Stress Reduction Through Dance in Older Adults

Thesis

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Natalie R. Gillespie

Undergraduate Program in Social Work

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Thesis Committee:

Dr. Holly Dabelko-Schoeny

Abstract

The purpose of this study was to determine the extent to which movement-dance classes influence the mood and level of stress of adults aged 60 and older. By 2050, nearly 17% of the world's population will consist of older adults (He, Goodkind, & Kowal, 2016). With this rapid growth comes the necessity to increase physiological and psychological care to ensure healthy aging. Dance and movement classes have been recently explored as a way to go about this. Facilitating dance/movement classes enables older adults to build community relationships, reduce levels of stress and depression, foster a healthy creativity, and encourage further physical and emotional growth (Kluge, Tang, Glick, LeCompte, & Willis, 2012). Although a plethora of research has been conducted on the effects dance-movement classes have on depression levels in older adults, little has been conducted on stress and mood levels. Therefore, in order to examine the stress and mood levels in older adults when provided dance-movement classes, six movement classes were facilitated in which a Positive and Negative Affect Schedule (PANAS) and Perceived Stress Scale (PSS) were administered to measure changes in stress levels and mood and a qualitative focus-group to explore the experiences of four class participants. Results suggest that the movement dance classes increased positive affect, social involvement, physical movement, sense of belonging and friendship development, memory and cognitive health, and being in the moment and decreased stress levels. Additionally, researchers identified specific challenges related to recruiting older adults to participate in new community-based programming.

Dedication

This study is dedicated to the older adult participants who made this work possible.

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Curriculum Vitae

2015…….....Bishop Watterson High School

2019……B.S. Social Work, Honors with Research Distinction
Cum Laude, The Ohio State University

Fields of Study

Major Field: Social Work

Minor Field: Dance

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Chapter 1: Statement of Research Topic

By 2050, nearly 17% of the world's population will consist of older adults (He, Goodkind, & Kowal, 2016). With this rapid growth comes the necessity to increase physiological and psychological care to ensure healthy aging, as older adults are at a higher risk of chronic disease and disability. Of older adults aged 70 or older, 79% of them have at least one of seven potentially disabling chronic conditions (National Institute on Aging [NIH], 1999). Chronic disease and disability are associated with an increase in stress, depression, anxiety, and social isolation (Kivela & Pahkala, 2001). There is often a lack of social supports and activities for older adults as they age, whether this is in the home or in long-term care. Depression among elderly persons has been associated with certain medical illnesses including arthritis, kidney disease, lung and heart disease, and stroke (Bazargan & Hamm-Baugh, 1995). Depression has also been identified as a predictor of physical disability as a person ages (Kivela & Pahkala, 2001).

There is a need to create community-based person-centered movement-dance classes for older adults to address both their mood and stress levels, as there is evidence that these types of interventions can support positive mood and decrease stress. According to Braun & Hwang (2015), dance/movement therapy (DMT) is "the psychotherapeutic use of movement to further the emotional, cognitive, physical, and social integration of the individual" (p. 65). Movement-dance classes improve gross motor ability, decrease anxiety, increase functional fitness, increase physical activity, improve mental state, improve quality of life, and decrease in depression (Cherkin, Sherman, Steuten, Strassel, & Vrijoef, 2011). Further, facilitating dance/movement classes enables older adults to build community relationships, reduce levels of stress and

depression, foster a healthy creativity, and encourage further physical and emotional growth (Kluge, Tang, Glick, LeCompte, & Willis, 2012).

It is critical that when movement-dance classes are developed and implemented for older adults, they are done so based on empirical evidence. However, there is limited research on the effects of movement-dance on stress and mood levels of older adults in a community-based setting. This study addresses these gaps. The purpose of this study is to determine the extent to which movement-dance classes influence the mood and level of stress of adults aged 60 and older. The specific aims include: (a) to understand the effectiveness of implementing movement-dance classes on reducing levels of stress and increasing mood of adults aged 60 years or older; and (b) to understand mechanisms of influence of a movement-dance class on the stress in adults aged 60 and older.

Chapter 2: Literature Review

Currently, there are 617 million older adult men and women in the world, with the number continuing to increase. It is important to recognize the heterogeneity of this population, in order to fully understand the implications of this increase. The population of older adults can be categorized into three different stages: the young-old (ages 65-74), the middle-old (75-84), and the old-old (85+) (Little, 2012). The idea behind categorizing is simply to further individualize a population that is rapidly growing, while also examining the possible physical, emotional, and mental decline within each sub-population (Blumstein et al., 2013). Such categories also identify ways to encourage successful aging, a term that although difficult to define, is used to describe aging with the highest quality of life as possible for each individual older adult (Chi & Chou, 2002).

Successful aging is an important term to foster and cultivate, as is it imperative to older adults' physiological and psychological needs and how those should be improved to ensure healthy aging and to increase quality of life. Successful aging is needed, as the population of older adults continues to rise. By 2050, nearly 17% of the world's population will consist of older adults (Goodkind, He, & Kowal, 2015). Goodkind et al. (2015) states that, "When the global population reached 7 billion in 2012, 562 million (or 8.0 percent) were aged 65 and over. In 2015, 3 years later, the older population rose by 55 million and the proportion of the older population reached 8.5 percent of the total population" (p. 1). Further, the older adult population in many countries in Europe and Asia is growing rapidly or further along in the aging process compared to the United States ("World's Older Population Grows Dramatically", 2016). Therefore, collaborating on aging issues globally will only strengthen issues around aging and determine ways to increase quality of life.

The older adult population within the United States makes up 15.2% (almost 50 million) of the population, with 9.3% of those individuals below the poverty line (Administration on Aging, 2017). California encompasses the largest number of older adults at 5.3 million, with Florida following close behind at 4.1 million (Administration on Aging, 2017). Further, there has been a 32.5% increase in the older adult population from 2006 – 2016 compared to a 9.3% increase from 1994-2004 (Administration on Aging, 2017). In Ohio alone, there are 1.9 million older adults as of 2016 compared to 1.5 million in 2005 (Administration on Aging, 2017).

Health, well-being, and life expectancy have a major impact on the quality of life for an older adult. Globally, extension of life expectancy has increased due to the reduction in cardiovascular disease and diabetes mortality, attributing to an increase in 3.0 years for men and 4.3 years for women in high-income countries (He et al., 2017). Further, the top five chronic diseases across the world include heart disease, stroke, cancer, chronic respiratory diseases, and diabetes (World Health Organization [WHO], 2015). In the United States, 45% of noninstitutionalized people age 65 and over assessed their health as excellent or very good (He et al., 2017). However, for persons ages 18-64, 64% of them assessed their health as excellent or very good (He et al., 2017). The top five chronic conditions for older adults in the United States, as of 2015, include hypertension, hyperlipidemia, arthritis, ischemic, and diabetes. (He et al., 2017).

With the increase in life expectancy, chronic disease, and increase in isolation, measures that incorporate both psychological and psychological levels of care are imperative to the quality of life for an older adult. Richard Hodes (Director of the National Institute of Aging) states, "Older people are a rapidly growing proportion of the world's population…People are living longer, but that does not necessarily mean that they are living healthier. The increase in our aging

population presents many opportunities and also several public health challenges that we need to prepare for" ("World's Older Population Grows Dramatically", 2016, p.1). Dance and movement classes/therapy have been recently explored as a way to go about increasing opportunities for older adults to have a better quality of life.

In general, the outcomes of movement-dance classes and therapies are extensive, including both physical and psychosocial positive outcomes for all populations. A systematic review conducted on the effectiveness of dance therapy (DMT) determined that the primary outcomes of DMT include improved gross motor ability, decreased anxiety, functional fitness, physical activity, improved mental state, improved quality of life, and a decrease in depression (Cherkin, Sherman, Steuten, Strassel, & Vrijoef, 2011). A specific study determined that those with chronic pain, built resilience through dance, including helping break free from physical and mental rigidity that the pain caused them (Bradt, Goodill, & Shim 2019). Further, positive emotions created by the intervention of (DMT), trumped the negative emotions brought about chronic pain. (Bradt et al., 2019). Another study identified DMT as an intervention for those suffering from addictions in that it intentionally keeps addiction on the radar, identifying reasons for the substance dependence, and mobilizing treatment response before the patient is discharged (Kirane, 2018).

DMT (more so dance than dance therapy) has also been incorporated into many physical education settings because "it offers so much to the development of students in the physical, intellectual, aesthetic, cultural, emotional, and social spheres" (Frömel, Pangrazi, Stratton, & Vasendova, 2002, p. 26). DMT has also impacted the lives of children with Congenital Myotonic Muscular Dystrophy in that it improves both static and dynamic balance and may improve

overall functional abilities if conducted for a long period of time (Biricocchi, Drake, & Svien, 2014).

Interventions mentioned included a similar structure to the intervention in that there was a warm-up to begin, followed by taught movements, and ending with a cool down. Various styles of dance have been used in dance/movement therapies- tango, ballroom, square dancing, contemporary, jazz, Lebed, improvisation, as well as cultural styles. The utilization of ballroom and contemporary dance is most popular within the United States. However, "findings suggest that dance, regardless of its style, can significantly improve muscular strength and endurance, balance, and other aspects of functional fitness" (Braun & Hwange, 2015, p. 64).

DMT has also been used extensively as a way to monitor stress levels. Dance encourages a person to process and overcome traumatic events, understand their body more deeply, and positively impacts the cardiovascular system, leading to a decrease in stress levels (Bräuninger, 2012). Such interventions relating to stress utilized either a randomized controlled design to ensure that the decrease in stress was in fact due to DMT or qualitative focus-groups to verbally understand the effectiveness of the intervention on the patients (Bräuninger, 2012). The dance interventions varied in terms of the structure of the class. For example, one study conducted with children suffering from earthquake trauma lasted only two days, limiting the potential impact of DMT on the students. Outcomes found, however, identified that having intensive DMT as opposed to extensive DMT may have benefitted the students to a greater degree because of their trauma. (Chung-Hsin, Ming-Hung, Tsung-Chin, & Yaw-Sheng, 2013).

In another study focusing on breast cancer patients, DMT sessions lasted for three consecutive weeks with twice a week dance classes 1.5 hours each. Results showed that the participants were more relaxed and felt the ability to release psychological tension (Cheung et

al., 2016). A similar study conducted on cancer patients focused on a mixed methods design, facilitating a 6-week dance therapy course, administering two pre and post tests and a qualitative focus group (Selman & Simms, 2012). Results indicate that the mean averages for the "concerns" variable between the pre and post-test scores lowered significantly (Selman et al., 2012).

Along with stress, DMT also impacts mood levels. In a longitudinal study focusing on the mood states of adolescents in a psychiatric hospital, 402 participants were administered mood measures (Fast Assessment of Children's Emotions) before and after a group DMT session (Anderson et al., 2014). The structure of the class included a 60-75-minute session with a warm-up, exploration, and closure. According to Anderson et al. (2014), "When controlling for pre-mood scores, there was a significant change in all mood states…after one DMT session…There was no significant association between patient characteristics and changes in individual or total mood scores, indicating that DMT may be useful for a wide range of patients" (p. 258). In another study looking at self-concept and mood changes associated with aerobic dance, the Self-Description Questionnaire III and the abbreviated Profile of Mood States was administered before and after a 60-minute dance class (Berger & McInman, 1993). The class consisted of a 10-minute warm-up, 45 minutes of aerobic work, and a 5-minute cool down. Results determined that the class contributed extensively to short-term changes in mood (Berger et al., 1993).

A literature review conducted on DMT for depression spoke on the recent changes to DMT. According to Mala, Karkou, & Meekums (2012), "In recent years, however, dance/movement therapists, along with the other arts therapists, have been encouraged to shift towards a more cyclical process of practice which on the one hand still remains well informed by theory and experience but on the other also draws upon research findings" (p. 287). Because of

these changes in DMT, therapists have been facilitating classes in a somewhat different manner in that they are based on evidence. The literature found that out of the nine total studies they reviewed, three studies were non-randomized control trials and the other six were randomized control trials. One of the non-randomized control studies found that DMT improved rates of depression, higher behavior morale, and higher self-esteem based on pre and post test scores (Harden, 1989). One of the randomized control trials utilized a crossover design in which 12 patients were selected based on the psychiatric diagnosis for depression, interviewed by a nurse using the Diagnostic Interview Schedule, and administered seven days of movement therapy (McMullen, Rubin, & Stewart, 1994). Outcomes suggested a significant reduction in depression in five of the 12 participants (McMullen et al., 1994).

Similar studies have been conducted on older adults that identify the significant physical impacts dance has. According to Capello (2018), "Dance/movement therapists working with the older adult client provide the essentials for resilience and revitalization: creative physical activity combined with cognitive, social, and emotional expression in a safe and supportive environment" (p. 1). Cross-sectional studies have shown that older adults who dance on a regular basis have greater flexibility, postural stability, balance, physical reaction time, and cognitive performance than older adults who do not dance on a regular basis (Capello, 2018). Dance/Movement Therapy is implemented in a way in which "everyone can move and dance" (Capello, p. 65). This brings about the notion that dancing is an art form that anyone can do and everyone is able to do. Research also indicates that D/MT can "illuminate and uncover aspects of self-knowledge, meaning, and understanding" (Kluge, Tang, Glick, LeCompte, & Willis, 2012, p. 5).

In one study on the effect of modified jazz dance on balance, cognition, and mood in older adults, 15 weeks of modified jazz dance classes were implemented and self-report

questionnaires (Mini Mental Status Examination, Geriatric Depression Scale, and the Sensory Organization Test) were administered between weeks 1 and 2, weeks 8 and 9, and after week 15 (Alpert et al., 2007). Results indicated that balance significantly increased overall, as well as improved after each class (Alpert et al., 2007). Another study utilized adapted tango with 74 older adults in Independent Living (Butler et al., 2015). Initially, participants were evaluated for overall health, ability to perform Activities of Daily Living (ADLs), fall risk, age, and education. Participants then completed 20 less of Tango over 12 weeks. Outcomes found that the classes improved mobility, motor-cognitive function, and gait (Butler et al., 2015).

Research has been conducted on the impact of movement dance classes on the mood levels of older adults. In a literature review conducted on the effects of dance on the aging population, 44 studies were reviewed in which three major domains were examined – cognition, sensorimotor performance, and underlying neurobiological factors (Barnstaple, DeSouza, Kshtriya, & Rabinovich, 2015). One of these studies examined the effects of dance on older adults with Parkinson's disease. They implemented a 13-week program that examined Argentine tango vs. American ballroom in a sample of 58 participants. Outcomes suggested that both the Argentine tango and American ballroom had a positive impact on mood (Hackney and Earhart, 2009). Finally, a study conducted on older adults with dementia showed adverse effects and had greater retention of movement based on the facilitation of dance classes and the Dementia Mood Assessment Scale (Freeston, Guzmán, Hughes, James, & Rochester, 2016).

Lastly, community-based dance interventions have been conducted to identify the positive, physical effects on older adult participants. Community-based dance interventions are important because they are sustainable, reasonably priced, and generally smaller (Bednarczyk et al., 2008). For example, in a two-year longitudinal study conducted on participants with

Parkinson's Disease, a control group and intervention group were facilitated to identify the effects of participation on disease severity and functional mobility (Duncan & Earhart, 2014). Both groups took a baseline evaluation at 12 months and then again at 24 months. Results indicate that improvements in motor symptoms, performance of activities of daily living, and balance improved, largely because of the small, community-based setting it was conducted in (Duncan et al., 2014). Another study created a community-based Argentine tango program on functional balance and confidence in older adults (Bednarczyk et al., 2008). It was determined that tango increases balance and confident more significantly than other dance forms, because the steps are often more complex (Bednarczyk et al., 2008).

Although studies utilizing community-based dance interventions have looked at the physical effects on older adults, there are little to no studies that have determined the mechanisms of influence on mood and stress levels due to community-based dance interventions on older adults. This study addresses this gap. By utilizing these community-based movement-dance interventions, mood levels may increase, and stress levels decrease. Further, from these interventions, it is clear that movement-dance classes, especially DMT, have a significant impact on both the physiological and psychological components of an older adult. Therefore, further research should be conducted that identifies community-based dance interventions that address both mood and stress in an older adult, as they will age more successfully, increase their quality of life, decrease stress levels, and increase mood level in a community setting.

Chapter 3: Methodology

Theoretical and Conceptual Framework

This study is informed by the biopsychosocial model of successful aging, specifically the thread related to physical activity. The biopsychosocial model, "is a way of understanding how suffering, disease, and illness affected by multiple levels of organization, from the societal to the molecular. At the practical level, it is a way of understanding the patient's subjective experience as an essential contributor to accurate diagnosis, health outcomes, and humane care" (Borrell-Carrió, Epstein, & Suchman, 2004, p. 1). Developed by George Engel, the biopsychosocial model was created as a solution to the problems of the Biomedicine Model (Engel, 1977). Key concepts of the biopsychosocial model focus on inclusion of both the patient and the illness, determining biological, social, and psychological reasons to the patient's illness, and not prioritizing biological factors alone when diagnosing a patient (Engel, 1977).

Physical activity supports older adults and successful aging through a dynamic process in two ways – 1.) physiological and cognitive effects and 2.) older adults enhance well-being while being physically active. Further, the biopsychosocial model allows an older adult to regulate their well-being by setting constructive, personal goals to satisfy psychological needs directly while being physically active. Personal or social-structural constraints may be a barrier when an older adult sets such goals. This study utilized the biopsychosocial model through the incorporation of physical activity (dance and movement classes). Participants spoke of goals they had accomplished as well as the physiological and cognitive effects a result of the dance classes (Kanning & Schlicht, 2008).

Research Design

This study used a pre-test post-test mixed methods design. The original design proposed was a pre-test and post-test randomized control group design that measured stress levels and mood and a qualitative focus-group to explore the experiences of class participants. Because of challenges in recruiting participants, a simple pre-test and post-test mixed methods design was implemented. Further discussion of recruitment challenges is presented below. Approval by the Ohio State Institutional Review Board was received for this study. Consent was obtained from all participants prior to data collection and the implementation of the intervention.

Sample

The sample consisted of four female residents of Columbus, Ohio. Three of them identified as heterosexual and one identified as unsure. All participants identified as Non-Latino or Hispanic. Three identified themselves as White and one identified themselves as Black or African-American. Ages ranged from 63-73 years.

Participants were recruited through the help of the Assistant Director of Age Friendly Columbus, an initiative of the OSU College of Social Work. Age-Friendly Columbus OSU College of Social Work is located at Blackburn Recreation Center in Columbus, Ohio. The space at the center is being used by the OSU College of Social Work. Flyers were created and distributed to Age-Friendly Columbus's elder partners as well as members of the Senior Services Round Table. A letter of support from the Director of Age-Friendly Columbus, was provided as well. It included a commitment to assist in recruitment and the utilization of space. There was also an announcement in the Age-Friendly Columbus weekly newsletter leading up to the study

Participants were given a monetary incentive consisting of a $5 Kroger gift card for every class they participated in and a reusable plastic water bottle at the first session. Plastic water

bottles, pretzels, and fruit snacks were also provided at each class. At the focus-group, they received refreshments (coffee, water, orange juice, cranberry juice) and gift bags filled with healthy snacks. They earned a total of $40 in Kroger gift cards if they attended all sessions of the three-week intervention as well as the focus-group following the end of the intervention. The goal of these incentives was to increase retention rates, as the study ran five consecutive weeks. Inclusion criteria for the subjects were the following: any person aged 60 years or older, any physical capability, and is able to speak and read English. Exclusion criteria includes any person 0-59 years old, and those who are not literate in English.

Recruitment proved to be a challenge for this study. Only one elder in the community surrounding Blackburn Recreation Center participated. The three other participants came from different areas of Columbus, Oho and driving was not an option for them. Therefore, transportation was provided for those three participants through Lyft and Uber. Recruitment was done through the use of a flyer that was made and distributed to Age-Friendly's partners in person and on social media sites such as Facebook and Twitter, advertisement of the study at the Senior Services Roundtable in Columbus, Ohio, and distributing the flyer by walking the surrounding neighborhoods around Black Recreation Center. The flyer was shared multiple times on Facebook by agencies including the Clintonville Resource Community Center, Central Ohio Agency on Aging, and the Franklin County Office on Aging.

This study and program were the first to be held for older adults at the Blackburn Recreation Center. One goal of housing the Age-Friendly Columbus and Franklin County offices at the recreation center was to increase older adult programming. Future program developers and researchers should explore systematically the barriers in place for attendance. Transportation was identified as one barrier for those who did participate. Few sign-ups may

have also been due to lack of knowledge pertaining to the location. Two participants mentioned they had not heard of Blackburn Recreation Center before the study. Further, there may have been a lack of interest in participating in movement-dance classes. There are likely other barriers that warrant exploration and study that prevented other older adults to participate, despite the wide distribution of recruitment materials.

Intervention Description

The intervention consisted of three weeks of movement-dance classes. They were twice a week for 1-1.5 hours each time. The timing varied each class due to group discussion, questions regarding movement, or extra time needed to articulate and clarify given choreography. Week one focused on jazz, week two focused on ballet, and week three focused on a Halloween-themed dance incorporating movements from week one and two. All classes began with introductions, explanation of the class structure for the day, followed by a warm-up. The warm-up consisted of four songs, totaling fifteen minutes and included the same movements each time. Songs were chosen strategically, as to start the warm-up slowly and continuously allow the body to move at a quicker pace. Participants were instructed to put a chair in front of them. The chair would be used for a majority of the warm-up.

The first song, “I Can’t Help Myself” by the Four Tops, included walking in place in line with the rhythm. I directed the participants to let their arms relax and do what felt natural. Upper body mobility, including moving the shoulders up and down slowly, then quickly, bicep and lateral stretches of the back and arm, moving the neck side to side and up and down, and swinging arms alternatively front and back proceeded. The second song, “Cheap Thrills” by Sia and Sean Paul, began once again with walking in place. Participants were instructed to swing their arms back and forth while walking. Lower body mobility, including calf stretches, calf

raises, hip flexibility movements (propping one foot and moving the leg from side to side), and the grape vine followed. These movements were completed by the assistance of a chair. Participants were instructed to put their hands on the chair in front of them as support. The third and fourth songs, “My Girl” by The Temptations and “Valerie” by Amy Winehouse”, were done in a chair. Rolling through the back, arm reaches, hamstring stretches, and circular ankle movements were included.

During Week 1, the classes were structured with the warm-up to begin, explanation of jazz movements, and ending with four simple combinations in the center. The class structure was the same both days. The purpose of this was to encourage muscle memory and create a relaxed environment for the participants. After the warm-up was completed, participants were given a five-minute break. Basic jazz technique was explained during this time. After the break, participants each stood up and the first combination was given. Movement was broken down step-by-step and participants were encouraged to ask questions. The same structure occurred with all four combinations. The last combination started from the back of the room and progressed to the front.

During Week 2, the structure of the class consisted of the warm-up, explanation of ballet movements, simple barre work (using chairs), and one simple combinations in the center. This week required more time, as ballet movements are not as intuitive as other dance forms. After the warm-up, participants were given a quick five-minute break. During this time, the instructor explained the five different positions of ballet along with the appropriate arm technique. Once the break was completed, participants practiced the five positions with the instructor. The participants then completed a shortened version of barre work, incorporating those positions and other simple techniques, including pliés and tendús. Combinations taught at the barre were

repeated on the right and left sides. One combination in the center was completed that included simple adagio movements.

During Week 3, the classes once again began with the same warm-up, followed by a Halloween-themed choreographed dance to "Thriller" by Michael Jackson. Theme was chosen based on time of year. The dance was taught in four sections. The first two sections were taught at the first class of the week and the last two sections were taught at the other class. The structure of the second class of the week was different in that it included the warm-up, review of the first 2 sections learned, new movement taught for the last two sections, and then combining all four sections. The instructor performed the dance with the participants multiple times until they felt comfortable to perform once for the instructor on their own. During this process, sets of movement were taught in sets of 8 counts. This forced the participants to keep a certain rhythm, activating the mind-body connection. Choreography combined jazz and ballet movements that were taught during the first two weeks of the intervention.

Measurement/Instrumentation

To measure the level of stress in the study participants, the Perceived Stress Scale (PSS) was used. According to Cohen (1983), "The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress... Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale includes a number of direct queries about current levels of experienced stress" (p. 4). The PSS also asks about feelings and thoughts in the past month and are asked how frequently they felt a particular way. There are 3 versions of the PSS, PSS-4, PSS-10, and PSS-14. The PSS-10 was utilized to ensure the greatest reliability and validity.

The PSS-10 is a reliable measure of stress for this population as evidenced by a systematic review conducted by Lee (2012) which states that, "Cronbach's alpha of the PSS-14 was >.70 in 11 of the 12 studies in which this version was evaluated… alpha of the PSS-10 was evaluated at >.70 in all 12 studies in which it was used" (p. 122). Therefore, the PSS-10 is the most reliable out of the three because it met the criteria for internal consistence reliability in all 12 of the studies. Evidence of validity stems from Cohen (1988), in which "higher PSS scores were correlated with the failure to quit smoking, failure among diabetics to control blood sugar levels, greater vulnerability to stressful life-event-elicited depressive symptoms, and more colds" (p. 4). This shows that the scale measures levels of stress, its main objective when created.

Utilization of the PSS scale for this study was most appropriate because the length of the test was suitable, the questions asked are easy to understand, it is not tailored to a specific population, and has been tested with older adults successfully. Therefore, it can be applied to a variety of people. The scale has also been created for persons who have obtained at least a junior high school education, a factor that was met by every participant in the study.

To test levels of mood in the study participants, The Positive and Negative Affect Schedule (PANAS) was utilized. According to Crawford & Henry (2004), "The PANAS consists of two 10-item mood scales and was developed to provide brief measures of PA and NA…Respondents are asked to rate the extent to which they have experienced each particular emotion within a specified time period, with reference to a 5-point scale" (p. 250). The reliabilities of the PANAS scales are estimated to be .89 for the PA scale using the Cronbach's alpha (95% CI= .88-.90) and .85 for the NA scale (95% CI= .84-.87) (Crawford & Henry, 2004).

To understand the study participants' experience with the intervention, a focus-group was conducted at the end of the intervention. It took place one week after the last dance class. It was

located at Blackburn Community Recreation Center. A recording device was used for the duration of the focus-group, approximately 1.5 hours. The recording device was used only to record what was spoken. Six questions were asked consisting of the following: (a) Tell me of your experiences with this class; (b) How did your engagement in the class make you feel; (c) How did your thoughts on the class change over time; (d) Would you participate in something like this again; (e) Describe any thoughts that you had during this experience; and (f) Is there anything else you think we should know in order to make programming effective here?

Detailed Study Procedures

The study took place for five weeks, consisting of one information session regarding the study and consent forms, pretest scales, and demographic sheet, 6 dance classes (2 classes twice a week) for three weeks, and one focus-study during the fourth week. The first week consisted of an information session that lasted approximately 30 minutes, as only one person attended. Dance classes started the next week, occurring twice a week. The first dance class was an hour and a half as there was allotted time for introductions, consent process for two other participants, and an overview of the structure of the dance classes. The next four dance classes will be twice a week for one hour. The last day of the dance class was also one and a half hours so participants could learn the second half of the choreographed dance, rehearse it, and then perform it on their own. This showcased the dance moves they have learned. Participants have the option not to participate in this, if they so choose.

The consent process occurred on each participants' first day. Only one participant came to the first information session. Two more participants came to the first dance class, totaling three participants and the fourth participant did not begin until the second week of dance classes. An overview of the study was provided, and one packet of papers was distributed to each

participant. This consisted of the consent form, two pretest scales, and one form that asks the participant's demographics (race, ethnicity, gender, sexual orientation, and age). We then instructed each participant to write down the ID they were assigned, coding their names. Approximately 10-20 minutes was allotted for the participants to complete the packet. The consent form described the study, the risks/benefits, incentives, and their rights as a subject in the study. We emphasized their choice to not participant in the study or to drop out at any time with no repercussions. During this time, key personnel and Co-Investigators answered any questions and/or concerns the participants may have.

Once consent and pre-tests were completed, packets were collected from each participant and put in a secure folder that only the co-investigators have access to. Completed forms are locked in a filing cabinet, as well as other information related to the study, in my office at Blackburn Recreation Community Center. The office is locked as well. Any written observations have been kept in a secure notebook. A data collection form consisting of the participants' demographics is kept in a secure folder in a locked cabinet in the locked office. Research-related documents (research protocol, IRB correspondence, consent forms, pre/posttests, focus-group script, etc.) and identifiable/linked data have been stored and will remain there for 5 years at Age-Friendly Columbus OSU College of Social Work in a locked office in a locked filing cabinet.

Analysis

Quantitative data analysis began with univariate analyses to describe the study sample and scores on each item of the measures of interest. Descriptive statistics, including frequencies and means scores, were used to describe the sample. Paired t-tests were used to examine the difference between the average scores of the pre and posttest outcome measures. This determined

the significance of the administration of dance-movement classes from pretest to posttest and the effectiveness of these classes. This answered the original research question sufficiently and in a cohesive manner.

To analyze the qualitative elements of this study, a thematic content analysis of the focus group transcription was conducted with a low level of abstraction. Transcription of the focus-group was completed by the company Landmark Associates. Words and phrases were formulated into codes by one investigator. Definitions were developed for recurrent and salient codes and shared with the faculty advisor for discussion, validation, and/or refinement. Both researchers analyzed transcripts with codes and had another meeting to compare and contrast their initial analysis to finalize codes. Level of agreement was 80% at initial meeting and then 100% final agreement on codes and categories after discussion**.** The utilization of this qualitative analysis is useful to this process in that it exacts the ways the transcript will be interpreted. It minimizes the effects of bias as well as further protects participants' privacy**.**

Chapter 4: Results

The purpose of this study was to determine the extent to which movement-dance classes influence the mood and level of stress of adults aged 60 and older by exploring the mood and stress levels of older adults before and after the facilitation of movement-dance classes. A focus-group was also conducted to explore central themes around participants' experience with the classes. The purpose was not to create an exhaustive examination of the impact of dance and movement classes on older adults but was designed to accumulate a basic understanding of community-based movement-dance classes and their impact on older adults. Findings from the pre-test and post-test questionnaires and post-intervention focus group discussion will be explored.

Measures of central tendency were examined for each item related to both the Positive and Negative Affect Scale (PANAS) and the Perceived Stress Scale (PSS). As presented in the table below, the mean scores from each given question is presented for the PANAS scale. Table 1 displays the two sub-scales (positive and negative) contained within the PANAS scale as well as the mean average scores for each question between the pre-test and the post-test.

Table 1. PANAS Average Scores

	PANAS SCALE (scores range from 1-5) 1 = very slightly or not at all, 5 = extremely		
	Question (Indicate the extent you have felt this way over the past week)	Pretest Average	Post-test Average
	POSITIVE AFFECT		
1	Interested	3.5	4.5
3	Excited	3	3.5
5	Strong	2.75	2.5
9	Enthusiastic	4	3.5
10	Proud	3	3.25
12	Alert	4	4.25
14	Inspired	2.75	3.5
16	Determined	2.75	4.25
17	Attentive	4	4.5
19	Active	2.75	4
	SUM	32.5	37.75
	NEGATIVE AFFECT		
2	Distressed	2	2
4	Upset	1.5	1.5
6	Guilty	1.5	1.25
7	Scared	1.5	1.5
8	Hostile	1	1
11	Irritable	1.5	1.25
13	Ashamed	1.25	1
15	Nervous	1.75	1.75
18	Jittery	1.75	1.5
20	Afraid	1.5	1.5
	SUM	15.25	14.25

The first ten questions describe positive affect while the second ten questions describe negative affect. The purpose of the PANAS scale was to determine if positive affect increased and negative affect decreased as a result of participation in dance classes. Mean averages for positive affect increased from the pre-test to the post-test for eight of the ten characterizations including “interested”, “excited”, “proud”, “alert”, “inspired”, “determined”, “attentive”, and “active”. The sum averages increased for positive affect significantly – from 32.5 to 37.75. Mean averages for

negative affect decreased in four of the ten characterizations including “guilty”, “irritable, “ashamed”, and “jittery”. The other six characterizations remained the same between the pre-test and the post-test (“distressed”, “upset”, “scared”, “hostile”, “nervous”, and “afraid”). The sum averages for negative affect decreased only slightly – from 15.25 to 14.25.

The purpose of administering the PSS was to determine if stress levels decreased after the three weeks of dance classes. Table 2 describes the mean average scores for each question. The sum of both the pre-test averages and post-tests are also noted.

Table 2. PSS Results of Averages

	Perceived Stress Scale (PSS), Scale ranges from 0-4, 0= never and 4= very often		
	Question (Indicate the extent you have felt this way over the past month)	Pretest Average	Post-test Average
1	How often have you been upset because of something that happened unexpectantly?	2.25	0.25
2	How often have you felt that you were unable to control the important things in your life?	1.5	2.5
3	How often have you felt nervous and "stressed"?	2.25	0.75
4	How often have you felt confident about your ability to handle your personal problems?	0.5	1
5	How often have you felt that things were going your way?	1.25	1
6	How often have you found that you could not cope with all the things that you had to do?	1.75	0.5
7	How often have you been able to control irritations in your life?	0.75	1
8	How often you felt that you were on top of things?	2.25	3
9	How often have you been angered because of things outside of your control?	2.5	0.75
10	How often have felt difficulties were piling up so high that you could not overcome them?	2	0.25
	Total	17	11

The mean averages were determined by reversing responses to the four positively stated items – questions 4, 5, 7, and 8. An increase in the averages for those four items indicate a positive impact of the dance classes. Reversing responses ensured that each question was coded the same direction (higher values indicate higher perceived stress) and sum averages were expressed correctly.

Averages in questions 4 (confidence in ability to handle personal problems), 7 (ability to control irritations), and 8 (feeling on top of things) all increased after the intervention. These include 0.5 to 1.0 (question 4), 0.75 to 1.0 (question 7), and 2.25 to 3.0 (question 8). Question 5 (felt things were going their way) decreased from 1.25 to 1.0. A decrease in the averages of the other six items (1, 2, 3, 6, 9, and 10) indicates a positive impact of the intervention on reducing stress. Averages from question 1 (upset because of something unexpectant) ,3 (felt nervous or stressed) ,6 (how often they could not cope with responsibilities) ,9 (angered because of things outside their control), and 10 (difficulties too much to handle) all decreased. These include 2.25-0.25 (question 1), 2.25 to 0.75 (question 3), 1.75 to 0.50 (question 6), 2.5 to 0.75 (question 9), and 2 to 0.25 (question 10). Averages from question 2 (unable to control the important things) increased from 1.5 to 2.5. The sum of the mean averages decreased from 17 to 11 between the pre-test and the post-test, identifying a decrease in stress levels.

Three different paired t-tests were conducted to compare mood (positive affect and negative affect) and stress levels in older adults before the six dance classes and after the six dance classes. There was not a significant difference in the stress scores before the six dance classes ($M=23.0$, $SD=2.8$), and after the six dance classes ($M=17.25$, $SD=2.36$) conditions; $t(3)= 2.48$, $p = .09$. Second, there was not a significant difference in the positive affect before the six dance classes ($M= 32.5$, $SD= 3.7$), and after the six dance classes ($M= 36.25$, $SD= 3.86$)

conditions; t(3) = -2.14, p =. 0.12. Third, there was not a significant difference in the negative affect before the six dance classes (M=15.25, SD=5.12), and after the six dance classes (M=14.245, SD=5.09) conditions; t(3) = 2.45, p=.09. Results are presented below in Table 3. However, the mean averages decreased for stress (23 to 17.25), increased for positive affect (32.5 to 36.25), and decreased for negative affect (15.25 to 14.25).

Two overarching themes were identified from the qualitative data – effectiveness and mechanisms of influence. Overarching themes were developed from the original study aims. There are two sub-themes under effectives and four sub-themes under mechanisms of influence. One quotation is provided for each sub-theme. Identified themes are presented below in Table 4.

Table 3. T-test Results for Mood and Affect

	Pretest		Posttest		95% CI for Mean			
Outcome	M	SD	M	SD	Difference	r	t	df
Stress	23	2.8	17.25	2.36	13.49, 21.01	0.459	2.48	3
Positive Affect	32.5	3.7	36.25	3.86	30.11, 42.39	0.572	-2.14	3
Negative Affect	15.25	5.12	14.25	5.09	6.15, 22.35	0.987	2.45	3

Table 4. Identified Themes

Themes	Subthemes	Quotations
Effectiveness	Increased Physical Movement	"I think I might have gained a little weight. I've been having a hard time gaining weight. I think the dancing has been helpin' me walk better." (Participant 4)
	Increased Social Involvement	"Hey, I'm getting outta the house today!" (Participant 3)
Mechanisms of Influence	Conscientious Instructor	"You were super conscientious about everyone in the class…We really appreciate that, because it helps elevate the mindset." (Participant 1)
	Being in the Moment.	"To be in the moment. We wanted to be in the moment and focus, I think." (Participant 2)
	Sense of Belonging and Friendship Development	"Yeah, I needed to meet people 'cause I have been isolated most often." (Particpant 3)
	Memory and Cognitive Health	"Gotta keep that mind active. That's what they say." (Participant 3)

Overarching themes were developed based on the aims of this study. Study aims included: (a) to understand the effectiveness of implementing movement-dance classes on reducing levels of stress and increasing mood of adults aged 60 years or older; and (b) to understand mechanisms of influence of a movement-dance class on the stress in adults aged 60 and older.

The first overarching theme, effectiveness, contained two sub-themes: Increased physical movement and increased social involvement. Both sub-themes were created based on the data collected during the focus group. These sub-themes were placed under the overarching theme of effectiveness – as both sub-themes affected the participants' physical and social well-being. The first sub-theme, increased physical movement, was not a direct aim of the study. However, results show that increased physical movement was common among all participants. Increased

physical movement pertained not only to gaining strength and endurance, but also to participating in productive stretching of the body. Such movements forced each participant to have greater flexibility and limberness as well as the opportunity to move their body differently than what they are used to. Illustrative quotes from the data below demonstrate the participants' increased physical movement due to the dance intervention.

Increased Physical Movement:

> "Yeah, I do know they've gotten better. I'm walking better." (Participant 4)
>
> "It will help my eyes. I could tell my legs—" (Participant 4)
>
> "I think I might have gained a little bit of weight. I'm having a hard time gaining weight. I think the dancing has been helpin' me walk better." (Participant 4)
>
> "Like me when I was your age. I loved to dance, and it's really good exercises on our bodies 'cause I was getting' all achy and everything, and now I'm dancing again. It kinda loosens my bones up a little bit. I think it's a good program." (Participant 1)
>
> "I loved it. I like dancing, and I had not gotten my feet or hind end movin' in so long. I forgot how that was fun! It made me feel young." (Participant 3)

The second sub-theme, increased social involvement, was largely discussed throughout the focus group. This theme addressed the participants' issues of isolation and the motivation and determination that resulted due to the dance intervention. Through this sub-theme, the reality of older adults' challenges with isolation, motivation, and the need to be socially involved with others, became evident. Increased social involvement included dancing with others, developing relationships, and providing a structured activity that got them out of the house. Results from the sub-theme of increased social involvement differs from the sub-theme of increased physical movement in that the former addresses the social and emotional increases that resulted due to the dance class. Examples of the participants' increased social involvement are presented below.

Increased Social Involvement:

> "It's really worthwhile because I chose this instead of my stories [tv shows]." (Participant 1)
>
> "Mm-hmm, gave your mind something else to do besides watching television. I'm not a big television fan at all." (Participant 3)
>
> "It gave me something to look forward to. I've been kinda sedentary for the past year, a little more than I usually am 'cause I had so many changes goin' on." (Participant 3)
>
> "I've got to say, this is one thing that C. has been very enthusiastic about coming to because a lotta things—it's really hard to get her to get up and go." (Participant 1)
>
> 'Cause I just had a birthday, so I wrote 'em back, and I said, "Well, I'm 71, but on the bright side is I never thought I'd live past 35, and I'm actively involved in dancing and exercise." (Participant 1)
>
> "I think all of us, pretty much, felt the same way. We looked forward to coming to the class." (Participant 2)
>
> "Hey, I'm getting' outta the house today!" (Participant 3)

The second overarching theme determined from the results were mechanisms of influence. Mechanisms of influence can be defined as characterizations of participants' experience with the movement-dance classes and the ways in which these influenced their experience. Mechanisms of influence were important to examine and understand because they defined the process in which the movement-dance classes influenced participant outcomes. Understanding the mechanisms of influence of the movement-dance intervention on stress and mood levels in older adults was also an aim of this study. There were four-sub themes beneath the overarching theme of mechanisms of influence. These include, conscientious instructor, being in the moment, sense of belonging and friendship development, and memory and cognitive health.

The first sub-theme focuses on the instructor's interaction with participants and the ways this influenced their experience with the dance intervention. This sub-theme is titled

conscientious instructor. The theme of conscientious instructor includes the instructor's patience, teaching mechanisms, and flexibility within the structure of the dance intervention. It also describes the different methods used to encourage participants when they were feeling discouraged, weak, or frustrated. Within this, discussion around the instructor's use of repetition when teaching movement as well as assurance of each participant's comfortability was talked about. Examples of such discussion are illustrated below.

Conscientious Instructor:

> "…very natural and very concerned about our safety."
>
> "You were super conscientious about everyone in the class…We really appreciate that, because it helps elevate the mindset."
>
> "You were very sensitive to the fact that we are old…I loved your music."
>
> "…encouraged us to do our personal best…It wasn't a contest." (Participant 2)
>
> "You were constantly checking if we had the routine down, if we needed to start over again." (Participant 1)

The second sub-theme is titled being in the moment. This theme deepens knowledge of the participants' experience with the ways in which the movement-dance classes encouraged them to be in the present. Participants reported an emphasis on simply focusing on the movement and instruction from the teacher, leading to focusing on the moment and not thinking about other things. There was a general consensus that the movement-dance classes provided a structured outlet to relieve stress as well as provided a different activity than just watching television throughout the day. Participants discussed that the classes also helped them to focus on something on something productive in comparison to watching the news. Illustrative quotations are provided below.

Being in the moment:

> It made me feel like I had to concentrate on it and not think about the news, which was very helpful for me. (Participant 2)
>
> Took my mind off some things, too. (Participant 3)
>
> Focus on something other than whatever else is going on, be it personal or not so personal. It alleviated some stress. (Participant 3)
>
> To be in the moment. We wanted to be in the moment and focus, I think. (Participant 2)
>
> It really took my mind off everything, you know, because I wanted to concentrate on what was happening in the class… (Participant 1)

The third sub-theme, sense of belonging and friendship development, focuses on the social and emotional benefits that the movement-dance classes provided. Participants spoke of the ways in which they were encouraged by others in the classroom. Development of friendships was important in that the issue of social isolation was prevalent. The movement-dance classes not only provided an environment in which the participants could grow physically and emotionally, but also a place to build friendships and participate in an activity that provided a sense of belonging for them.

Sense of Belonging and Friendship Development:

> "Well, it gives you a sense of belonging." (Participant 2)
>
> "Yeah, I needed to meet people 'cause I have been isolated most often." (Participant 3)
>
> "I think it improved when it got more casual 'cause we knew each other. When we came in, we yakked to each other, and I think that is what's great is I feel I've made two new friends." (Participant 1)
>
> "Three new friends!" (Participant 3)

The fourth sub-theme is titled memory and cognitive health. This theme focuses on the ways in which the movement-dance classes influenced the participants' memory and cognitive health. Discussion around remembering movement and choreography was emphasized. Memory

and cognitive health were utilized throughout the movement-dance classes in that participants were asked to remember choreography taught in the third week of the intervention. Further each class began with the same warm-up. This encouraged muscle memory as well as exercising the mind-body connection in that both had to work together to complete the same warm-up at each of the six dance classes. Memory and cognitive health were also exercised at each class through the technique taught. Participants were encouraged to remember combinations as much as possible, while dancing rhythmically. Examples are presented below.

Memory and Cognitive Health:

> "We had to remember the steps. Remembering, memory, is very important for people our age." (Participant 2)
>
> "Gotta keep that mind active. That's what they say." (Participant 3)
>
> "…I think all of us wanted to do it as well as we could." (Participant 1)
>
> "It helps with mental acuity and all, too." (Participant 3)
>
> "…I think it's good to be challenged sometimes with tryin to remember things. I think it helps our minds. Me included." (Participant 1)

Both quantitative and qualitative results presented reflect the impact of movement-dance classes on older adults aged 60 and older. The PSS and PANAS scales demonstrate that movement-dance classes may decrease stress and increase positive affect in older adults. Further, the six themes that were extracted from the focus-group demonstrate both the effectiveness and mechanisms of influence on older adults' mood and stress levels. Two sub-themes reside under the overarching theme of effectiveness and four sub-themes reside under the overarching theme of mechanisms of influence. Each theme works together to create an understanding of the impact that movement-dance classes have not only on older adults' mood and stress levels, but also physical improvement and cognitive health. From these results, further research and community-

based programs can be developed to examine the gaps between social isolation and the incorporation of movement-dance classes in a community setting to promote positive outcomes for older adults' mood and stress levels.

Chapter 5: Discussion

This study focused on determining the impact that movement-dance classes have on older adults aged 60 and older. Understanding the implications of this intervention will provide insight for social workers and other helping professionals to incorporate movement-based interventions in their care plans. This study utilized a pre-test and post-test mixed methods design in which two different scales were administered before and after a three-week movement-dance intervention. Further, a focus-group was also conducted to understand the participants' experience with the intervention. Two study aims were developed based on gaps in available research in relation to the ways in which movement-dance classes impact the mood and stress levels of older adults. These were included to understand both the effectiveness and the mechanisms of influence that movement-dance classes have on older adults' mood and stress levels. Through the examination of the impact on mood and stress levels of older adults based on movement-dance classes, recommendations for further study, programming, and discussion of the limitations of the results will be reviewed.

The first aim was to understand the effectiveness of implementing movement-dance classes on reducing levels of stress and increasing mood of older adults aged 60 years or older. Three different paired t-tests were conducted to compare mood (positive affect and negative affect) and stress levels in older adults before the six dance classes and after the six dance classes. There was not a significant difference in the stress scores before the six dance classes (M=23.0, SD=2.8), and after the six dance classes (M=17.25, SD=2.36) conditions; t(3)= 2.48, p = .09. Second, there was not a significant difference in the positive affect before the six dance classes (M= 32.5, SD= 3.7), and after the six dance classes (M= 36.25, SD= 3.86) conditions; t(3) = -2.14, p =. 0.12. Third, there was not a significant difference in the negative affect before

the six dance classes (M=15.25, SD=5.12), and after the six dance classes (M=14.245, SD=5.09) conditions; t(3) = 2.45, p=.09. However, from these variables, there is a trend in the right direction. Mean averages for stress decreased between the pre-test and the post-test, increased for positive affect between the pre-test and post-test, and decreased in negative affect between the pre-test and the post-test.

The implications for practice include having social workers or other helping professions incorporate movement-dance classes into their care plans as well as understanding the importance of activity on mental health from a social work perspective. The results indicate that movement-dance classes may decrease stress and increase positive affect in older adults. Therefore, understanding the ways in which to incorporate both physical and mental health supports when providing services for older adults is imperative to social work practice. Because social workers work with a multitude of populations, there are differences in levels of care needed. For an older adult, utilizing alternative methods to combat physical and mental health challenges may increase mood and decrease stress in a community-based setting, particularly for those who may be socially isolated.

Further, frequent goals for practitioners working with older adults includes limiting chronic conditions/illnesses, depression, and stress levels. In 2012, 60% of older adults managed two or more chronic conditions including heart disease, cancer, chronic bronchitis, stroke, diabetes mellitus, and Alzheimer's Disease (Office of Disease Prevention and Health Promotion, 2014). Chronic conditions, as well as isolation or grief, may further cause stress and depression. In fact, depression affects more than 6.5 million of the 35 million Americans aged 65 or older (Duckworth, 2009). Further, according to Duckworth (2009), "Late-life depression increases risk for medical illness and cognitive decline. Unrecognized and untreated depression has fatal

consequences in terms of both suicide and nonsuicide mortality" (p. 1). Movement-dance classes are an inexpensive, healthy way to combat chronic conditions as well as decrease levels of depression and increase mood.

Future research should have a larger sample size and control group. The inclusion of a control group in future studies will ensure that the changes seen in stress and mood were truly from the movement-dance classes and not from other influences. A larger sample size will further strengthen quantitative findings. Quantitative measures that focus on physical movement should also be added.

The second study aim seeks to understand mechanisms of influence of a movement-dance class on the stress in adults aged 60 and older. A focus-group was conducted after the three-week dance intervention to understand both the effectiveness and mechanisms of influence that movement-dance classes have on the mood and stress levels of older adults. A total of six themes were extracted from the focus-group, organized under two overarching themes: effectiveness and mechanisms of influence. Under effectiveness, two sub-themes were determined – increased physical movement and increased social involvement. Under mechanisms of influence, four sub-themes were determined – conscientious instructor, being in the moment, sense of belonging and friendship development, and memory and cognitive health.

The findings suggest that movement-dance classes will increase physical movement and social involvement. Mechanism of influence include conscientious instructor, being in the moment, sense of belonging and friendship development, and memory and cognitive health. These findings are similar to other studies relating to increased physical movement, increased social involvement, sense of belonging, and memory and cognitive health. There is a plethora of evidence that identifies the effects of movement-dance classes on older adults' physical health

and increased physical movement, similar to the results of this study. For example, Alpert et al. (2007), implemented a 15-week study that included modified jazz classes. Results indicated that balance significantly increased overall as well as after each class (Alpert et al., 2007). Similarly, another study utilized adapted tango with 74 older adults in Independent Living (Butler et al., 2015). Initially, participants were evaluated for overall health, ability to perform Activities of Daily Living (ADLs), fall risk, age, and education. Participants then completed 20 lessons of tango over 12 weeks. Outcomes found that the movement-dance classes improved mobility, motor-cognitive function, and gait (Butler et al., 2015). Understanding the effects of physical health on older adults who participate in movement-dance classes is important in order to increase both physical and mental health.

One study identified social involvement as a result of movement-dance classes. Research was conducted on cancer patients, incorporating mixed methods design and facilitating a 6-week dance therapy course. Two pre-tests and post-tests as well as a qualitative focus group were administered (Selman & Simms, 2012). Results indicate that the mean averages for the "concerns" variable between the pre and post-test scores lowered significantly (Selman et al., 2012). Further, qualitative findings determined that social involvement and sense of belonging increased, "Meeting people makes you feel happy and you feel good about yourself…Happy with class and look forward to Thursdays, helps me get out of the house. Would otherwise be housebound" (Selman & Simms, 2012, p. 92). Increased social involvement and sense of belonging are evident outcomes from group-based movement-dance classes.

Findings of this study differ from other studies in that being in the moment and instructor conscientious were not determined. One study that created a community-based Argentine tango program on functional balance and confidence in older adults determined that tango increased

balance and confidence significantly (Bednarczyk et al., 2008). Confidence increase was a result of improvements made in the movement-dance classes. Instructor consciousness was not a mechanism of influence in this increase. Another study conducted on older adults with dementia showed adverse effects and had greater retention of movement based on the facilitation of movement-dance classes and the Dementia Mood Assessment Scale (Freeston, Guzmán, Hughes, James, & Rochester, 2016). Although participants had a greater retention rate, results did not determine that focus on movements was a mechanism of influence. The sub-theme, "being in the moment", was in relation to participants feeling that they had to focus on the movement.

Social workers and other care professionals can consider these mechanisms of influence when developing and incorporating movement-dance classes into their care plans. Specifically, having a trained, engaged instructor seems to matter in terms of influencing the positive outcomes of the intervention. In addition, future research should include additional measures of mindfulness and being present as it relates to movement-dance interventions. Finally, Social workers and other practitioners should consider adding movement-dance classes into care plans for community-dwelling older adults to decrease stress, increase positive affect, increase physical movement, and provide a sense of belonging. movement-dance classes into their care plans for clients. In addition, future research should incorporate qualitative measures regarding types of dance that are most impactful for older adults.

There were several limitations to this study. First, there was a small sample size - four participants. The participants were largely homogeneous in ethnicity and gender. Differences were present in race, age, and sexual orientation. Also, because of the small sample, testing of the distribution of the sample could not be done, therefore, the data is likely to not be normally distributed. Further, overarching themes and sub-themes may not be applicable to every older

adult in that only four people were interviewed. Second, a control group could not be employed because of challenges in recruiting enough participants. Quantitative measures could not determine if the impact of the movement-dance classes on the participants was truly from the intervention. Lastly, this was the first-time programming had ever taken place at Blackburn Recreation Center for older adults. Because this was a pilot study, issues around recruitment and understanding the most effective ways to implement the classes were unknown.

The older adult population is vast and continues to grow each day, both in the United States and across the world. There is a need to incorporate community-based movement-dance programs into care plans for older adults as they age. Community-based movement-dance programs may reduce social isolation, reduce stress levels, increase positive affect, and increase physical movement. This study creates a foundation for research that provides a perspective on the impact of community-based movement-dance classes on older adults' mood and stress levels and should continue to be utilized in further research to determine the impact of movement-dance classes not only on mood and stress levels, but also the impact that such classes have on socialization and the physical body.

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Appendix A: Perceived Stress Scale

The Perceived Stress Scale

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate your response by placing an "X" over the circle representing HOW OFTEN you felt or thought a certain way.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	○	○	○	○	○
2. In the last month, how often have you felt that you were unable to control the important things in your life?	○	○	○	○	○
3. In the last month, how often have you felt nervous and "stressed"?	○	○	○	○	○
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	○	○	○	○	○
5. In the last month, how often have you felt that things were going your way?	○	○	○	○	○
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	○	○	○	○	○
7. In the last month, how often have you been able to control irritations in your life?	○	○	○	○	○
8. In the last month, how often have you felt that you were on top of things?	○	○	○	○	○
9. In the last month, how often have you been angered because of things that were outside your control?	○	○	○	○	○
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○

Appendix B: Positive and Negative Affect Scale

THE OHIO STATE UNIVERSITY

Positive and Negative Affect Schedule (PANAS-SF)

Indicate the extent you have felt this way over the past week.		Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
PANAS 1	Interested	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 2	Distressed	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 3	Excited	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 4	Upset	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 5	Strong	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 6	Guilty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 7	Scared	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 8	Hostile	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 9	Enthusiastic	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 10	Proud	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 11	Irritable	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 12	Alert	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 13	Ashamed	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 14	Inspired	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 15	Nervous	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 16	Determined	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 17	Attentive	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 18	Jittery	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 19	Active	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PANAS 20	Afraid	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Appendix C: Focus Group Protocol and Script

Focus Group Protocol and Script

The Co-Investigators will conduct a focus group with 4 self-selected (i.e. voluntary participation) older adults to understand the study participants' experience with the intervention. Specific emphasis will be on ways movement classes effect older adults' stress and mood levels as well as ways in which these can be further improved.

Focus Group Protocol (Date - TBA)

Arrange furniture in designated room
Set up healthy refreshments
Set out nametags.
Greet and chat with people as they come in.
Offer refreshments.

Focus Group Script

Main thing: we want to understand your perspective so that we know the best ways to program these kinds of classes

My name is Natalie Gillespie and this is Holly Dabelko-Schoeny and Marisa Sheldon who will be helping me today. Thank you for filling out the scales and participating in the movement classes.

Now, that you have each completed the movement classes, we would like to know your experience with them. Understanding your perspective will help us improve ways in which to provide these kinds of classes for older adults in the Columbus area. We are also trying to understand the effects such classes have on stress and mood. We are here to learn from you, as you are the experts – we really want your thoughts, feelings, opinions, and experiences you have had.

Your real names will not be used in any report. Whatever anyone shares should remain in this room. There is a risk that what you share during the meeting will be shared outside of the focus group by another participant. Please know that you may choose to stop your participation at any time.

"I wanna make sure that I hear from everyone"

I am going to ask that you speak one at a time so that we can all hear what is being said and so that we'll be able to follow the conversation. We'll go around the table and give each one of you a chance to talk. Let's begin.

1.) Tell me of your experiences with this class

2.) How did your engagement in the class make you feel?

3.) How did your thoughts on the class change over time?

4.) Would you participate in something like this again?

5.) Describe any thoughts that you had during this experience.

6.) Is there anything else you think we should know in order to make programming effective here?

<u>To seek consensus for each question, additional probes will include:</u>
Do you agree with that?
How is your experience different from that person?
Do you feel that way too? You look like you disagree with what was just said. Do you? Is that the way it really is?

Our time is about up. You've all been very cooperative and we've learned a lot. To thank you for your participation, we would like to offer you the final $5 gift card to Kroger as well as this goody bag full of healthy snacks.

Thank you so much.

Appendix D: Demographic Sheet

Demographic Information

Participant ID: _____

Age: _____

Ethnicity:

☐ Latino or Hispanic

☐ Non-Latino or Hispanic

Race: (Check those with which you identify)

☐ American Indian or Alaska Native

☐ Asian or Asian American

☐ Black or African-American

☐ Native Hawaiian or Other Pacific Islander

☐ White

☐ Hispanic or Latino

Other: _____

Gender:

☐ Male

☐ Female

☐ Another Gender Identity, please specify: _____

☐ I prefer not to respond

Sexual Orientation:

☐ Heterosexual

☐ Lesbian

☐ Gay

☐ Bisexual

☐ Another sexual orientation, please specify: _____

☐ Questioning

☐ Unsure, I prefer not to respond

Appendix E: Informed Consent Form

The Ohio State University Consent to Participate in Research

Study Title:	Shaking it Up, Shaking it Off: Stress Reduction through Dance for Older Adults
Researcher:	Natalie Gillespie, BSW, The Ohio State University, College of Social Work
Sponsor:	The Ohio State University College of Social Work

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

The purpose of this study is to determine the extent to which movement-dance classes influence the mood and level of stress of adults aged 60 and older.

Procedures/Tasks:

We will first seek consent from you and then use an online random number generator to assign you to the intervention group (those participating in dance classes) or to the control group (those not participating in the dance classes). Regardless of what group you have been assigned to, all participants will receive an overview of the study and one packet of papers that will be distributed to you on the first day of the movement classes. The packet will consist of the consent form, two pretest scales, and one form that asks your demographics (race, ethnicity, gender, sexual orientation, and age), We will instruct you to write down the ID you have been assigned, coding your name. Approximately 20-30 minutes will be allotted for you to complete the packet. During this time, key personnel Marisa Sheldon, Katie White, and Ava Eisele and co-investigators, Dr. Holly Dabelko-Schoeny and Natalie Gillespie, will answer any questions and/or concerns you may have.

Those who have been chosen for the dance class (intervention group) and those who have not been chosen for the dance class (control group) will be notified at the completion of the consent day. There will be no alternative offered to the control group. You can decide to not participate in the study. We will emphasize your right to drop out of the study at any time. Once the dance classes are completed, those in the control group will be notified and asked to come in one more

time to complete only the posttest scales on November 5th. Financial and material rewards will also be provided at this time.

The dance classes will consist of contemporary movement and jazz movement. There will be an informal performance on the last day of the study that will encompass each of these movements. You can decide to not participate in the performance, if you are uncomfortable.

There will also be focus-group portion of the study, after the movement classes have been completed. This will take place one week after the last dance class. It will be located at Blackburn Community Recreation Center, in the Age-Friendly Columbus space upstairs. A recording device will be used for the duration of the focus-group that will be used only for audible purposes. You will be asked questions pertaining to your experience with the movement classes. While we ask other focus group participants to keep the discussion in the group confidential, we cannot guarantee this. Please keep this in mind when choosing what to share in the group setting.

Duration:

The study will take place for five weeks, consisting of obtaining consent one week, 6 dance classes (2 classes twice a week) for three weeks and one focus-study during the fifth week. All classes/sessions will be two hours in length. However, you will not be dancing for the entirety of this time. The dancing portion will be 45 minutes in length. The rest of the time will be allotted to social participation and transportation. You have the option not to participate in this, if you so choose. The last day of the study, November 5th, will also be two hours for the focus-group.

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:

Anticipated risks, harms, or discomforts are minimal. However, physical risks may come into play during the movement-classes, as well as discomfort with the movement being taught. While measuring outcomes, you may feel uncomfortable answering questions pertaining to their stress and mood. In terms of the focus-group, while we ask other focus group participants to keep the discussion in the group confidential, we cannot guarantee this. Please keep this in mind when choosing what to share in the group setting.

These risks, harms, and discomforts will be minimized. In terms of physical harm and discomfort, the dance teacher will always begin with an adequate warm-up before each class. This will initiate comfortable muscle movement and protects you from injuries during the class. There will also be a cool-down at the end of class, where you can safely finish the class. When teaching movement, the instructor will always present modified movement for steps taught. Therefore, if you feel uncomfortable with the step, you may do the modified version, if you so choose. You may also choose not to participate in that movement. Psychological harm will be minimized by assigning you an ID number. The investigators will be unable to identify the

participant who answers what on the scales given. You may discontinue participation at any time without penalty. You can also skip any questions you do not feel comfortable to answer.

Potential benefits that you may expect as a result of this research study includes facilitating dance/movement classes that enables older adults to build community relationships, reduce levels of stress and increase in mood, foster a healthy creativity, and encourage further physical and emotional growth. The dance-movement classes may also build cohort morale, as you will be together with the other participants for four consecutive weeks.

Confidentiality:

All electronic data collected will be maintained on password protected network drives. Both electronic and hard copy records with names and other identifiable information will be stored separately from the scale questions and other data in University-owned, secured filing cabinets in a secured office on campus. Any personal data collected on the participants will be destroyed following 10 months. All results will be reported in aggregate and no results will be linked to any identifying information.

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices
- The Ohio State University College of Social Work

Incentives:

Participants will be given a monetary incentive consisting of a $5 Kroger gift card for every session they partake and a reusable plastic water bottle on the first day. At the focus-group, they will also receive refreshments (coffee, water, orange juice, cranberry juice) and gift bags filled with healthy snacks. The control group will earn $25 in Kroger gift cards. The dance group will earn a total of $40 in Kroger gift cards if they attend the three-week intervention as well as the focus-group following the end of the intervention. Free transportation will be provided to you, if needed, to travel to and from the facility.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:

For questions, concerns, or complaints about the study, or you feel you have been harmed as a result of study participation, you may contact Natalie Gillespie at 614-572-7938. For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form**.**

Printed name of subject	**Signature of subject**
	AM/PM
	Date and time
Printed name of person authorized to consent for subject (when applicable)	**Signature of person authorized to consent for subject (when applicable)**
	AM/PM
Relationship to the subject	**Date and time**

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent	**Signature of person obtaining consent**
	AM/PM
	Date and time

Appendix F: Age-Friendly Columbus and Franklin County Letter of Support

June 10, 2018

Blackburn Recreation Center
Age-Friendly Columbus
263 Carpenter St.
Columbus, Ohio 43205

Re: Our support for the study, Shaking It Up, Shaking It Off: Stress Reduction Through Dance in Older Adults

To Whom It May Concern:

Age-Friendly Columbus is very pleased to commit to becoming a partner with The Ohio State University for the project entitled: *Shaking It Up, Shaking It Off: Stress Reduction Through Dance in Older Adults.* As the executive director, I support the study and its process and implementation.

We will happily allow the research team to utilize our center, located in 263 Carpenter St, Columbus, Ohio. We will engage our appropriate staff members to assist in the recruitment process, consent process, pre- and post-measurement, focus-group facilitation, and a provided space for the movement-dance classes. We hope our partnership with The Ohio State University will be continued to measure and test the influence of movement-dance classes on the mood and stress of older adults aged 60 and older.

Age-Friendly Columbus is a particularly appropriate partner for this study as we are an initiative of The Ohio State University College of Social Work. The study provides an opportunity for Age-Friendly Columbus to encourage older adults in our community to engage in physical exercise at our facility and to build and foster relationship. Age-Friendly Columbus has a longstanding successful relationship with OSU's College of Social Work, and specifically with Natalie Gillespie and Dr. Holly Dabelko-Schoeny, as a partner on numerous research studies.

It is our mission to ensure that our community's older adults remain in their neighborhoods, living independently and with access to services, amenities and opportunities for community engagement. It is without reservation that Age-Friendly Columbus commits its support to the research team.

Sincerely,

Katie White
Executive Director

Appendix G: Recruitment Flyer

Shake it Up, Shake it Off

FREE DANCE CLASSES

Are you aged 60 or older? Then you are eligible for an upcoming research project on movement hosted at Blackburn Community Recreation Center and sponsored by Age-Friendly Columbus and Franklin County and OSU College of Social Work!

How it works:

- 5 weeks total
- 2 hour sessions (1-3 pm) including transportation, dance, and refreshments
- 20 participants are needed. 10 will be placed in the dance class and 10 will not be placed in the dance class.
- For those in the dance group, dancing will take place for 45 minutes. Classes will be provided for the non-dance group once study is completed
- If you need transportation, let us know!

Dates/Times:

October 8th •October 15th • October 17th •October 22nd • October 24th • October 29th • October 31st • November 5th

All sessions are 1-3 pm

Join us! Financial reward, reusable water bottle, and snacks provided!

To register, contact Age-Friendly Columbus at (614) 549- 7980