands, and movement to project their ideas and emotions. One must use their body in order to undertake a dramatic performance. Drama therapy uses the same process as a means for the individual's "self" to be released through the body. Jones (2011) argues that in drama therapy the client can use their physical abilities to express themselves in the here-and-now. The use of the body is an essential component in drama therapy and can be used to communicate emotion. As a result, drama therapy by its very nature is physical and in this case could provide the exercise component that is required in the biomedical approach. In this new application of drama therapy various drama therapy techniques could be implemented to provide the physical exercise component for the prevention and delay of Alzheimer's disease and dementia.

Drama Therapy Methods and Physical Exercise

Jones (2011) describes how the methods of drama therapy incorporates play and action in order to facilitate personal growth and insight (p. 8). Drama therapy is an embodied approach that uses the body and physical action as a form of expression. The FINGER's prevention research study has included participation in physical exercise and activities to be a contributing factor in the prevention and delay of Alzheimer's disease and dementia for at-risk individuals. The exercise component in this prevention research can be enhanced by adding the drama therapy embodied approach as an alternative to the traditional form of physical exercise and activities (e.g. treadmill and lifting weights). In addition to drama therapy's embodied method increasing the participant's physical exertion, it will also provide a therapeutic dimension presently not available in the physical intervention of the FINGER's research study. Both the physical and emotional dimensions can influence and affect an individual's physical involvement and must be considered in order to ensure the success and maintenance of participant participation. For example, a research participant might begin an exercise program intending to follow and complete the program designed for them, but because of past negative experiences and attempts at exercising, they might react by withdrawing from the research study. Drama therapy can bring a novel approach to being physically active as well as addressing any past or

unforeseen issues a participant might have with exercise that could impede on their success. This method of physical engagement also aids the participant in becoming more aware of “self” and gain a new perspective on what motivates them to change, a fundamental aspect of this prevention research.

Blatner and Glass Collins (2008) recognize that participating in drama therapy can be intimidating to some individuals and may result in their non-participation. They state, “The image of therapy as primarily a process of verbal interchange – simply talking – is not as threatening as having to get up and involve the whole body in action” (p. 136). There are several approaches that can be used to address these concerns. Blatner (2009) describes using different psychodramatic techniques, such as doubling, mirroring, and role-reversal, to help build trust and comfort levels while participating in this embodied experience. Landy (1994) describes how developing an aesthetic distance can be applied to drama therapy methods, i.e. role play, myth and fairy-tale, to decrease the anxiety and intimidation factor that might arise when participating in a drama therapy session. Old and old-old individuals may find participating in drama therapy sessions threatening because of their cognitive and physical deficits. Sandel and Johnson (2012) recognize this potential problem and provide a safe space for these participants to discuss and acknowledge these deficits. They also introduce imaginative projective tools; such as the “magic box,” where individuals can discover or place anything they require to fully participate in a drama therapy session (Sandel & Johnson, 2012, pp. 59-60).

Jones (2011) defines embodiment in drama therapy as a way for the client to use their body to become more physically, mentally, emotionally aware, and more involved in the process of insight and personal growth (pp. 112-113). He describes the different changes and processes in drama therapy: (1) using drama therapy techniques to encourage the client to become more aware of their body to effectively communicate their needs; (2) using the body to therapeutically transform the individual’s preconceived ideas of “self” to develop new insight and change in their future behaviour; and (3) to aid the individual’s exploration of how their personal, social, and political views affect their somatic experience (Jones, 2011, p. 113). Drama therapy’s physical dimension bridges the divide between mind and body and considers how both interact and influence an individual’s behavior and health. Using drama therapy as a bridge to include both the mind and body in the physical element of the prevention research, provides both the participant and the researcher to bear witness to any physical changes that may not be readily

described verbally. In addition, using drama therapy's embodiment intervention in the biopsychosocial approach to healthcare interventions places the individual in the here-and-now which allows the participant to reflect on the process. This reflection can lead to greater insight and personal growth, thus, promoting participation and success in the program (Jones, 2011).

All drama therapy interventions have different degrees of physical interaction, some methods utilize the physical aspect more intensely. Some examples of more physical interventions would be Developmental Transformations, play therapy techniques, role-play, and the use of various exercises in the Five Phase Model. Developmental Transformations will be described below to illustrate the concept of incorporating the physical dimension in the drama therapy technique.

Johnson (2009b) describes the Developmental Transformations method in drama therapy to include four key elements: transformation, embodiment, encounter, and play-space (p.89). Transformation is a term used to describe the ability of the participant to use their body to interact within the environment. Their body movements, sounds, and images are utilized to change and shift the existing scene and behaviours. This movement is an effort to adapt and adjust to the unstable and changing environment of the play-space. This transformation of action and roles requires a constant level of physical interaction and communication by the participant. Embodiment can reveal the individual's life experience and show the differences between other participants. It is important in Developmental Transformations that individuals interact in close physical proximity in order to identify and observe individual differences and changes in their behaviour. Encounter uses the intention of the individuals to interact and communicate with other participants in the play-space. This method relies on the physical movement and interaction from the participants and does not use props as aids. The play-space is a mutually agreed upon area that permits respectful, safe, physical contact, and movement between the participants. Every participant is encouraged to engage with other participants within the play-space (Johnson, 2009b). The play-space contains three essential elements: (1) restraint against harm; (2) discrepant communication; and (3) mutual agreement, which forms a moral and ethical commitment amongst the participants (Johnson, 2009b, pp. 93-94).

Several authors (Grunberg Smith, 2000; Johnson, 1986; Johnson, Smith & James, 2003; Parkinson, 2008) recognize the effectiveness of Developmental Transformations as a therapeutic modality for the elderly. Parkinson (2008) argues that Validation Therapy provides a framework

for interacting with the elderly and specifically, individuals living with Alzheimer's disease. The author makes a connection between Validation Therapy and Developmental Transformations which results in an improvement in the effectiveness of the therapy. When working with individuals living with Alzheimer's disease and dementia, the Developmental Transformations method has been modified to take into account the individual's functionality, ability to recognize real and pretend play, memory problems, therapist as manager of the play-space and play objects, and physical touch (Parkinson 2008).

Developmental Transformations with its concepts of transformation, encounter, and embodiment requires the participant to physically exert and express themselves in the play-space. This physical exertion in this drama therapy method enhances or replaces the physical component of the biomedical method as defined in the FINGER's prevention research study. An added benefit of including this method is the ability of the researcher and the participant to identify any changes or behaviour that might impede the participants' ability to complete this dimension of the preventive treatment. Adding drama therapy to the physical component in this prevention research study can explore the participant's feelings about the possible effects Alzheimer's disease and dementia will have on their physical abilities in the future.

Drama Therapy Methods and Cognitive Stimulation

It has been determined that the brain continues to develop throughout an individual's lifespan, and the brain's plasticity continues to evolve as long as it is challenged and exercised. Cozolino (2010) argues that when individuals expand their experiences, or are required to undertake new perspectives, neural integration will increase. Increasing neural integration will increase the number of neurons, create greater synaptic density, and alternate cognitive networks, therefore, expanding brain and cognitive reserve. In the FINGER's prevention research study, cognitive stimulation, i.e. using computer games, was used to develop and maintain cognitive reserve. The use of computer games provides cognitive stimulation between the participant and the computer screen but does not factor in the human interaction. In addition, the computer exercises can lose the challenging aspect because the games can become routine and predictable therefore losing their cognitive stimulating effect on the brain.

Sandel and Johnson (2012) describe drama therapy methods that stimulate cognitive abilities for the geriatric population. The authors state that participating in a group drama therapy program is interactive, social, and relies on creative communication which stimulates

cognition. The interaction between individuals is a dynamic process which provides novel and challenging experiences unlike the passive interaction of computer games. All drama therapy techniques have within them personal interactions that result in cognitive stimulation. Examples of some of these methods are: improvisation, play, rehearsals for growth, Developmental Transformations, and Role Play, etc. An example of cognitive stimulation using improvisation is described below.

Weiner and Cantor (2003) describe improvisation as being in the moment and requires the individual to respond spontaneously to different situations. In order for improvisation to function well, individuals must cooperate, be attentive, be generous, and validate each participants' contribution. It is important to recognize that improvisation is dynamic and constantly changing, requiring the brain to be actively involved in the situation. Improvisation also allows the individual to expand their range of emotion and imagination beyond the rational confines of everyday situations. The use of improvisation in drama therapy provides cognitive stimulation that is ever changing and challenging. As a result, improvisation will potentially build up the number of neurons, increase synaptic density, and expand the cognitive networks, thus, increasing brain and cognitive reserves.

Drama Therapy Methods and the Social Dimension

Several authors (Imtiaz et al., 2014; Jennings, 2006; Johnson, 1986; Kivipelto et al., 2013; H. Noice & Noice, 2006; Norton et al., 2015; Stassen Berger, 2011; Qiu et al., 2009; Zhang et al., 2015) state that certain lifestyle factors might aid in the prevention or delay Alzheimer disease and dementia. Imtiaz et al. (2014) state these lifestyle factors include: education, physical activity, smoking and alcohol use, dietary patterns, and social characteristics (Imtiaz et al., 2014). Maintaining social connections and activities has been identified as a means of protecting an individual's overall cognitive, physical, and psychological well-being. Social interactions and experiences are especially critical as an individual ages.

Several review articles (Flicker, 2009; Fratiglioni, Paillard-Borg, & Winblad, 2004) summarized the research related to lifestyle interventions and its impact on the risk of developing Alzheimer's disease and dementia. In both of these review articles, social networks were identified as a lifestyle intervention. Both reviews suggest that lifestyle interventions, i.e. social, mental, and physical activities, may provide some protection against Alzheimer's disease and dementia. However, the authors stated that there were no randomly controlled trials undertaken

by these studies and thus the conclusions were based on observational measures. It appears that the mechanism for this added benefit is common for all three interventions (social, mental, and physical). Fratiglioni et al. (2004) suggest three possible mechanisms that generate this benefit. These are the cognitive reserve hypothesis (previously explained), the vascular hypothesis, and the stress hypothesis. The vascular hypothesis is based on the idea that social, mental, and physical activities may decrease the risk of cardiovascular disease potentially reducing the risk of developing Alzheimer's disease and dementia. The stress hypothesis suggests that social and physical activities decrease stress and increase positive emotional states such as self-esteem.

Kivipelto et al. (2013) consider the social dimension to be an important protective factor in the prevention and delay of Alzheimer's disease and dementia. The authors describe the social factor in this multidimensional intervention as participating in social activities and being socially engaged. Kivipelto et al. (2013) looked at the different multidimensional interventions, such as controlling and managing metabolic and vascular risk factors, diet, physical exercise, and cognitive and social stimulation, in order to determine if any of these factors had an effect on preventing and delaying cognitive decline in at-risk individuals (Kivipelto et al., 2013, p. 659). The authors describe the FINGER study's approach to cognitive training in which ten group sessions were implemented and led by a psychologist. Each group session lasted for approximately 60-90 minutes and included group discussions pertaining to the participant's experiences (e.g. cognitive changes, memory strategies, memory training). The social activities addressed all the multidimensional factors in the study that further enhanced interpersonal and intrapersonal components (e.g. attending Alzheimer's meetings, sharing lifestyle information, keeping diaries, forming personal connections). Independent computer training was also implemented over this time period (Kivipelto et al., 2013, pp. 660-661).

Bennett, Schneider, Tang, Arnold and Wilson (2006) undertook a study on the impact of social networks on Alzheimer's disease pathology and cognitive function. The study was a large scale longitudinal cohort study where study participants undertook annual testing to determine their cognitive functioning. In addition, upon death the individual's donated their brain for analysis to determine the Alzheimer pathology, i.e. degree of plaque and tangles. The results of the first 89 individuals indicated that the size of the social network had some effect on the measure of Alzheimer's disease pathology and the level of cognitive functioning. The authors

concluded that having a large social network improved the cognitive function relative to the Alzheimer's disease pathology (Bennett et al., 2006).

Saczynski et al. (2006) undertook a study that investigated social engagement of Japanese-American men and the incidence of Alzheimer's disease and dementia. Social engagement was measured at mid-life in 1968 and at late-life in 1991. Social engagement was assessed using five indicators: marital status; living arrangements; participation in social, political, or community groups; number of face to face or telephone contacts with close friends per month; and the existence of a confidential relationship (Saczynski et al, 2006, p. 435). The authors found that individuals with high levels of social engagement at mid-life did not have a significantly different cognitive function score than individuals with low levels of social engagement. In late-life individuals with low levels of social engagement had lower mean cognitive function scores than individuals with middle or high levels of social engagement. The authors used an adjusted hazard model to assess the relationship between social engagement and the risk of developing Alzheimer's disease and dementia. The authors found that there was no relationship between mid-life social engagement and the risk of developing Alzheimer's disease and dementia. However, in late-life, individuals with the lowest social engagement group had a significantly higher risk of developing Alzheimer's disease and dementia as compared to the highest social engagement group. The authors also investigated the change in the level of social engagement between mid-life and late-life. Individuals whose social engagement decreased from mid-life to late-life had a significantly higher risk of Alzheimer's disease and dementia than individuals who had high levels of social engagement at both mid-life and late-life. Individuals who increased their social engagement from mid-life to late-life did not result in a reduction in the risk of developing Alzheimer's disease and dementia. Finally, individuals who had low social engagement at both mid-life and late-life had only a slightly higher risk of developing Alzheimer's disease and dementia than those individuals who had high social engagement at both mid-life and late-life (Saczynski et al., 2006).

Wang, Karp, Winblad and Fratiglioni (2002) investigated the impact of social and leisure activities on the incidence of dementia. The study was based on following individuals who were 75 years or older in the Kungsholmen district of Stockholm, Sweden. The baseline data was collected in 1987-1989 and two follow-up surveys were undertaken in 1991-1993 and 1994-1996. A total of 560 individuals were alive for the 2nd follow-up survey and 123 of these

individuals had dementia. They found that individuals who participated in mental, social or productive activities decreased the incidence of dementia. The possible mechanisms they suggest for these results were: (1) increase brain reserve through mental activity; or (2) psychosocial pathways might be increased with social interactions which could improve brain plasticity. This latter mechanism has been shown to increase memory performance scores.

The above research suggests that social interactions and enhancing social networks could assist in the prevention and delay of Alzheimer's disease and dementia. It has been hypothesized that the mechanism that results in this added health benefit could be from increasing the cognitive reserve, improving vascular health, or decreasing stress. Drama therapy as a form of group therapy in particular, enhances the social dimension and network of individuals.

Reinstein (2002) discusses how drama therapy can be used in conjunction with other treatment methods to aid in the reduction and management of depression in functional elderly people. The author describes the positive impact group drama therapy sessions provide by reducing their isolation, enhancing their self-worth, and by allowing the elderly to contribute to the drama in a meaningful way. In addition, the social situation created by drama therapy group work taps into their creativity and reconnects them to others as well as gaining a deeper appreciation for self (Reinstein, 2002, pp. 13-15).

Drama therapy by its very nature is a group orientated method that increases social interaction. Emunah (1994; 2009) developed the Integrative Five Phase Model based on her observations of group therapy process. The five stages of this model are: dramatic play, scene work, role play, culminating enactment, and dramatic ritual (Emunah, 1994, pp. 34-45). In phase one of this process, dramatic play is used to build trust within the group and to facilitate interactions amongst the group members. Often, improvisational drama is used in this phase to encourage spontaneity amongst the group members and for individuals to feel comfortable interacting with each other. In phase two, dramatic scenes are used so that individuals in the group can experience dramatic roles and characters. In this phase, individuals are able to use their self-expression in order that they experience role expansion over their normal range of expression. The goal is to provide group members the flexibility and freedom for self-expression. In phase three, role play is an essential component. The group explores common themes allowing them to interact while providing the individual a safe distance in order for them to evaluate their own roles and behavior. Phase four allows individual group members the

opportunity to evaluate their own motivations and behaviors. This can include: reliving events and addressing emotions that are often suppressed, increasing the empathy of other group members for the individual which also increases empathy for the group members, witnessing of the dramatic scene, by which the group unloads the burden of the event from the individual. The final phase is the dramatic ritual and provides closure for the group. During this phase closure rituals are used at the end of individual group sessions and at the end of the treatment series. These phases are not intended to be a rigid structure but as a flexible guide to meet the needs of the individual and group (Emunah, 1994, pp. 34-45). Across these five phases, the group interaction provides the individual with mental stimulation through enriched dramatic social interactions that increases their self-awareness and motivation for change.

An example of a mid-session dramatic therapeutic activity is “calling out emotions” (Emunah, 1994, p. 192). With this drama therapy technique group members call out different emotions for two of the group members to act out in a scene. For the two actors, this improvisational situation requires them to pick up on verbal and non-verbal cues expressed by the other. For the actors and the group members, this requires them to identify emotional and behavioural changes, thus heightening their senses and clarifying the information being processed and input into their brain. This emotional activation can stimulate the sensory input which has the potential to increase the neural network required to maintain memory. In addition, improvisational situations and increased social interactions could decrease stress for the individuals. Both of these are potential mechanisms from social interactions that can increase the prevention or delay of Alzheimer’s disease and dementia.

Drama Therapy and the Multifactorial Dimensions of Stress & Anxiety

The FINGER’s study acknowledges the potential, multifactorial risk factors involved in developing Alzheimer’s disease and dementia. The researchers of this prevention study provided some additional examples of these multifactorial risk factors, i.e., type 2 diabetes, cardiovascular disease, and other problematic lifestyle factors (Ngandu et al., 2015; Kivipelto et al., 2013). In order to reduce the chances of at-risk individuals developing Alzheimer’s disease and dementia, it would be prudent for these at-risk individuals to modify their unhealthy lifestyle choices. Some of these lifestyle concerns thought to contribute to Alzheimer’s disease and dementia are indirect causes such as stress and anxiety. It has been reported that some of the contributing risk factors for developing type 2 diabetes is an unhealthy diet and obesity. Some of the risk factors

for becoming obese are an unhealthy diet, socioeconomic influences, and certain medications (e.g. anti-depressants). And finally, some of the risk factors for developing cardiovascular disease are diabetes, obesity, and stress (Mayo Clinic, 2014; Mayo Clinic, 2015; Mayo Clinic, 2016).

Stress and anxiety can indirectly effect cardiovascular disease, type 2 diabetes, obesity, and unhealthy lifestyle choices. Stress has been defined as an individual's response to events that are happening in the present time, while anxiety is described as an individual's response to events that may or may not occur in the future. Depending on the degree of anxiety, it may be associated with another factor such as mental illness. Cozolino (2010) discusses anxiety and its effects on the neural circuitry in the brain. The author describes how from an evolutionary perspective, anxieties may be ingrained in the brain as a mechanism for survival and how anxiety and fear responses can be conscious or unconscious and both affect behaviour, thoughts, and feelings (pp. 239-240). Areas of the brain that are affected by anxiety and fear are the amygdala (e.g. unconscious, emotional) and hippocampus (e.g. conscious, memory), if an individual has experienced chronic stress and anxiety. These areas of the brain can become negatively affected. The affects chronic stress has on the body and brain can result in physical and psychological illness, cognitive impairment, and memory deficits (Cozolino, 2010).

The FINGER's prevention research study has targeted probable contributing factors for developing Alzheimer's disease and dementia that have an indirect link to stress and anxiety (e.g. cardiovascular disease, type 2 diabetes, diet, and unhealthy lifestyle factors). Providing the tools to cope with stress and anxiety could be an area for drama therapy interventions to enhance an Alzheimer's disease and dementia prevention research study. Drama therapy methods potentially can have a positive effect on cardiovascular health, type 2 diabetes, nutrition, and other lifestyle concerns, by providing the tools to understand and effectively manage stress and anxiety. Another consideration for the Alzheimer's disease and dementia prevention research is to address the participants' potential stress and anxieties that might surface as a result of participating in such a study. For example, the participant's reaction to knowing that they are at-risk for developing this chronic degenerative disease may trigger immediate stress or anxiety and fear for their future. This confounding factor could be addressed by implementing a drama therapy component in the prevention research study to help the participant address and manage these concerns.

The performance in drama therapy can be used as a mechanism to change an individual's perception of themselves. This mechanism usually includes an element of fear, obstacles to be overcome, and crossing into the new perception of self (Snow, 2009, pp. 125-126). Snow (2009) states that the concept of health should be one of wholeness or balance, in particular when considering the unconscious. Linden (2009) uses a similar concept as Snow when discussing Omega Transpersonal Drama Therapy. The author argues that using this approach in healthcare considers the whole person first instead of the pathology. As a result, the disease is put in context after the whole person has first been defined. The Omega Transpersonal Drama Therapy approach parallels the biopsychosocial model in healthcare which considers the whole person.

Jones (2011) describes dramatic projection as allowing an individual to project their emotions and parts of themselves onto other individuals or objects, and this act is generally performed at an unconscious level. Projection as a technique requires the individual to be creative, resulting in gaining new perspective and insight. The use of role play and projection in drama therapy allows the individual to explore inner conflicts that can have a bearing on their behaviour. Using this method in Alzheimer's disease and dementia prevention research could assist the participant in identifying any underlying conflicts that can directly impact their ability to successfully complete the program, e.g. attitudes towards exercise and weight. Landy (1994) suggests that models of distancing and roles can be used to address anxiety and stress disorders. Using these techniques can address stress and anxiety that can indirectly lead to health benefits that can affect Alzheimer's disease and dementia, e.g. decreasing cardiovascular disease, type 2 diabetes, obesity, and other lifestyle issues.

Blatner (2003) states that psychodrama allows individuals to act out their problems through role play in a conscious way and provides them with opportunities to explore deeper emotions. Many of the concepts used in psychodrama have been integrated into newer forms of drama therapy such as Omega Transpersonal Drama Therapy. Linden (2009) identifies eleven principles underlying Omega Transpersonal Drama Therapy (pp. 213-216). All of these eleven principles could be utilized in Alzheimer's disease and dementia prevention research, however, certain principles have been identified as being more suitable. "Embodying the therapeutic issues" has a direct relevance to the participant in the prevention research study as it can help them recall any stress or anxiety provoking issues that might directly impact these emotions (Linden, 2009, p. 214). In this way, participants will receive feedback and potentially learn to

manage their stress and anxiety better to reduce these factors that impact cardiovascular disease, type 2 diabetes, etc. Reducing these stressors indirectly decreases the potential risks for developing Alzheimer's disease and dementia. The next principle of importance is "Working with archetypes" (p.214). The therapist in this technique takes on four roles: healer, artist, educator, and shaman. Using these archetypes the therapists can assist in the healing process by working through issues and problems (Linden, 2009, p. 214). Over time, the individual can acquire these archetypes so they can use this information to manage their stress and anxiety. Finally, Linden's (2009) principle of "Seeking mastery through self-discipline" describes how an individual can achieve a healthy, balanced life by being mindful of their thoughts and actions (p. 215). The author states that if an individual can master their internal and external conscious thought and actions, what they perceive is what they will achieve. Linden (2009) states that an individual who has self-discipline, is focussed, and positive will have the ability to follow recommendations prescribed for them in order to achieve emotional, physical, and spiritual growth (Linden, 2009, pp. 215-216). Using the principles described in the Omega Transpersonal Approach to Drama Therapy, the participants' will learn the tools to enhance mindfulness and self-discipline in order to comprehensively follow the researchers' recommendations for the prevention of Alzheimer's disease and dementia.

Future Drama Therapy Prevention Study Design

The ideal study design would be a random controlled trial (RCT) consisting of a control group and 3 treatment groups. The Control Group and Treatment Group 1 are similar to those in the FINGER's study. The Control Group (CG) receives standard medical information on Alzheimer's disease and dementia. Treatment Group 1(TG-1) would receive the standard medical information on Alzheimer's disease and dementia along with exercise, nutrition, and cognitive stimulation interventions. The next treatment group, called Drama Therapy Treatment Group 1 (DTTG-1) would receive the standard medical information, the exercise, nutrition, and cognitive stimulation interventions, as per TG-1, plus a drama therapy intervention. The final treatment group, called Drama Therapy Treatment Group 2 (DTTG-2) will receive the standard medical information plus the drama therapy intervention.

Participants in the study will be randomly allocated to one of the four groups. All of the individuals will be between the ages of 60-75 years, and will be screened for their level of risk of developing Alzheimer's disease and dementia. The standard test that was applied in the

FINGER's study would be used to identify individuals at risk. The study will draw participants from across Canada to ensure that all provinces and territories will be statistically represented. The study should be a long-term study with preliminary results reported after the second year and final results after the seventh year of the study.

The hypothesis to be tested is that drama therapy will increase the prevention or delay of Alzheimer's disease and dementia for at-risk individuals. All of the treatments will be compared to the CG. In addition, TG-1 will be compared with DTTG-1 to determine if the addition of a drama therapy treatment will enhance the prevention or delay beyond those of the intervention that included medical information, exercise, nutrition, and cognitive stimulation activities. DTTG-2 when compared to the CG will determine whether drama therapy alone increases prevention and delay beyond just giving medical information. In addition, DTTG-2 will be compared to TG-1 to determine whether drama therapy on its own provides an increased level of prevention or delay above the intervention that includes medical information, physical exercise, nutrition, and cognitive stimulation.

To test this hypothesis, a number of different measurements could be used. First, in the long-term study, the number of individuals who do not develop Alzheimer's disease and dementia will be used to test whether the 3 treatment groups provide additional protection. Second, standard neurological psychological tests will be used to measure cognitive ability. The results from these cognitive tests will be compared across the 4 groups to determine statistical significance. Finally, brain scans will be utilized to measure any changes to the hippocampus, e.g. nerve cell regeneration, hippocampal atrophy. These measurements will be taken at the start of the study, in the second year, and in the seventh year of the study.

Chapter 5. Conclusion

“This is all I had to say on old age. I pray that you may arrive at it, that you may put my words to a practical test.” (Cicero, c. 44 B.C./1909, para. 57-58)

This research paper reviewed the literature on the potential role drama therapy could play in the prevention and delay of Alzheimer’s disease and dementia. The literature indicates that there has been a paradigm shift in the medical field, moving away from the treatment of Alzheimer’s disease and dementia to placing a greater emphasis on the prevention of Alzheimer’s disease and dementia. The medical literature suggests that increasing physical exercise, improving nutrition, and participating in cognitive stimulating activities using computer programs could increase the prevention against Alzheimer’s disease and dementia. In addition, the medical literature indicated that a variety of diseases, such as cardiovascular disease and type 2 diabetes, can contribute to the development of Alzheimer’s disease and dementia. The medical literature identified factors such as exercise and nutrition, as well as stress and anxiety, that can affect the likelihood of obtaining cardiovascular disease and type 2 diabetes, as having an impact on the probability of exhibiting the clinical symptoms of AD and dementia.

This change of paradigm in the medical field has been described as a change in the framework in which to evaluate healthcare. The traditional framework in medicine was a biomedical paradigm that focused on the disease and the biological components of that disease. The biomedical model was important when the priority in the healthcare system was challenged by infectious diseases, e.g. smallpox. Currently, the crisis in healthcare systems has shifted from infectious diseases to chronic diseases. As a result, the medical paradigm has needed to adapt to this reality. To respond to this new reality, a biopsychosocial model has been adopted. The biopsychosocial model emphasises the biological, psychological, and social components to health. This approach incorporates the whole person and not just focusses on the disease. A newer paradigm has evolved called the ecopsychosocial framework. This new framework expands the biopsychosocial dimensions to include anthropological and environmental components to health.

A bibliographical literature review was undertaken to identify drama therapy studies that included prevention and treatment of Alzheimer’s disease and dementia. The review indicated that no studies, to this researcher’s knowledge, specifically used drama therapy techniques to

address the *prevention* of Alzheimer's disease and dementia. The literature did indicate that drama therapy techniques have been used in the treatment of these chronic diseases. The results reported in these papers were mostly based on qualitative measures with very small sample sizes, and in some cases the results reported were for caregivers and staff and not for the individual living with Alzheimer's disease and dementia. Given these results, it is difficult to draw conclusions on the effectiveness of drama therapy for the treatment of Alzheimer's disease and dementia.

A hypothesis was proposed on the ability and effectiveness of drama therapy to prevent or delay Alzheimer's disease and dementia for at-risk individuals. It was hypothesised that drama therapy could be used to prevent or delay Alzheimer's disease and dementia. A study design was proposed to test this hypothesis.

The study design is based on a random control trial (RCT) for individuals at-risk of developing Alzheimer's disease and dementia. The study design included four groups: a Control Group (CG) that would receive medical information, a Treatment Group (TG-1) that would receive medical information, in addition to physical, nutritional, and cognitive stimulation interventions; a Drama Therapy Treatment Group 1 (DTTG-1) was a group that would receive medical information, physical, nutritional, and cognitive stimulation interventions along with a drama therapy intervention; and a final Drama Therapy Treatment Group 2 (DTTG-2) which would receive medical information along with a drama therapy intervention. The study designed that was proposed included both quantitative and qualitative measures in order that statistical inferences could be estimated.

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