University of Memphis
University of Memphis Digital Commons

Electronic Theses and Dissertations

2021

EXPLORING SELF-DETERMINATION THEORY-BASED MOTIVATIONAL PROFILES FOR EXERCISE PARTICIPATION AMONG U. S. LINE DANCERS

Patrick L. Shipp

Follow this and additional works at: https://digitalcommons.memphis.edu/etd

Recommended Citation
Shipp, Patrick L., "EXPLORING SELF-DETERMINATION THEORY-BASED MOTIVATIONAL PROFILES FOR EXERCISE PARTICIPATION AMONG U. S. LINE DANCERS" (2021). *Electronic Theses and Dissertations*. 2774.
https://digitalcommons.memphis.edu/etd/2774

This Dissertation is brought to you for free and open access by University of Memphis Digital Commons. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of University of Memphis Digital Commons. For more information, please contact khggerty@memphis.edu.

EXPLORING SELF-DETERMINATION THEORY-BASED MOTIVATIONAL PROFILES FOR EXERCISE PARTICIPATION AMONG U. S. LINE DANCERS

by

Patrick L. Shipp

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

Major: Educational Psychology and Research

The University of Memphis

May 2021

Dedication

I dedicate this dissertation to both sides of my family---Crutcher, Payne, Shipp (paternal) and Benton, Salley, Shaw (maternal). As a first-generation college student, I am proud to say that I have finally completed this educational journey which started nearly 50 years ago. Though I was always committed and loved learning, I owe my determination to cross this finish line to GOD who has blessed me with family members, teachers, and friends to whom I am eternally grateful. I know that I was not lucky, but I was blessed to have their support. Everything I have ever received is because of GOD's promise, grace, and favor. I give honor to my LORD for this achievement. This blessing is from you, and there is none like you.

II Timothy 4: 7 - 8

I have fought a good fight, I have finished the race, I have kept the faith. Now there is in store for me a crown of righteousness, which the LORD, the righteous Judge, will award to me on that day -- and not only to me, but also to all who have longed for his appearing.

PSALMS 125: 1

They that TRUST in the Lord shall be as Mount Zion, which cannot be removed.

Acknowledgements

With heartfelt gratitude and sincere appreciation, I would like to thank Dr. Leigh Harrell-Williams and humbly say that her guidance and incredible patience throughout this research have been invaluable to me. Her dedication and wealth of knowledge not only helped me but also taught me more about myself. This journey would not have been possible without her, and I will forever be indebted to her for it.

I also would like to acknowledge each member of my dissertation committee for their efforts. Special thanks to Dr. Christian Mueller for pointing me in the direction of "motivation" and always lending a helping hand. To Professor Michael Medcalf, I say thank you for your contributions and your insights about the world of dance. I would especially like to acknowledge Dr. Denise Winsor for her commitment to excellence in education. I humbly say thank all of you for your patience and mentoring.

I would like to express my gratitude to Ms. Lisa Wright for being the first to invite me to a beginner's line dance class at Green Forest Community Baptist Church (Leatha's Soul Line Dancing) in Atlanta, GA. I also thank Al and Val Wilhoite (Letz Rock Crew) and the dancers from across Chicago area for showing me the art and the science of line dancing. Last, but most certainly not least, I would like to thank my own line dance group (#MEMPHIS❤) as well as all the line dancers across the United States who participated in this research.

Abstract

Shipp, Patrick. Ph.D. The University of Memphis. April 2021. Exploring Self-Determination Theory-Based Motivational Profiles for Exercise Participation among U.S. Line Dancers. Leigh Harrell-Williams, Ph.D., Michael Medcalf, Christian Mueller, Ph.D., and Denise Winsor, Ph.D.

Physical activity (PA) has been important in reducing the number of chronic health conditions within the United States. To ensure that the effects of PA is transferred to one's life (Cerar et al., 2017), motivation has been considered a key factor that influences individuals' initiation and maintenance of behavior (Molamourouzi et al., 2015). In order to address this issue, researchers have begun investigating PA by exploring people's perceptions of their motivation for PA. One promising idea has been to focus on exercise participation motives (Markland & Hardy, 1993; Morris & Rogers, 2004) based on self-determination theory (SDT) of motivation (Deci & Ryan, 1985). Working from Deci and Ryan's (1985) conceptual work, the present study sought to examine exercise participation motives among line dancers across the United States. A diverse sample of 705 line dance participants was recruited from across the United States. The study sought to confirm the factor structure of the PALMS (Physical Activity Leisure Motivation Scale) (Morris & Rogers, 2004) had an acceptable fit to the sample of U.S. line dance participants, identify homogeneous motivational profiles for exercise participation for the line dance participants, and determine which demographic characteristics of line dance participants predict line dance profile membership. Results revealed that PALMS did have an acceptable fit to the line dance data, three distinct line dance motivational profiles, and gender was the only useful predictor distinguishing between line dance profile membership groups. These findings are further discussed in the context of the existing literature, as are limitations, implications for practice, and future directions.

Table of Contents

List of Tables

List of Figures

Chapter 1. Introduction

Physical inactivity has been described as one of the most concerning public health problems of the 21st century. According to the 2005 census, difficulty walking three blocks and climbing a flight of stairs were the most common limitation among older adults (U. S. Census Bureau, 2009). In fact, less than 25% of the total United States population meet public health guidelines for physical activity (PA) (i.e., ≥ 150 min of moderate-intensity aerobic activity and 2 days of muscle-strengthening activities per week) (U. S. Department of Health and Human Service, 2018) and 70.2% of the United States population have a high BMI (body mass index) classifying them as overweight or obese (U. S. Department of Health and Human Service, 2017).

Health disparities in PA by sex, race, and income are well-documented (National Center for Health Statistics, 2017). Latinos and non-Latino blacks (NLB), unfortunately, have significantly more individuals with preventable diseases which have been correlated with sedentary lifestyles compared to non-Latino whites (NLW) (Marquez et al., 2010). Compared to Caucasian women, African American women have lower rates of meeting PA guidelines (12% versus 18%) and thus higher levels of health risks (National Center for Health Statistics, 2017). Adults from socioeconomically disadvantaged groups report less participation in leisure-time physical activity (LTPA) (Gidlow et al., 2016; Stalsberg et al., 2018) and experience higher rates of chronic diseases than those who are more affluent (Glover et al., 2004). A recent study found that over a third of Black adults in the lowest income category reported limited activity due to chronic diseases compared with only 9.5% of those in the highest income category (Braveman et al., 2011; Dlugonski et al., 2017).

Given this situation, researchers have begun investigating PA by exploring people's perceptions of their motivation for PA. Although the reasons for participation in PA are very

complex, one promising idea is to focus on exercise participation motives (Markland & Hardy, 1993; Molamourouzi et al., 2015; Morris & Rogers, 2004) based on self-determination theory (SDT) of motivation (Deci & Ryan, 1985; Deci & Ryan, 2000). This has emerged as an important focus because exercise motivation is a key factor that influences individuals' initiation and maintenance of behavior (Molamourouzi et al., 2015) to ensure that the effects of PAs will be transferred to one's life (Cerar et al., 2017). This perspective has provided important conceptual frameworks (Deci et al., 2004) for understanding motives, wherein exercise motives can include intrinsic aspects (engaging in an activity for the pleasure, inherent satisfaction, or personal goals) and/or extrinsic aspects (participating in an activity for instrumental reasons, such as external pressures or rewards, social interactions, or connecting with others). Encompassing this trend, some attention has been paid to participants' motivation for engaging in certain physical activities during their leisure time (Chowdhury, 2018). In fact, SDT-based interventions have shown promise in promoting motivation in LTPA in the general population (Fortier et al., 2012).

Given these circumstances, the current investigation seeks to contribute information that might work to address gaps in understanding around how exercise motives might manifest among underserved populations. Specifically, this study hopes to provide a model of influence for non-exercisers who lack motivation to be physically active and to officials who are interested in increasing PA participation and motivation among adults. In order to promote PA among African Americans consistent with national health objectives, a greater depth of understanding regarding motivation in LTPA is essential. An understanding of how exercise motives work in line dancing is potentially enlightening as line dancing require participants to be healthy students possessing highly specialized skills and delivering performances in evaluative settings. In

addressing the necessity of identifying factors that increase motivation and participation, this study seeks to examine the associations between perceived benefits of exercise participation of African American line dancers. This may be particularly promising given that multiple surveys examining LTPA have found that Latinos and NLB are markedly more sedentary (Crespo et al., 2000; Jones et al., 1998; Marquez et al., 2010). Line dancing has become very popular and has branched out to include many workout options in response to the diverse needs, goals, and abilities of the exercising participants. As people of all ages can participate, line dancing incorporates PA and movement, social interaction, self-expression and cognitive demands in terms of learning and recalling steps and routines (Keogh et al., 2009).

Line dancing as a LTPA has been shown to be effective in producing increases in fitness and may offer additional benefits to exercise in terms of health and well-being due to the holistic and social nature of the activity (Keogh et al., 2009). The picture of line dancing as a leisure-time PA is complex and overlaps with other health concerns and quality of life. Studies have demonstrated relationships among the variables associated with participation motives. These motives are comprised of intrinsic and extrinsic motivation.

The two intrinsic motives are mastery as well as enjoyment and the six extrinsic motives are physical condition, appearance, psychological condition, others' expectations, affiliation, and competition-ego (Ryan & Deci, 2000). Given that there has been limited quantitative research examining participation motivation of diverse cultural groups who participate in line dancing as a LTPA, there is a noted need to examine their exercise participation motives. Considering the multi-faceted nature of participation motives, it useful to explore whether there are groups of individuals who share similar patterns of participation motivation in a manner consistent with a proposed conceptualization of motives for participation using a person-centered approach

(Bergman et al., 2003). Scarce research has used a person-centered approach (Bergman et al., 2003) to study participation motives, and there appears to be no research on the profiles of participation motivation of line dancing as a LTPA. This study uses such a person-centered approach (Bergman et al., 2003) to understand participation motives among individuals using line dancing as an intervention for a possible health concern. The goal is to increase knowledge of participation motivation trends to aid health and fitness experts in recognizing participation motives and promoting line dancing and as an alternative treatment.

The current study will answer the question whether line dance profiles differ significantly between gender, across ethnic groups, income levels, age groups, among the U. S. geographical regions (North, Mid-West, South, and West), the three (novice, intermediate, and advance) ability levels, sexual orientation, occupation, and in health-related variables.

Self-Determination Theory and Exercise Participation Motives

The self-determination theory (SDT) suggests that motivated behavior is based on the satisfaction of three needs: competence, autonomy, and relatedness (Deci & Ryan, 1985; Ryan et al., 2008). These needs form a continuum of internalization from externally to intrinsically regulated motives. Extrinsic motivation leads an individual to perform and obtain rewards or outcomes that are separate from the behavior itself (e.g., recognition, money, prize). Intrinsic motivation, however, is when the individual participates for the experience of the activity as pleasant, fun, or satisfying (Dacey et al., 2008; Deci & Ryan, 1985). Overall, SDT approach has been shown to be a relevant theory in the field of exercise science, providing a strong foundation for understanding the goals and motives for leisure exercise as well (Deci & Ryan, 2012).

Derived from Deci and Ryan's (1985) SDT, exercise motives refer to individuals' reasons for engaging in PA (Markland & Hardy, 1993; Morris & Rogers, 2004). These

researchers developed a taxonomy of exercise motives for participation in PA, consisting of eight different domains: enjoyment, mastery, competition/ego, affiliation, other's expectation, physical condition, psychological condition, and appearance. The enjoyment motive involves engaging in exercise because of the inherent pleasure and satisfaction exercisers derive from the PA. The mastery motive involves participating in PA to develop ability and competence without any external pressures (Kirkpatrick, Hebert, & Bartholomew, 2005). Competition/Ego motive entails participating in LTPA to outperform others for external rewards (Chowdhury, 2012). Affiliation is a social motive fostering individuals' engagement in exercise in order to gain recognition for their accomplishments in exercise. Others' expectations are extrinsic motives that involve participating in physical activity either for money or because individuals are advised to do so. Physical or health-related motives are strongly linked to exercise behaviors (Kirkpatrick et al., 2005). Avoiding ill-health, for instance, involves engagement in exercise to prevent health problems, such as coronary heart disease or anxiety and depression (Ingledew & Markland, 2008). Those who participate in physical activities may do so for better mental health (Bailey & McLaren, 2005) or less stress (Bailey & McLaren, 2005). The motive of appearance is a body-related motive, which refers to engagement in exercise to look more attractive and to gain an athletic body. Different motives are considered and examined in each domain. Motivation plays a vital role in PA because increased motivation leads to continued participation (Aaltonen, et al., 2014; Tsorbatzoudis et al., 2006). Understanding the different motives in PA participation may provide valuable information to encourage and even increase the level of PA among various populations. Due to the changing demographics and generational characteristics of adults, it is important to continue to track reasons why people participate in PA and use this information to help drive health programming (Molanourouzi, 2015).

The Present Study

There have been very few empirical studies that have explored motivation of dancing. Motivation may be very different for leisure dancers when compared to professional dancers. In fact, the majority of studies published on dance motivation have only examined professionals' motivation to dance rather than leisure dance motivation (Alter, 1997; Maraz et al., 2015; Stinson et al., 1990).

The main purpose of this study is to examine what exercise motivation profiles emerge among line dancers across the United States. The first aim of this study will be to confirm the factor structure of the PALMS by conducting a confirmatory factor analysis (CFA) of the PALMS in a sample of U. S. line dance participants since the PALMS has not been used in research in the United States. The second aim of this study will be to statistically identify homogeneous profiles of line dancers' perception of exercise participation motivation. Although no prior literature precluded specific hypotheses regarding the number of emerging line dancer profiles, I hypothesize that several profiles will emerge, including both a highly motivated profile and low motivation profile because motivations are often a mixed with varying levels of both intrinsic and extrinsic based motivation and performance goals. The third aim of this study will be to further describe demographic characteristics of participants which predict line dance profile membership. Limited prior literature precluded specific hypotheses regarding the differences in perception of exercise motivation, the differences in characteristics between the profiles of the line dancers, or the ability to predict profile membership.

Summary and Research Questions

Motivating people to be physically active is important in designing, implementing, and promoting a program around a healthy lifestyle. In response to relatively low numbers of African

American meeting PA national guidelines, efforts have been directed towards understanding how to best promote adherence to an exercise program. Programs such as line dancing with goals of engaging and motivating culturally diverse populations in PA have highlighted the importance of involving the target population early, tailoring the PA programs to suit the predominant group and creating partnerships among diverse groups (Razon et al., 2019). Motivation and engagement, together, in PA has been examined using the theoretical framework of exercise participation motives (Markland & Hardy, 1993; Molamourouzi et al., 2015; Morris & Rogers, 2004) based on self-determination theory (Deci & Ryan, 1985, 2000). In doing so, African American line dancers are used to both identify factors related to PA and promote behavioral changes that result in sustained participation. Findings will help officials promote a physically active lifestyle for a sedentary and non-exercising African-American adult population who may choose to use line dancing to become more physically active and/or may subsequently use line dancing as a gateway to other types of PAs.

With these aims of research guiding the project, the following research questions are posed with the intent of providing relevant information to support each:

Research Questions

(1) From the 40-item measure (PALMS), are the empirically supported 8 factors (Enjoyment, Mastery, Competition/Ego, Affiliation, Other's Expectation, Physical Condition, Psychological Condition, and Appearance) clearly identifiable constructs in a diverse sample of line dance participants within a population of the United States?

(2) What homogeneous profiles of exercise motivation emerge among line dancers?

(3) Which demographic characteristics of participants predict line dance profile membership?

Chapter 2. Literature Review

In this section, an overview of physical activity and health issues are presented. The motivation theories relevant for studying exercise participation motivation will be introduced as well. Two dominant theories, the self-determination theory (SDT; Deci & Ryan, 1985, 2000) and the exercise motivation (Morris & Rogers, 2004), are presented in detail. Additionally, the relevant findings related to these theories in the dance, exercise, and sports settings are presented.

Physical Activity

The physical activity guidelines recommend that all adults engage in at least 150 minutes of moderate-intensity aerobic physical activity, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity (U. S. Department of Health and Human Services, 2018). The physical activity, in adults aged 18-64, includes leisure time physical activity such as walking, hiking (transportation); working (occupational); cleaning, gardening (household chores), dancing, swimming, playing football (sports or planned exercise) in the context of daily, family, and community activities. However, only 40% of the entire U.S. population engages in enough activity to derive health benefits (Izquierdo-Porrera, Powell, Reiner, & Fontaine, 2002) and 70.2% have a high BMI (body mass index) classifying them as overweight or obese (National Center of Health Statistics, 2016). What is more, according to 2005 United States Census, difficulty walking three blocks and climbing a flight of stairs were the most common limitation reported among older adults (CDC, 2009).

Physical Inactivity

A decline in physical activity can be attributed to changes in the economy, technology, society, and the environment (Berg et al., 2015). In 2000, only 22% of the U. S. population worked in high-activity jobs, compared to 30% in 1950, while individuals working in low-activity jobs rose from 23% in 1950 to 41% in 2000 (Brownson et al., 2005). Activity in the home is also declining due to the increased use of technology to complete household tasks. The decrease in physical activity lends itself to an increase in sedentary activities, particularly those related to "screen time", such as video games, tablets, hand-held consoles, computers, and televisions (Berg, et al., 2015; Katzmarzyk, 2010). Finally, Americans are driving more often today, with 88% of trips to work being made in a car versus 67% in 1960 (Brownson et al., 2005).

Health Issues Related to Physical Inactivity

Physical inactivity is the fourth leading risk factor for global mortality and estimated to cause 6% of deaths worldwide and has created a public health issue (Craike et al., 2019). Physical inactivity is also a major risk factor for diabetes (Rosas et al., 2020). According to the American Diabetes Association (2015), approximately 30 million children and adults have diabetes in the United States and out of that number, nearly 95% have type 2 diabetes (Hester, 2019). Among U. S. individuals 18 years of age and older in 2015, 30.2 million had diabetes, of which 1.7 million were new cases. Additionally, prediabetes, which is associated with a high risk of diabetes due to elevated fasting plasma glucose and hemoglobin A1C levels, is also on the rise. In 2015, an estimated 84.1 million U. S. adults had prediabetes. The prevalence of diabetes and prediabetes is increasing among U. S. adults, and heart disease, kidney failure, and lower-limb amputation are associated complications (Murillo et al., 2019). Physical activity and weight

loss have been shown to reduce the risk of diabetes. The 2002 landmark Diabetes Prevention Program (DPP) trial demonstrated that a lifestyle intervention aimed at modest weight loss (5-10% of initial weight) and moderate-to-vigorous physical activity can reduce the development of diabetes by 58% over a 3-year period compared with control (Rosas et al., 2020).

It has been estimated that 15% to 20% of cancer deaths in the United States can be attributed specifically to overweight and obesity (Rosario, 2014). Besides genetics, many other factors play major roles in the development of cancer including chemical carcinogens (such as tobacco), physical inactivity, and diet (Kushi et al., 2012). Inherited genetic factors are thought to contribute little to susceptibility to most malignancies, determining a major role of the environment in sporadic cancer (Rogers et al., 2008). Some interventions such as physical exercise are able to modulate the risk of developing some types of cancer or cancer progression and prognosis by improving obesity, physical activity and CRF (Morales-Rojas et al., 2016).

Physical inactivity is also a major risk factor for cardiovascular disease. Health care professionals have a role in counseling patients about physical activity for cardiovascular disease prevention. In August 2014, the U.S. Preventive Services Task Force recommended that adults who are overweight or obese and have additional cardiovascular disease risk factors be offered or referred to intensive behavioral counseling interventions to promote a healthful diet and physical activity for cardiovascular disease prevention (Omura, 2015). Generally reducing the average lifespan, physical inactivity is associated with the risks of obesity, hypertension, depression, cardiovascular diseases, stroke, type 2 diabetes, osteoporosis, colon and breast cancer, gallstone formation, depression and anxiety, a number of other non-communicable and chronic diseases and conditions, and aging of various metabolic systems (Kwasniewsa et al., 2016; U.S. Department of Health and Human Service, 2018; Whitfield et al., 2019).

Costs for Physical Inactivity

Millions of deaths from non-communicable diseases could have theoretically been prevented if people who were inactive had instead been sufficiently active. The associated morbidity of health disorders related to inactivity, including health-related quality of life as well as direct and indirect economic costs, exerts a substantial burden on societies and health systems (Kohl et al., 2012). In 2018, Americans spent $3.65 trillion on healthcare and the treatment of chronic diseases consumed 86% of U.S. healthcare costs (Centers for Medicare and Medicaid Services, 2018). Diabetes is associated with high rates of morbidity, mortality and cost, contributing to nearly 1.2 million deaths and 376 billion (US) in cost worldwide (Rosenberg-Yunger, et al., 2018). High levels of health care spending are problematic for the United States. Public spending on health care—primarily through the Medicare and Medicaid programs—is crowding out spending on other state and national priorities, including education, Social Security, national defense, and deficit reduction (Garber, Gates, Keeler, Vaiana, Mulcahy, Lau, & Kellermann, 2014). Despite efforts of Healthy People 2020 (U.S. Department of Health and Human Services, 2010), preventable diseases remain a major public health problem (Chemtob et al., 2019).

Health Disparities

Although research has grown in the 21st century regarding the physical activity patterns among racial, lower socioeconomic, and sexual minority groups, health disparities have not diminished. Adverse environmental, social, and economic conditions are associated with numerous negative health outcomes and contribute to the generation and maintenance of health inequalities (Upchurch et al., 2015). Adults from socioeconomically disadvantaged groups report less participation in leisure time physical activity and experience higher rates of chronic disease

than those who are more affluent (Craike, et al., 2019). People of color are generally less physically active than White people according to data that have been collected for over 15 years (Henderson, 2011; U.S. Department of Health and Human Services, 1996). Despite the known benefits from exercise, over 66% of women in the United States reported engaging in no vigorous leisure-time physical activity.

Specifically, a nationally representative sample of women 40 years and older estimated that African American women participated in lower levels of overall physical activity than did white, Hispanic, and Native American women (66.5%, compared to 71.7%, 76.8%, and 74.0%, respectively) (McArthur et al., 2009). As a result, on average 82% of African American women are classified as overweight (Razon et al., 2019). Non-Hispanic Black males were similar in percentage (72%) regarding overweight and obesity compared with Non-Hispanic White males (Henderson, 2011). Additionally, the National Health and Nutrition Examination Survey indicated that 51% of African American women (ages 40-56 years) were considered obese compared to 30% of African American men in the same age range (Fleury, et al., 2006). What is more, sexual orientation-based disparities in physical activity are mixed. One study reported that sexual minority females are less likely than heterosexual females to participate in moderate to physical activity and team sports, whereas another study found no such differences in physical activity (Mereish et al., 2015). Some have found a higher prevalence of obesity and overweight among sexual minority than heterosexual men, but others have found the opposite in representative samples of the population (Rosario et al., 2014).

Due to these health disparities, the likelihood that the risk of developing obesity-related diseases, such as diabetes, hypertension, and heart disease, will impact African American women more often is quite high (Fleury, et al., 2006). Regular physical activity prevents risks for

developing cardiovascular disease and obesity. Physical inactivity, nevertheless, is an ongoing challenge in the United States, particularly among minorities and women (Razon et al., 2019).

Line Dancing as Physical Activity

Leisure-time physical activity (LTPA; ie., recreational physical activity done in one's free time) is a health promoting behavior that has been associated with physiological (i.e., increases in strength and endurance) and psychological (i.e., reductions in depressive symptoms and improvements in quality of life) benefits for adults (Daniel & Manigandan, 2005). As for adults, leisure-time physical activity is typically characterized as an activity chosen with relative freedom, undertaken during free time, with the potential to provide a feeling of enjoyment, control, or mastery (Zach et al., 2012). Leisure encompasses a diverse and complex category of activities. According to McQuoid (2017), leisure activities are often key sources of meaning, enjoyment, and sense of purpose. To achieve benefits, LTPA guidelines recommend at least 150 min of moderate to vigorous intensity aerobic activity twice a week and strength training exercises two times per week (Martin-Ginis et al., 2017).

As a leisure activity, line dancing may be an activity to implement as a regular activity to improve the fitness level of adults. Line dancing is considered a low impact aerobic dance (LIAD) that is characterized by choreographed routines of movement continuously performed to music (Hopkins et al, 1989). Dating as far back to the mid-20th century with the creation of "The Hustle" and the "Harlem Shuffle" to the 21st century with "The Cha Cha Slide" and the "The Cupid Shuffle," line dancing incorporates rhythm & blues (R & B), jazz, pop, country, gospel, house, and hip-hop with associated dance moves. Individuals who line dance often perform dances in groups during festive occasions such as birthday parties, family reunions, night clubs, wedding receptions, church programs, and picnics.

An organized line dance class usually lasts 50-60 minutes and has students of varying ability (novice, experienced, and advanced). As people of all ages can participate, line dancing incorporates physical activity and movement, social interaction, self-expression and cognitive demands in terms of learning and recalling steps and routines (Keogh et al., 2009). Line dance classes have been shown to be effective in producing increases in fitness. As a fitness activity, line dancing may offer additional benefits to exercise in terms of health and well-being due to the holistic and social nature of the activity (Keogh et al., 2009). Though Gordon, Overend, and Vandervoort (2001) have pointed out the importance of exercise in preventing physiological health diseases, research is currently lacking that suggests effects of leisure fitness activity such as line dancing as method to improve health outcomes among adults. Though dancing has been reported to be an enjoyable activity leading to high adherence rates and typically requires learning and memorizing new step sequences and a simultaneous engagement of both endurance and coordination as well as executive functions (Dhami, Moreno, & DeSouza, 2014), one of the common barriers that impede physical activity participation for adults is motivation. (Chemtob et al., 2019).

Motivation for Participation in Physical Activity

Motivation as a Construct

Motivation can be characterized as that which influences the initiation, direction, magnitude, perseverance, continuation, and quality of goal-oriented behavior (Maehr & Zuscho, 2009) and defined as the act, or providing with a reason to act in a certain way (Simpkins et al., 2005; Kuch, 2019). Nevid (2013) suggested that the term motivation referred to "factors that active, direct, and sustain goal-directed behavior (Kuch, 2019). Psychologists define motivation

as the need or desire which gives energy to behave and directs it to the purpose (Mayers, 2008; Kwasniewsa et al., 2016).

For the past eight decades, theories related to the psychological construct of motivation have proliferated to contribute to the body of knowledge on motivation. These motivational theories have consisted of hierarchy of needs (Maslow, 1943), the expectancy-value theory (Atkinson, 1957), the attribution theory (Heider, 1958; Weiner, 1979), the need for achievement theory (McClelland, 1961), self-determination theory (1985), the social cognitive theory (Bandura, 1986), and the achievement goal theory (Ames & Ames, 1954, 1984). In recent years, however, self-determination has served as the framework and the chief constructs for understanding factors that promote human motivation in the domains of education, business, healthcare, psychology, and sports (Hodge, 2017; Ryan & Deci, 2017).

Self-Determination Theory

The theoretical framework for this study is based on the SDT. Motivation is the main factor which affects self-determination and support physical activity (Kwasniewsa et al., 2016; Mayers, 2008). Frequently used to understand human motivation, self-determination theory (Deci & Ryan, 1985; Deci & Ryan, 2000) is a modern framework applied in physical activity contexts (exercise, sports, and physical education) (Ng, Ntoumanis, et al., 2012). Its originators, Deci and Ryan (1985), contended that people have an inherent desire to be competent and to master the environment. The basic drive to be skilled is sensitive to the social environment (Ryan & Deci, 2017). In this way, SDT's predictions about human motivation depend on the dynamic interaction between the person's active self and the social context.

SDT not only distinguishes two kinds of motivation (autonomous and controlled/amotivated) (Deci & Ryan, 2000), but it also presents a continuum in which

motivational self-regulation varies from amotivation to intrinsic motivation (see Figure 1). These variations have important ramifications in psychological and physical well-being of the individual (Ryan & Deci, 2000). In autonomous forms of motivation, behavior has an internally perceived locus of causality and is intrinsic in nature. Autonomous forms of motivation are as follows: intrinsic motivation (performing an activity for its own satisfaction, pleasure, and/or challenge), integrated regulation (a synthesis of various identifications to form a coherent self), and identified regulation (guided by personal values and self-endorsed commitments).

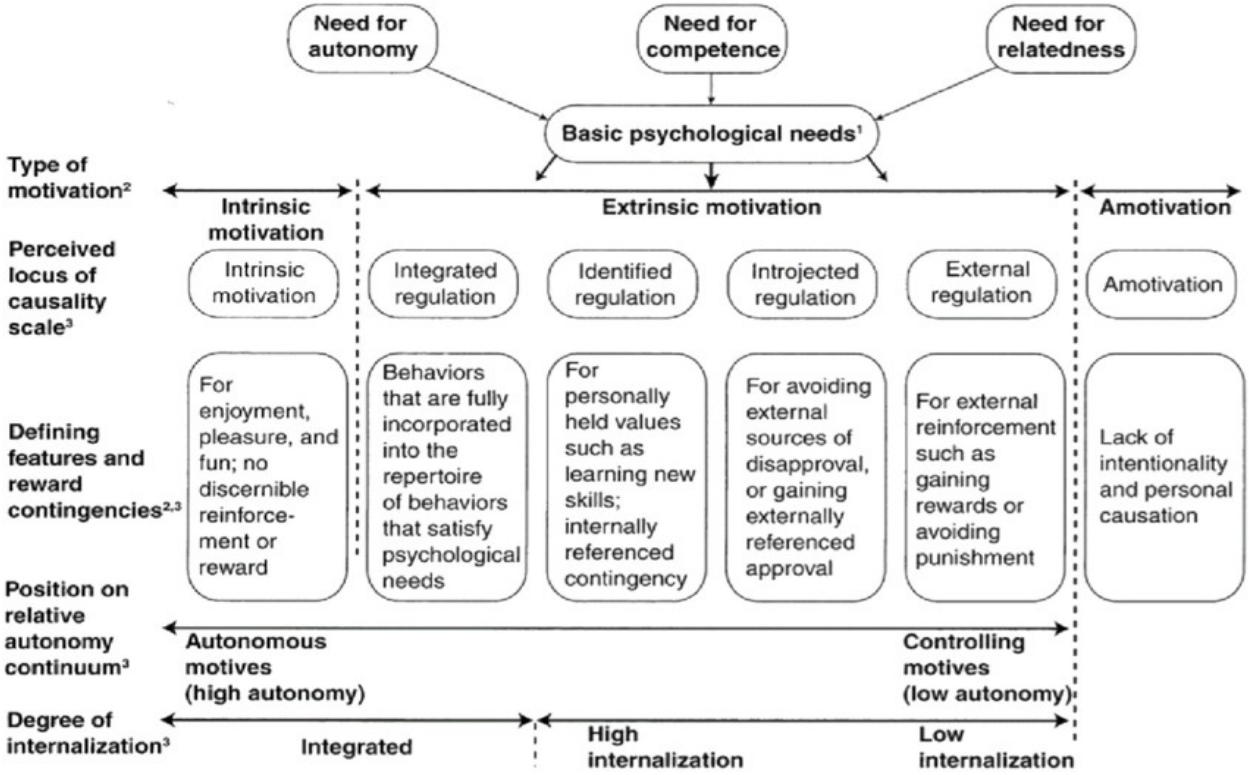

Figure 1. The Self-Determination Theory Continuum

Unlike autonomous motivation, controlled motivation has an external perceived locus of causality. Controlled motivation involves regulation of behavior based on imposition and pressure to behave, think, or feel in particular ways. Both introjected and external regulation are forms of controlled motivation. Introjected motivation involves internal pressures to comply with

a partially internalized contingency to avoid feelings of guilt or shame, or to gain pride and self-esteem. However, external regulation entails external pressures to obtain a reward or avoid punishment. Defined by the lack of intentionality towards a given behavior, amotivation contrasts with autonomous and controlled motivation. Individuals who lack intentionality often do not value the relationship between behavior and its outcomes, or do not feel capable of performing behaviors necessary to achieve the desired outcomes (Raposo, et al., 2020).

Exercise Participation Motives

Motivation plays a vital role in PA because increased motivation leads to continued participation (Aaltonen, et al., 2014; Tsorbatzoudis et al., 2006). Understanding the different motives in PA participation may provide valuable information to encourage and even increase the level of PA among various populations. Due to the changing demographics and generational characteristics of adults, it is important to continue to track reasons why people participate in PA and use this information to help drive health programming (Molanorouzi et al., 2015). Derived from Deci and Ryan's (1985) SDT, PALMS (Physical Activity Leisure Motives Scale) provides information about individuals' reasons for engaging in PA and covers a range of motives for participation in PA (Morris & Rogers, 2004). PALMS consists of a taxonomy of eight exercise motives for LTPA participation (enjoyment, psychological condition, mastery, competition/ego, affiliation, physical condition, appearance, and other's expectation).

A description and the prior research about each subscale is provided below. Additional research on participation motivation suggests that there are systematic differences between exercise participation motives and some demographic variables. With this in mind, special attention is given to results, where applicable, related to gender, age, ethnicity, marital status,

exercise frequency, ability level, educational level, socioeconomic status, and sexual preference for each exercise motive.

Enjoyment. Enjoyment is defined as the part of inherent pleasure, fun, happiness and satisfaction exercisers derive from the PA. Enjoyment has been positively associated with continued PA participation (Jaakkola et al., 2016), intrinsic motivation (Deci, 1975; Wankel & Kreisel, 1985), self-efficacy (Hu et al., 2016), and a range of positive health consequences (Barnett et al., 2019). Numerous studies have found that enjoyment is a chief motive for PA for adults and children across multiple contexts, such as Finland university dance students (ballet dancers and dancers of other dance forms; Thesleff, 2014), Greek dancers (Filippos et al.,2016), Zumba programs in the U. S. (Krishnan et al., 2015; Razon et al., 2019), Iranian recreational exercise and professional sports programs (Zarei et al., 2016), fitness centers in Israel (Zach et al., 2012), as well as British and Chinese secondary and Irish college PE students (Abdullah et al., 2019; Lerner et al., 2011; Ntoumanis, 2002).

Gender. Multiple studies have shown that males consistently rated enjoyment more highly than their female counterparts (Chowdhury, 2018; Egli et al., 2011; Filippos, 2016; Gao & Xiang, 2008; Gonzalez-Cutre et al., 2011; McArthur et al., 2009; Molanorouzi et al., 2015). However, a Malaysian study (Kuch et al., 2019) found that the males and females did not exhibit significant difference in enjoyment scores on the PALMS-Y-M.

Marital Status. Michaelidou et al. (2014) found significant differences in the enjoyment among individuals in cities in England grouped by sex and marital status. Specifically, women not living with partner found exercise less enjoyable than single women, men not living with a partner, men living with a partner, married men, divorced/widowed men, and single men.

Race. Whites, Hispanics, and Whites were significantly more likely to exercise for enjoyment than Blacks (Egli et al., 2011).

Age. Researchers found that there is a downward trend in the enjoyment of regular exercise as life progresses (Owen and Bauman, 1992; Murcia et al., 2008). For instance, a research study of motives revealed that enjoyment in exercise diminishes with age but health becomes more important as individuals age (Molanorouzi et al., 2015).

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found university students who participated in exercise often had a significantly higher enjoyment motive than those university students who participated rarely or sometimes.

Psychological Condition. Prior research has shown that those who participate in physical activities may do so for better mental health, less stress-induced illness, reduced feelings of alienation and loneliness, higher morale, reduced anxiety, and increased total perceived wellness (Bailey & McLaren, 2005). While one study (Sorol et al., 2017) found that psychological condition was the second highest motive among Turkish university students, the psychological condition motive was rated as the least endorsed motive among Kelantan Chinese secondary school students (Abdullah et al., 2019).

Gender. A number of studies have shown that females consistently rated psychological condition more highly than their male counterparts (Chowdhury, 2018; Molanorouzi et al., 2015; Zervou et al., 2017). However, in a Malaysian study consisting of preadolescent students, Kueh et al. (2017) found that the males and females did not exhibit a significant difference in psychological condition motives.

Marital Status. Among individuals in cities in England, Michaelidou et al. (2014) found single men and women not living with a partner scored significantly lower for the mental health

motive than men not living with a partner, men living with a partner, married men, divorced/widow men, single women, women living with a partner, married women, or divorced/ widowed women.

Race. In a study assessing race differences on psychosocial correlates of physical activity among college students, results revealed no significant race-based differences on psychological condition motives (McArthur et al., 2009). However, in the Egli et al., (2011) study, Whites were significantly more likely to be motivated to exercise for stress management than Blacks.

Age. Multiple studies have shown that psychological condition motives increase with age (Abdullah et al., 2019; Molanorouzi et al., 2015; Sorol et al., 2017).

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found that university students who participated in exercise often had a significantly higher psychological condition motive than those university students who participated rarely or sometimes.

Mastery. Mastery motives are adopted by individuals who aim for a standard of competence without external pressures. Mainly concerned with their own ability, these individuals opt for a physical activity that assists them in improving their proficiency and skill level in that activity (Chowdhury, 2018). At a challenging skill level, an individual will not only develop ability but confidence as well (Frederick-Recascino, 2003; Deci & Ryan, 1991; 1985). Numerous studies have explored mastery motives from the perspective of the self-determination theory and found that mastery is neither the chief motive nor the least motive adopted by adults and school-aged exercisers (Abdullah et al., 2019; Filippos et al., 2016; Krishnan et al., 2015; Lerner et al., 2011; Ntoumanis, 2002; Razon et al., 2019; Thesleff, 2014; Vlachopoulos et al. 2000; Zach et al.; 2012; Zarei et al., 2016).

Gender. Research indicates that male and female exercisers exhibit different mastery motives. Molanorouzi et al. (2015) found that Malaysian males had a significantly higher mastery motive than Malaysian females. However, Chowdhury (2018) found that females had a significantly higher mastery motive than the males in an Austrian study. Still yet, Kueh et al. (2017) found in another study that Malaysian preadolescent males and females exhibited similar motive for participation in physical activity.

Age. Two studies on exercise motives have shown that mastery motive diminished with age (Cooper, Schuett & Phillips, 2012; Molanorouzi et al., 2015).

Race. In a study assessing race differences on psychosocial correlates of physical activity among college students, the results revealed that no significant race differences emerged on mastery motives for exercise (McArthur et al., 2009).

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found university students who participated in exercise often had a significantly higher mastery motive than those university students who participated rarely or sometimes.

Competition/Ego. The competition/ego motive involves exercisers who are primarily concerned with their capacity to outperform their adversaries and engage in head-to-head competition (Chowdhury, 2018). Unlike the mastery motive, the competition/ego is an extrinsic motive which involves an interpersonal comparison standard and entails participating in PA for external rewards (Chowdhury, 2012). Multiple studies have found that PALMS competition/ego was one of the least endorsed exercise motives for both school-aged and adult exercisers (Kueh et al., 2017; Kueh et al., 2018; Zach et al., 2012) across the contexts of school-aged students in Malaysia (Kueh et al., 2017; Kueh et al., 2018) as well as fitness centers, recreational parks, and facilities in Israel (Zach et al., 2012).

Gender. Research on gender differences in exercise participation motivation indicates that males consistently rated competition/ego more highly than their female counterparts (Chowdhury, 2018; Filippos, 2016; Kueh et al., 2017; Kueh et al., 2018; Molanorouzi et al., 2015; Sorol et al., 2017; Zervou et al., 2017).

Age. A Malaysian study on exercise motives found that competition/ego motives diminished with age (Molanorouzi et al., 2015).

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found that university students who participated in exercise often had a significantly higher competition/ego motive than those university students who participated rarely or sometimes.

Affiliation. Affiliation is a social motive in which individuals participate in exercise to feel a sense of kinship, become close to others, and obtain acknowledgement for their successes (Kim et al., 2016). Research suggests that physical activity performed with others improves one's sense of belonging (Bailey & McLaren, 2005). Other research has shown that affiliation in physical and leisure activities may not only assist individuals in feeling valued and boost morale (Bailey & McLaren, 2005), but it may also provide an opportunity for individuals to expand their social network and avoid isolation (Bailey & McLaren, 2005). Two studies have found that affiliation is a top motive for PA for both Greek dancers and students in a P. E. classes (Filippos et al., 2016; Fonseca & Maia, 2001).

Gender. While one study (Chowdhury, 2018) found that male participants have higher affiliation motive than females, two studies found that no significant difference in affiliation between males and females (Kueh et al., 2017; Molanorouzi et al., 2015).

Age. A Malaysian study on exercise motives found that affiliation diminished with age (Molanorouzi et al., 2015).

Race. Broader social and cultural factors influence physical activity in minorities (Wells et al., 2019). For instance, in a qualitative study exploring participation of African American women in a Zumba exercise program, researchers found that participants identified that the participants placed a high value on being active with others in a community religious building (Razon et al., 2019). In another qualitative research study, Kim et al. (2016) found that Korean middle-aged women become very close to one another and feel strong social closeness to one another through line dance activities.

Physical Condition. Health-related motives are strongly associated with exercise behaviors (Kirkpatrick et al., 2005). A number of studies have found that individuals who participate in PA endorsed physical condition as a chief motive for PA for adults and children across multiple contexts, such as Portuguese ballroom dancers (Gomes da Cruz et al., 2017) Greek dancers (Filippos et al.,2016), Zumba program in the U. S. (Krishnan et al., 2015; Razon et al., 2019), fitness centers in Israel (Zach et al., 2012), Malaysian school-aged students (Kuch et al., 2019), and Turkish university students (Sorol et al., 2017).

Gender. Three studies have shown that male and female exercisers exhibit different physical condition motives (Chowdhury, 2018; Kuch et al., 2019; Molanorouzi et al., 2015). Kuch et al. (2019) found that preadolescent Malaysian boys and girls had similar physical condition motives. However, in an Australian study Chowdhury (2018) found that males had a significantly higher physical condition motive than the females while Molanorouzi et al. (2015) in another Malaysian study found that males had a significantly lower physical condition motive than females.

Age. In a Malaysian study of motives for physical activity found that the physical condition motive decreases with age (Molanorouzi et al., 2015).

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found university students who participated often had higher physical condition motive scores than those university students who participated rarely or sometimes.

Appearance. One's perceived body image has the potential to influence one's participation in exercise (Brudzynski, 2010). For instance, previous research has shown that those who perceive themselves as overweight are more likely to exercise to lose weight than those who do not perceive themselves to be overweight (Ziebland et al., 2002). Two studies (Zarei et al., 2016; Kueh et al., 2018) have found that appearance is a top motive for PA for adults in the area of recreational exercise and professional sports programs in Iran (Zarei et al., 2016) and for secondary PE students (Kueh et al., 2018). In a French qualitative study (Ferrand, 2008) examining perceived motives for regular physical activity in individuals with type 2 diabetes, results revealed that the combination between regular physical activity and weight loss contributed to a positive body image in improving physical attractiveness. The participants described how they now felt much more positive about themselves by doing physical activity and how their confidence had grown.

Gender. While one Malaysian study revealed that males and females did not exhibit different appearance motives for participation in PA (Kueh et al., 2017), several other studies found that males had a lower appearance motive than female counterparts (Chowdhury, 2018; Molanorouzi et al., 2015; Zervou et al., 2017) and Sorol et al. (2017) found in a Turkish university study that male students had a higher appearance motive than female students.

Marital Status. Among individuals in cities in England, Michaelidou et al. (2014) found married men had a lower appearance motive for PA than single men, men not living with a

partner, men living with a partner, divorced/widow men, single women, women not living with a partner, women living with a partner, married women, divorced/widowed women.

Race. In a study assessing sex/race differences on psychosocial correlates of physical activity among college students, White females placed more importance on appearance-related motives than did Black males (McArthur et al., 2009).

Age. In a Malaysian study of motives for physical activity, Molanorouzi et al. (2015) found that appearance motive for participants increased with age.

Exercise Frequency. In a Turkish university study, Sorol et al. (2017) found that university students who participated often had higher appearance motive than those university students who participated rarely or sometimes. In another study (Brudzynski, 2010), 58% of university exercisers reported that the amount they exercised was influenced by their perceived body image. General themes found within the results revealed increased exercise participation when feeling overweight or unattractive, a desire to achieve or maintain a specific level of fitness, and a desire to feel better about one's overall body image.

Others' Expectations. Exercise motives that involve individuals participating in physical activity because they are advised to do so or because they are interested in money are called others' expectations. This motive is concerned with living life according to what friends, parents, teachers, government, the media, or others think is best for the individual (Zach et al., 2012). Several studies have found that others' expectations was the least endorsed exercise motives of school-aged and adult exercisers across multiple contexts, such as Greek dancing (Filippos, 2016), fitness centers in Israel (Zach et al., 2012), Iranian recreational exercise and professional sports programs (Zarei et al., 2016), and Turkish university students (Sorol et al., 2017).

Gender. Chowdhury (2018) found that males rated others' expectations significantly higher than their female counterparts; however, another study found that there was no significant difference in others' expectations motives between males and females (Molanorouzi et al., 2015).

Age. A Malaysian study on exercise motives related to racquet sports, exercise (walking, jogging, dancing, and gym), martial arts, team sports, and racing sports found that others' expectations as a motive diminished with age (Molanorouzi et al., 2015).

Summary

Although researchers have examined exercise participation motives in many types of sports and exercise, a review of extant literature reveals that no studies have explored motives for participating in line dancing as a physical activity. Research studies in several countries have used PALMS to delve into exercise motives across multiple contexts, such as public schools, colleges and universities, fitness and recreational exercise centers, as well as professional sports programs; however, PALMS has not been used to examine exercise motives in the United States. In particular, there is a lack of knowledge about the patterns and prevalence of line dance participation in the United States. The lack of advanced studies in this area is one of the most important hindrances towards the development of strategies for increasing PA rate. This study helps to bridge this gap; it presents how line dancing significantly influences the life of Americans, with a key focus on people living in urban areas of the United States. An investigation into what motivates participation in line dancing will provide useful insights towards increasing population physical activity and improving health. This study has significant public health implications for scholars, physicians, and policymakers for future studies.

Chapter 3. Methodology

Study Design

This cross-sectional, observational study was conducted via an online survey format to obtain a convenience sample of line dancers across the United States. The exercisers' self-reported exercise participation motives were collected to conduct a CFA to confirm the appropriateness of the 8-factor structure for PALMS in the United States, explore what exercise motivation profiles emerge among the U. S. line dancers, and examine demographic characteristics which might predict line dance profile membership.

Procedures

Preceding the collection of data, a consent to conduct the study was submitted for approval from the Institutional Review Board (IRB) at The University of Memphis. Because the line dancers are geographically dispersed, a series of advertisements for the study along with follow-up reminders was placed on Facebook. This Facebook post included a researcher-provided cover page providing a brief synopsis of the study, a disclaimer about participation, and details regarding an opportunity for compensation (i.e. all participants electing inclusion will be entered into a lottery for one of ten $25 gift cards awarded electronically via email). The Facebook post also contained researcher and IRB contact information, and a link to the online Qualtrics survey. These advertisements were posted on the page of Facebook line dance groups and users over the age of 17 years, who listed their location as United States. The advertisement included an image of a person dancing and invited people to "Go to complete the Line Dance Survey". If the Facebook users clicked on the advertisement image, they were taken to a Qualtrics survey containing an online consent form, demographic questions, and then on to complete the PALMS. The questionnaires were administered in a single session online. Because

a number of line dancers belong to a class or a group, participants were asked to answer all questionnaires individually and without time limit.

When participants completed the survey online, subjects were asked to provide an email address in order to be entered to the gift card lottery upon full completion of the questionnaire. These email addresses were excluded from the general data set used for analysis, and were copied into a separate, password-protected spreadsheet. Selection of those who received gift cards was conducted by assigning numbers to each of the email addresses and using a random number generator with a pre-defined range matching the number of the email addresses.

Participants

The initial sample data included ratings for 746 line dancers. For the purposes of this study, we selected a final sample based on the following inclusion criteria. Line dancers were included in the study if they: (1) participated in or taught a line dance class, participated or taught at a line dance workshop, or used Facebook or YouTube to learn new line dances, (2) belonged to the age cohorts between 18 and 85 inclusive, (3) lived within the United States, and (4) were able to complete the survey in English. The final sample included 705 adult line dancers from across the United States: Midwest (26.3%), Northeast (11.5%), South (46.2%), and West (16%). Slightly more than half of the line dancers were African American (57%), with the rest of the participants identifying as White (37.9%), multi-ethnic (2.3%), Asian (1.4%), Hispanic/Latino (1.1%), and American Indian/Alaska Native (0.3%). Most of the participants were women (89.1%) with 10.4% men and 0.5% transgendered women. Approximately 47% of the participants indicated that they line dance more than 5 hours per week, 35% line dance 3 - 4 hours per week, 14% line dance 1 - 2 hours per week, and 4% line dance less than an hour per week. More than half of the participants primarily enjoy Soul line dancing (61%), with the

remaining indicating that they enjoy Country Western line dancing (25.5%), Progressive line dancing (12.9%), and Latin line dancing (0.6%). While 68.5% of the sample revealed that they were in good health, 28.4% stated that they were mildly physically impaired and 3.1% indicated that they were moderately physically impaired. Approximately 82.8% of the line dance participants had been line dancing for 5 years or more.

Survey Content/Instrument

Demographics. Individuals began the survey with important demographic questions about their age, gender, ethnicity, residence, income, past or current health/medical issues, highest educational level, marital status, dance level, sexual orientation, exercise frequency, years of line dancing, and intent to continue. The questionnaire described as follows: *The purpose of this survey is to examine different aspects of physical activity among U.S. adult line dancers*, and participants were not be given any indication the survey would include questions about their motives for exercise participation in line dancing. A direct question asked if the participant was currently participating in a line dance class or currently learning line dances from social media (YOUTUBE/Facebook), had previously participated in a line dance class or previously learned line dances from social media (YOUTUBE/Facebook) but no longer currently participate or watch, or no longer currently participate in a line dance class or learn line dances from social media/never participated in a line dance class in person or learned a line dance from social media (YOUTUBE/Facebook). After indicating that they were (not) actively participating in a line dance class (or via YOUTUBE/Facebook) at the time of completing this questionnaire, participants were asked a series of questions about their current exercise participation motives. In recognition that some individuals might have been participating in more than one exercise activity, participants were asked to report information only on their line dancing. Individuals also

were asked to report the length of time they have been line dancing (in years) as well as rate their line dance frequency within the last six months (prior to the COVID-19 pandemic as well as during the COVID-19 pandemic) using a seven-point scale (where 0 = no physical/exercise per week, 1 = 1 hour or less per week, 2 = between 1 hour and 2 hours per week, 3 = between 2 hours and 3 hours per week, 4 = between 3 hours and 4 hours per week, 5 = between 4 hours and 5 hours per week, and 6 = more than 5 hours per week).

Physical Activity and Leisure Motivation Scale. This study used Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004) to analyze exercise participation motives. The scale consisted of 40 items measuring 8 dimensions of exercise motives. All motivation items were rated on a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The range of each PALMS subscale were 5 to 25 because each subscale has five items. The questionnaire in the current study had individual item stem of "I participate in line dancing …." Specifically, the dimensions: Enjoyment (e.g., because it's interesting, because it makes me happy, because it's fun, because I enjoy exercising, and because I have a good time), Mastery (e.g., to get better at main exercise activity, to improve existing skills, to obtain new skills/activities, to do my personal best, and to keep current skill levels), Competition/Ego (e.g., because I perform better than others, to be best in the group, to work harder than others, to compete with others around me, and to be fitter than others), Affiliation (e.g., to do activity with others, to do something in common with friends, because I enjoy spending time with others, to be with friends, and to talk with friends exercising), Appearance (e.g., to define muscle/look better, to improve body shape, to improve appearance, to lose weight/look better, and to maintain trim, toned body), Physical Condition (e.g., be physically fit, to maintain physical health, because it keeps me healthy, to improve cardiovascular fitness, and because it helps maintain a

healthy body), and Psychological Condition (e.g., to take mind off other things, because it acts as a stress release, to better cope with stress, because it helps me relax, and to get away from pressures), and Others' Expectations (e.g., to earn a living, because I get paid to do it, to manage medical condition, because people tell me I need to, and because it was prescribed by doctor). Based on Self-Determination Theory, Morris and Rogers (2004) categorized the 8 motives as either intrinsic (mastery and enjoyment subscales) or extrinsic (psychological condition, physical condition, appearance, others' expectations, affiliation, and competition/ego).

The PALMS has already been validated in previous studies. Filippos (2016) administered the PALMS to a sample of 249 Greek folk dancers and 141 Greek non-folk dancers. The overall score for the PALMS demonstrated good internal consistency with a Cronbach's alpha (α) of 0.88 for the entire questionnaire. The α values for the PALMS subscales ranged from .89 to .95: .93 (competition/ego), .90 (appearance), .93 (others' expectations), .91 (affiliation), .95 (physical condition), .94 (psychological condition), .90 (mastery), and .89 (enjoyment). Molanorouzi et al. (2014) distributed the PALMS to a sample of 502 Malaysian voluntary participants, aged 18 to 67 years, who engaged in regular exercise. Cronbach's alpha coefficient ($\alpha = 0.79$) indicated good internal consistency for the overall measure. Internal consistency for the PALMS subscales was sound, ranging from 0.78 to 0.82. The PALMS was also validated with a sample of 678 recreational exercise participants, aged 9 to 89 years, who engaged in regular exercise (Zach et al., 2012) from over 30 different fitness and recreational facilities in Israel. The α values for each of the eight sub-scales of PALMS ranged from .63 to .96: .96 (competition/ego), .90 (appearance), .83 (family's and friends' expectations), .63 (health professionals' and employers' expectations), .91 (affiliation), .84 (physical condition), .90 (psychological condition), .84 (mastery), and .89 (enjoyment). In a community sample of 202

volunteer participants, 120 male and 82 female participants, aged 18 to 71 years, were recruited from Australian Football League (AFL), gym-based exercise, Taekwondo, tennis, and yoga. The overall score for the PALMS demonstrated good internal consistency with a Cronbach's alpha (α) of 0.79 (Chowdhury, 2018). The α values for the PALMS subscales ranged from .80 to .99. The PALMS was also validated in a sample of 306 Greek exercise participants (Zervou et al., 2017) in the context of recreation and leisure, age ranged from 18 to 70 years. The Cronbach alpha reliability coefficient value was .82 for the Greek population. Specifically, the Cronbach alpha value was .88 for competition/ego, .83 for appearance, .61 for others' expectation, .91 for affiliation, .81 for physical condition, .87 for psychological condition, .87 for mastery, and .85 for enjoyment.

Response validity items. Validity items were embedded throughout the survey, ("Please select *Agree* as the response to this item"). Participants were automatically excluded if they did not correctly respond to the validity items.

Data Analysis

Data was screened for missing values prior to the analysis. A preliminary analysis included an examination of descriptive statistics (frequencies, histograms/distributions, and boxplots) for outliers and scale reliability metrics using IBM SPSS Statistics 26. A confirmatory factor analysis (CFA) was conducted to obtain factor scores to serve as mixture indicators.

To address the first research question, a CFA was conducted in Mplus to confirm the appropriateness of the 8-factor structure fit for PALMS since the PALMS has not been used in research in the United States. The maximum likelihood (ML) estimator was the common estimator used in CFA, to estimate the fit of the model with the unbiased standardized estimates of path coefficients. However, the data must meet the assumption of multivariate normality in

order to use the ML estimator. Because the data were non-normal, an alternative estimator, such as MLM (known as Satorra-Bentler chi-square) was used. The MLM estimator is robust to non-normality and it estimates with standard errors and a mean-adjusted chi-square test statistic (Muthen & Muthen, 1998/2012). The initial hypothesized measurement model was developed and tested in CFA. The initial hypothesized measurement model consisted of 8 latent variables (subscales of PALMS) and 40 observed variables (items in PALMS). Factor loadings of .40 and above, with significant p-value and modification index was used as a guide to retain or remove the items from the measurement model (Ford, MacCallum, & Tait, 1986; Wang & Wang, 2012). Evaluation of fitness was carried out each time the model was re-specified or when there was removal of a problematic item. Multiple fit indices was used in determining whether to reject or retain a model (Hu & Bentler, 1999; Hooper, Coughlan, & Mullen, 2008). Based on the 8-factor structure and 40 items measurement model in the present study, the fit indices that were used in this study and the recommended fit values were: (minimum discrepancy (CMin or χ^2), degrees of freedom (DF), minimum discrepancy divided by the degrees of freedom (CMIN/DF ratio), the comparative fit index (CFI) and Normed Fit Index (NFI) with the desired value of more than .90, the root mean square error of approximation (RMSEA) with the desired value of less than .07, and the standardized root mean square (SRMR) with the desired value of less than .08 (Hu & Bentler, 1999; Hooper, Coughlan, & Mullen, 2008).

After the best fit measurement model was identified, the eight factors were assessed for construct validity, which measures the extent to which the set of items actually reflects the theoretical construct that the items are designed to measure (Hair et al., 2010). Construct validity in CFA includes two components: convergent and discriminant validity. According to Hair et al., convergent validity assesses whether the items that belong to the same factor shared a high

proportion of variance in common. Convergent validity was assessed using composite reliability (CR) and average variance extracted (AVE). CR calculated by Raykov's method was applied to measure the reliability of the scale (Raykov & Marcoulides, 2015). CR has been recommended as a reliability test in the CFA measurement model instead of Cronbach's alpha (Wang & Wang, 2012). This is because Cronbach's alpha always underestimates the scale reliability when measurement errors of the observed variables are uncorrelated (Raykov, 2001). The minimum acceptable range of CR is .60 and above (Tseng, Dornyei, & Schmitt, 2006) and AVE is .50 and above (Fornell & Larcker, 1981). Discriminant validity was used to examine the extent to which one factor is distinct from the other factors (Kline, 2011). Discriminant validity was checked by inspecting the correlation between the factors in the model. Brown (2006) stated that if the correlation coefficients between factors are not too high ≤ .85, then discriminant validity can be established.

To address the second research question, latent profile analysis identified motivation profiles based on the PALMS factor scores of 8 exercise motives (enjoyment, mastery, competition/ego, affiliation, appearance, physical condition, psychological condition, and others' expectations). Latent profile analyses were conducted using Mplus 8 with Yuan-Bentler (2000) correction to the test statistic and sandwich estimator standard errors that were robust to non-normality, operationalized as the MLR estimator in Mplus (Muthén & Muthén, 1998–2017). Models including one to *eight* profiles were freely estimated with ***5,000*** random sets of start values, ***100*** iterations per random start, and the *200* best solutions retained for final stage optimization. To identify the optimal number of motivation profiles, a series of statistical indicators were used including, Bayesian information criteria (BIC) (Schwartz, 1978), sample-size adjusted BIC (SABIC) (Sclove, 1987), adjusted Lo-Mendell- Rubin (2001) likelihood ratio

test (aLMR), bootstrap likelihood ratio test (BLRT) (McCutcheon, 1987; McLachland & Peel, 2000), and entropy (Geiser, 2013; Morin & Wang, 2016). Lower values on BIC and SABIC indicate better model fit. The aLMR (Lo-Mendell- Rubin, 2001) test and BLRT (McCutcheon, 1987; McLachland & Peel, 2000) were hypothesis tests used to compare the model with k profiles with a model with *k* -1 profile(s). A significant result indicated the k profile model is superior to the *k* - 1 profile model. A higher entropy suggested a more accurate classification, ranging from 0 to 1.

To address the third research question and examine relations between demographic information and motivation profiles, the most likely membership of class (outcome) was regressed on demographic information accounting for classification error in a categorical latent variable multinomial logistic regression (Asparouhov & Muthén, 2014) in Mplus. The predictors included age, gender, whether line dancer is African American or not, whether a line dancer has a health condition or not, etc…. For the statistical analysis, age was treated as a continuous variable, and gender, underrepresented minority, and the health condition will be dummy-coded predictors (i.e., male = 1, female = 0; African American = 1, other races = 0; health condition = 1, no health condition = 0).

Chapter 4. Results

In the first section of this chapter, the preliminary and descriptive analyses of the line dance data are provided. Next, the results of the CFA are reported. The CFA was conducted to test the factor structure of the PALMS. Then the internal consistency and criterion validity of the PALMS are reported. In the second section of this chapter, latent profile models were fit to the data. Information criteria, entropy, and likelihood ratio tests were used to determine the best-fitting model. In the last section of this chapter, a multinomial logistic regression was performed to determine which demographic characteristics predict line dance profile membership.

Preliminary and Descriptive Analyses

Prior to conducting a CFA on the PALMS, the data from 746 participants were screened for normality, multivariate outliers, and missing data in SPSS version 26 according to procedures described by Tabachnick and Fidell (2013). Descriptive statistics (including mean, standard deviation, ranges, skewness, and kurtosis) for all survey items of the PALMS are presented in Table 1. The survey items were generally normally distributed with several items presenting significant skewness and kurtosis as outlined by Kline (2011), who states that the absolute value of skewness greater than 3 and kurtosis value greater than ten may indicate a problem and values above 20 may indicate a more serious problem. The absolute values of skewness and kurtosis of the PALMS items are mostly within the acceptable range of less than 3 and less than 10, respectively, except 5 items. Significant skewness and kurtosis were found for item 6 (*To obtain skills/activities*), item 12 (*because it is interesting*), item 21 (*because it makes me happ*y), item 34 (*to improve cardiovascular fitness*), and item 38 (*because I have a good time*). However, MLM (maximum likelihood mean-adjusted) estimator is robust to non-normality and, therefore, no transformations were made to these items.

Table 1. Descriptive Information for PALMS Items

Observed Variables	Item Context	N	Mean (SD)	Min	Max	Skewness	Kurtosis
Item 1	To do something in common with friends	701	3.96 (1.28)	1	5	-1.19	0.321
Item 2	Because people tell me I need to	696	1.47 (1.00)	1	5	2.10	3.55
Item 3	Because it acts as a stress release	700	4.40 (1.00)	1	5	-2.11	4.18
Item 4	To improve body shape	701	3.94 (1.08)	1	5	-1.08	0.741
Item 5	To obtain new skills/ activities	704	4.32 (0.94)	1	5	-1.75	3.16
Item 6	Because it's fun	703	4.84 (0.72)	1	5	**-4.80**	**22.14**
Item 7	Because it was prescribed by doctor, physician	703	1.66 (1.11)	1	5	1.45	0.96
Item 8	To work harder than others	704	1.79 (1.10)	1	5	0.99	-0.25
Item 9	Because it keeps me healthy	704	4.40 (0.90)	1	5	-1.98	4.35
Item 10	To compete with others around me	705	1.75 (1.11)	1	5	1.21	0.32
Item 11	Because it helps me relax	704	4.44 (0.89)	1	5	-2.04	4.54
Item 12	Because it is interesting	704	4.67 (0.74)	1	5	**-3.13**	**11.34**
Item 13	Because I enjoy spending time with others	704	4.54 (0.81)	1	5	-2.37	6.54
Item 14	To get better at line dancing	702	4.44 (0.93)	1	5	-2.04	4.22
Item 15	Because I perform better than others	705	2.10 (1.20)	1	5	0.59	-0.80
Item 16	Because I get paid to do it	702	1.48 (1.02)	1	5	2.03	3.02
Item 17	To do line dancing with others	703	4.43 (0.88)	1	5	-2.03	4.64
Item 18	To better cope with stress	703	4.05 (1.09)	1	5	-1.19	0.90
Item 19	Because it helps maintain a healthy body	701	4.37 (0.89)	1	5	-1.83	3.82
Item 20	To define muscle, look better	703	3.41 (1.20)	1	5	-0.49	-0.47

Table 1. (Continued)

Observed Variables	Item Context	N	Mean (SD)	Min	Max	Skewness	Kurtosis
Item 21	Because it makes me happy	705	4.77 (0.71)	1	5	**-4.09**	**17.87**
Item 22	Be physically fit	704	4.26 (0.91)	1	5	-1.58	2.86
Item 23	To get away from pressures	703	4.05 (1.09)	1	5	-1.20	0.96
Item 24	To maintain physical health	703	4.35 (0.86)	1	5	-1.78	3.90
Item 25	To earn a living	703	1.51 (1.02)	1	5	1.87	2.50
Item 26	To improve existing skills	705	4.08 (1.08)	1	5	-1.33	1.34
Item 27	To be the best in the group	704	1.89 (1.13)	1	5	0.87	-0.44
Item 28	To manage medical condition	704	2.58 (1.44)	1	5	0.21	-1.37
Item 29	To do my personal best	704	4.05 (1.13)	1	5	-1.23	0.90
Item 30	To maintain trim, tone body	705	3.69 (1.13)	1	5	-0.80	0.10
Item 31	To talk with friends who line dance	704	4.14 (0.98)	1	5	-1.38	1.92
Item 32	To keep current skill level	705	4.30 (0.89)	1	5	-1.55	2.82
Item 33	To improve appearance	703	3.57 (1.14)	1	5	-0.66	-0.12
Item 34	To improve cardiovascular fitness	702	4.28 (0.94)	1	5	-1.75	3.34
Item 35	Because I enjoy line dancing	699	4.87 (0.59)	1	5	**-5.62**	**33.35**
Item 36	To take mind off other things	703	4.23 (1.04)	1	5	-1.50	1.89
Item 37	To lose weight, look better	701	3.83 (1.08)	1	5	-0.99	0.64
Item 38	Because I have a good time	702	4.95 (0.60)	1	5	**-5.22**	**28.92**
Item 39	To be with friends	702	4.45 (0.88)	1	5	-2.05	4.65
Item 40	To be fitter than others	673	2.21 (1.14)	1	5	0.36	-0.90

Mardia (1970) multivariate tests were used to check the multivariate normality assumption. The assumption of multivariate normality was not met based upon Mardia (1970) multivariate skewness and kurtosis tests of fit ($p < .001$). However, when the data are non-normal, an alternative estimator, such as MLM (known as Satorra-Bentler chi-square) can used. The MLM estimator is robust to non-normality and it estimates with standard errors and a mean adjusted chi-square test statistic (Muthen & Muthen, 1998, 2012). Therefore, the MLM estimator will be used in the analysis. The data was screened for multivariate outliers. Because 25 participants did not provide answers to the PALMS items and 16 participants did not answer pertinent demographic questions, 41 participants were removed from subsequent analysis. The final sample consisted of 705 participants.

Confirmatory Factor Analysis

A confirmatory factor analysis was carried out through Mplus version 7 on the eight subscales of the PALMS: Affiliation, Others' Expectations, Psychological Condition, Appearance, Mastery, Enjoyment, Physical Condition, and Competition/Ego. The hypothesized measurement model for PALMS consisting of 8 factors with 40 items, which is 5 items in each factor (Model 1), did result in a good fit to the data based on the several fit indices (see Model 1, Table 2). The fit indices were mixed in terms of being within acceptable values.

Table 2. PALMS Model Fit Results for Line Dancing

Path Models	N	CMIN	DF	CMIN/DF	RMSEA (90% CI)	NFI	CFI	SRMR
Model 1	705	1951.312	712	2.74	.051 (.048, .054)	.884	.873	.067
Model 2	705	1951.312	712	2.74	.051 (.048, .054)	.884	.873	.067

The NFI (Normed Fit Index) and CFI (Comparative Fit Index) for the present study were found to be lower than the acceptable criteria (Hu & Bentler, 1999), suggesting that the hypothesized model does not represent a good fit to the data.

The RMSEA (Root Mean Square Error of Approximation) value for the hypothesized model in the present study is 0.051, with 90% confidence interval ranging from 0.048 to 0.054. These values indicate a close model fit and the narrow CI shows a good degree of precision (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996; Steiger, 1990).

The SRMR (Standardized Root Mean Residual) value for the hypothesized model in the present study was found to be 0.067. This value indicates a close model fit for the line dance data (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999).

The hypothesized model produced a significant chi-square (Hu & Bentler, 1999). The CMIN/DF or χ^2/df ratio for this study was found to be 2.74, indicating an acceptable fit (Kline, 2005; Marsh & Hocevar, 1985).

While the fit indices in Model 1 (see Table 3) suggested an acceptable fit, an examination of the CFA results suggested some modifications to the path model. Model 1 contained several non-significant correlations (Affiliation and Competition, Others' Expectations and Psychological Condition, Others' Expectations and Mastery, Others' Expectations and Physical Condition, and Competition and Physical Condition). In an attempt to improve the model fitness, these non-significant correlations were removed in Model 2. Similar results were found in Model 2 when the fit indices were reexamined.

Since the values for three out of the four indices were in the acceptable range and RMSEA and SRMR are more important than NFI and CFI, the 8-factor model with 40 items of the PALMS was considered a good fit for the line dance data. Overall, the results from the present study lend support to the validation of the PALMS. The fit indices and factor loadings

Table 3. Standardized Factor Loadings for Model 1 and Model 2

		Factor Loadings	
Subscale and Items	**Item: I like line dancing…**	**Model 1**	**Model 2**
Enjoyment			
Item 6	because it is fun.	.721	.726
Item 12	because it is interesting.	.637	.633
Item 21	because it makes me happy.	.733	.730
Item 35	because I enjoy line dancing.	.911	.911
Item 38	because I have a good time.	.880	.879
Psychological Condition			
Item 3	because it acts as a stress release.	.633	.633
Item 11	because it helps me relax.	.739	.738
Item 18	to better cope with stress.	.793	.794
Item 23	to get away from pressures.	.752	.755
Item 36	to take mind off other things.	.740	.740
Mastery			
Item 5	to obtain new skills/activities.	.621	.616
Item 14	to get better at line dancing.	.680	.679
Item 26	to improve existing skills.	.698	.695
Item 29	to do my personal best.	.636	.638
Item 33	to keep current skill level.	.759	.762
Competition/Ego			
Item 8	to work harder than others.	.626	.625
Item 10	to compete with others around me.	.706	.705
Item 15	because I perform better than	.748	.751
Item 27	to be the best in the group.	.791	.791
Item 40	to be fitter than others.	.639	.641
Affiliation			
Item 1	to do something in common with	.528	.530
Item 13	because I enjoy spending time with	.787	.786
Item 17	to do line dancing with others.	.687	.685
Item 31	to talk with friends who line dance.	.736	.744
Item 39	to be with friends.	.815	.816
Physical Condition			
Item 9	because it keeps me healthy.	.759	.758
Item 19	because it helps maintain a healthy	.860	.860
Item 22	be physically fit.	.850	.850
Item 24	to maintain physical health.	.887	.886
Item 34	to improve cardiovascular fitness.	.727	.725
Appearance			
Item 4	to improve body shape.	.665	.665
Item 20	to define muscle, look better.	.770	.768
Item 30	to maintain trim, tone body.	.817	.815
Item 33	to improve appearance.	.775	.781

Table 3. (Continued)

Subscale and Items	Item: I like line dancing…	Factor Loadings	
		Model 1	Model 2
Item 37	to lose weight, look better.	.756	.756
Others' Expectations			
Item 2	because people tell me I need to.	.302	.301
Item 7	because it was prescribed by	.402	.401
Item 16	because I get paid to do it.	.768	.768
Item 25	to earn a living.	.796	.795
Item 28	to manage medical condition.	.291	.291

indicate that the PALMS has sound psychometric properties. It can be concluded that future research on participation motivation can use PALMS to examine and study people's motives for engaging in line dancing as a LTPA (leisure-time physical activity).

Subscale and Item Analysis

Internal consistency. Reliability was assessed in the form of internal consistency, using Cronbach's alpha coefficient, obtained in SPSS version 26 (see Table 4). The entire PALMS instrument demonstrated excellent internal consistency with a Cronbach alpha (α) of .91. The alpha values for each of the subscales ranged between .63 and .91, with seven reaching the 0.80 threshold for acceptable values. The lowest internal consistency was for the Others' Expectations subscale (alpha = .63); however, if item 28 (*to manage medical condition*) were removed, the internal consistency would increase to 0.64.

Table 4. PALMS Subscale Statistics

Subscale	Mean (SD)	Alpha	If item deleted Alpha range	CR	AVE
Enjoyment	4.81 (0.08)	0.87	0.82 - 0.87	0.885	0.611
Psychological Condition	4.24 (0.18)	0.85	0.79 - 0.84	0.853	0.540
Mastery	4.24 (0.17)	0.81	0.75 - 0.80	0.810	0.462
Competition/Ego	1.94 (0.20)	0.83	0.77 - 0.81	0.829	0.494
Affiliation	4.31 (0.24)	0.81	0.75 - 0.84	0.840	0.516
Physical Condition	4.31 (0.06)	0.91	0.87 - 0.91	0.910	0.670
Appearance	3.69 (0.21)	0.87	0.82 - 0.86	0.870	0.570
Others' Expectations	1.74 (0.47)	0.63	0.53 - 0.64	0.655	0.311

Note. $n = 705$.

Correlations among and within Subscales. In addition, Table 5 presents correlations among the subscales. Correlations among the subscales were expected because all of the subscales measure the same theoretical construct, motivation for physical activity; however, because each subscale measured a different characteristic, the correlations were not predicted to be too high. As expected, in most cases correlations among the subscales were significant and small to moderate in size, ranging from -.28 to .69. While most of the correlations were positive in nature, there were several correlations involving Others' Expectations approaching zero. With regard to inter-item correlations, all subscales had inter-item correlations in the acceptable range of .30 to .80, except Others' Expectations subscale. The inter-item correlation for Others' Expectations ranged from .12 to .67, which means that the responses to the items within the subscale are not correlated with the other items within the Others' Expectations subscale and may need to be removed.

Table 5. Correlations and Inter-Item Correlations for the PALMS Questionnaire Subscales

	Subscale Correlations								Range of Inter-Item Correlations
	1	2	3	4	5	6	7	8	
1	1								.48 - .79
2	.524**	1							.43 - .65
3	.596**	.453**	1						.37 - .46
4	-.109**	.080*	.151**	1					.56 - .78
5	.617**	.418**	.587**	.022	1				.35 - .63
6	.566**	.479**	.564**	.033	.416**	1			.41 - .61
7	.333**	.411**	.496**	.232**	.298**	.687**	1		.49 - .66
8	-.277**	.060	-.027	.433**	-.113**	.039	.201**	1	.12 - .67

Note: n = 705. 1 = Enjoyment; 2 = Psychological Condition; 3 = Mastery; 4 = Competition/Ego; 5 = Affiliation 6 = Physical Condition; 7 = Appearance; 8 = Others' Expectations; ** = $p < .01$, * = $p < .05$.

Convergent and discriminant validity. The Composite Reliability (CR) and Average Variance Extracted (AVE) were computed for each subscale using Mplus version 7 and Excel (see Table 4). CR values ranged from .725 to .948, which indicated a moderate to excellent construct reliability. The AVE of each subscale ranged from .311 to .670. Although the AVE values for Affiliation, Others' Expectations, Mastery, and Enjoyment subscales were below the recommended value of .50, the CR were above the recommended value of .60, so we can conclude that the convergent validity of the construct is adequate (Fornell & Larcker, 1981).

As previously mentioned in the correlation section, only five factor pairs of the 28 subscale correlations were not significant (Others' Expectations with Competition/Ego, Affiliation with Competition/Ego, Others' Expectations with Psychological Condition, Others' Expectations with Mastery, and Competition/Ego with Physical Condition. All correlations were below the recommended value of .85, which indicated good discriminant validity.

Latent Profile Analysis

Latent Profile Analysis was performed using Mplus version 7. Multiple criteria were used to evaluate the models, but the criteria did not provide a clear solution. First, the BIC and SABIC decreased as the number of profiles increased, but only marginally from more than four profiles. The proportional reduction in BIC started to level off when moving from 4 to 5 profiles and beyond. In other words, the relative improvement in model fit from adding a profile diminished considerably after 4 profiles. Additionally, the p-values of the aLMR for k versus k – 1 groups were also significant as additional profiles were added, except for four-profile solution and eight-profile solution. In other words, the four-profile solution is not significantly better than the three-profile solution and the eight-profile solution was not better than the seven-profile solution. However, one profile of the seven-latent-profile solution included less than 1% of the total sample, which is not very meaningful (Nylund et al., 2007). Thus, the three-latent-profile model would be a better solution based on the rule of parsimony (Feldman, Masyn, & Conger, 2009). In addition, the entropy of the three-profile solution (entropy = .87) was slightly better than that of the seven-profile solution (entropy = .86), and the three-latent-profile solution demonstrated that a very high proportion of the individuals were correctly classified (profile 1 = 1.00, profile 2 = .89, and profile 3 = .95 for average latent class probabilities for the most likely latent class memberships). Nevertheless, by analyzing the classes, the three-profile model made it possible to draw up a very interesting global categorization: extrinsically motivated line dancers, moderately intrinsically motivated line dancers, and highly intrinsically motivated line dancers. Taken together, the three-latent-profile model was selected to represent the data most adequately, according to various fit indices and the class membership percentage. Table 6 displays the information utilized to determine that a 3-class option was the best suited for these data.

Table 6. Goodness of Fit Statistics for Latent Profile Analysis

Classes	Log Likelihood	BIC	SABIC	Entropy	aLMR, p-value	BLRT, p-value	n for each class
1	-6459.29	13023.51	12972.71	-	-	-	$c_1 = 705$
2	-5611.55	11387.06	11307.68	1	<.001	<.001	$c_1 = 691$, $c_2 = 14$
3	-5231.62	10686.22	10578.26	0.870	0.0002	<.001	$c_1 = 13$, $c_2 = 202$, $c_3 = 490$
4	-4995.11	10272.22	10135.68	0.878	0.3506	<.001	$c_1 = 12$, $c_2 = 198$, $c_3 = 54$, $c_4 = 441$
5	-4848.72	10038.64	9873.52	0.900	0.0225	<.001	$c_1 = 8$, $c_2 = 12$, $c_3 = 54$, $c_4 = 442$, $c_5 = 189$
6	-4736.29	9872.63	9678.94	0.895	0.0399	<.001	$c_1 = 12$, $c_2 = 240$, $c_3 = 55$, $c_4 = 8$, $c_5 = 26$, $c_6 = 364$
7	-4653.90	9766.87	9544.61	0.857	0.0109	<.001	$c_1 = 12$, $c_2 = 24$, $c_3 = 54$, $c_4 = 8$, $c_5 = 301$, $c_6 = 208$, $c_7 = 98$
8	-4583.34	9687.78	9433.94	0.861	0.6476	<.001	$c_1 = 24$, $c_2 = 12$, $c_3 = 285$, $c_4 = 57$, $c_5 = 8$, $c_6 = 179$, $c_7 = 102$, $c_8 = 38$

1 = Enjoyment; 2 = Psychological Condition; 3 = Mastery; 4 = Competition; 5 = Affiliation; 6 = Physical Condition; 7 = Appearance; 8 = Others' Expectations

Profile 1 was labelled as the *"extrinsically motivated"* line dance group and was characterized by high others' expectations, moderate competition/ego, psychological condition and appearance, and low mastery, enjoyment, affiliation and physical condition. This profile contains 13 line dancers which accounted for approximately 2% of the sample. Next, profile 2 was labelled as the *"moderately intrinsically motivated"* line dance group and was characterized by high affiliation, psychological condition, mastery, enjoyment and physical condition, moderate appearance, and low others' expectations and competition/ego group. This profile contains 202 line dancers which accounted for approximately 29% of the total sample. Last, Profile 3 was labelled as the *"highly intrinsically motivated"* line dance group and was characterized by high affiliation, psychological condition, mastery, enjoyment, physical condition and appearance, and moderate others' expectations and competition/ego. This profile is comprised of 490 line dancers which accounted for approximately 69% of the sample.

Figure 2 demonstrates the observable difference in response profiles via subscale means. Profile 3 (Highly Intrinsically Motivated) had the highest mean Affiliation, Psychological Condition, Appearance, Mastery, Enjoyment, and Physical Condition scores than the other two profiles, whereas Profile 1 (Extrinsically Motivated) had the lowest mean Affiliation, Psychological Condition, Appearance, Mastery, Enjoyment, and Physical Condition scores. Profile 1 had the highest mean Others' Expectations and Competition/Ego mean scores than Profile 2 (Moderately Intrinsically Motivated) and Profile 3 (Highly Intrinsically Motivated). Profile 2 had the lowest mean Others' Expectations and Competition/Ego scores than Profile 1 and Profile 3.

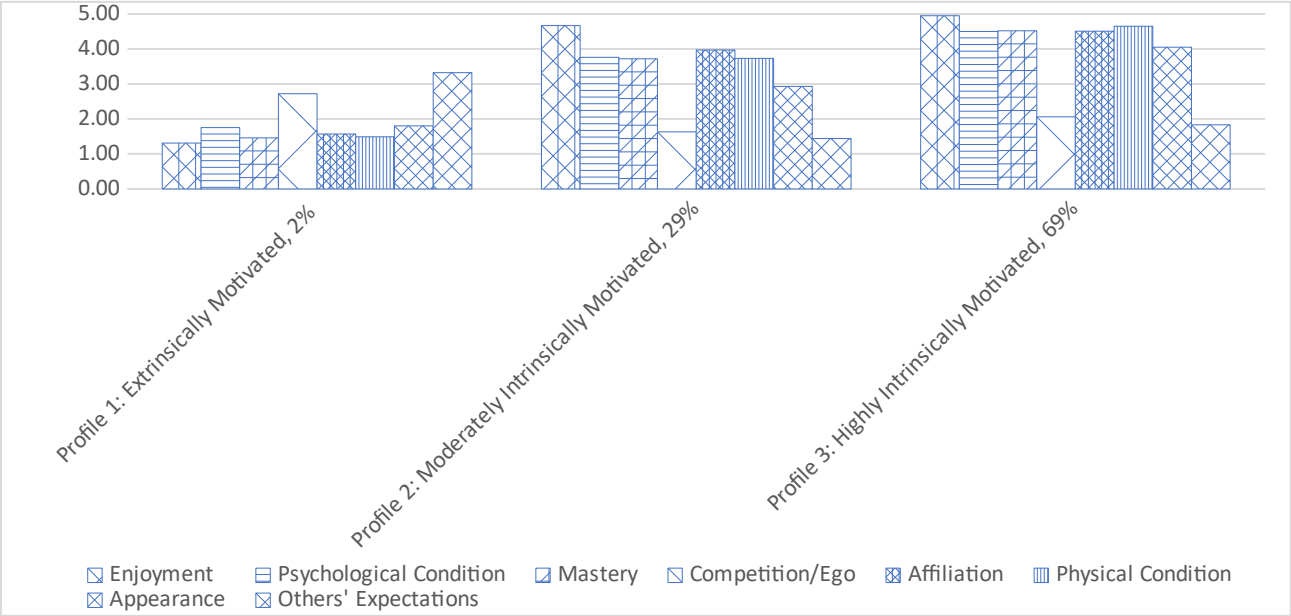

Figure 2. Latent profiles of U. S. adults' motivation to participate in line dancing

Multinomial Logistic Regression

To determine which demographic characteristics of participants predict line dance profile membership, a multinomial logistic regression was performed using Mplus version 7 between the demographic variables (age, gender, whether a line dancer was African-American, and whether a line dancer has a health condition) and the dependent variable of profile membership, which consists of three groups (Highly Intrinsically Motivated, Moderately Intrinsically Motivated, and Extrinsically Motivated). The model Chi-square test indicated that was no difference between the final model which contains the full set of predictors (age, gender, health condition, and whether the line dancer was African American) and the null model; that is, based upon the likelihood ratio test, the model containing the full set of predictors does not represent a significant improvement over the null model. Therefore, the final model was not a good fit for the data, [χ^2 (12) = 14.36, p = .278]. The Pearson Goodness of Fit tests indicated that the model

was statistically significant and that the model is not a good fit for the data, [χ^2 (48) = 65.55, p = .047]. A significant test result for Pearson Goodness of Fit is an indicator that the final model does not fit the data well. However, the Deviance Goodness of Fit test indicated that the model was not statistically significant and that the model is a good fit for the data, [χ^2 (48) = 54.25, p = .248]. A non-significant test result for Deviance Goodness of Fit is an indicator that the final model fits the data well. Nevertheless, this suggests that that the existence of a relationship between age, gender, health condition, and whether the line dancer is African-American and the dependent variable profile membership was supported.

The likelihood ratio test evaluates the overall contribution of each demographic variable to the model. As can be observed from Table 7. the demographic variables (age, health condition, and race) are not significantly associated with line dance motivation profile membership. Using the conventional alpha = .05 threshold, there is a statistically significant relationship between the independent variable gender and the dependent variable profile group (p = .043). The model parameter estimates are generated using the Highly Intrinsically Motivated profile as the reference category. The independent variable gender is not significant in distinguishing the Extrinsically Motivated profile group from the Highly Intrinsically Motivated profile group, but it is, however, significant in distinguishing the Moderately Intrinsically Motivated profile group from the Highly Intrinsically Motivated profile group. With the Highly Intrinsically Motivated profile group as a reference, the odds ratio (.528) indicates that women line dancers are 47.2% less likely to be in the Moderately Intrinsically Motivated profile group, holding age, health condition, and race constant (see Table 8).

Table 7. Likelihood Ratio Tests from Multinomial Regression

Effect	-2log Likelihood	Chi-Square	Df	p-value
Age	176.05	3.78	6	.71
Gender	186.69	6.42	2	.04
Health Condition	182.05	1.78	2	.41
African American	181.51	1.24	2	.54

Table 8. Multinomial Logistic Regression of Predictor Variables on Profile Membership

	Estimate	S. E.	Est./S.E.	p-value	Odds Ratio
High Intrinsic (ref.) v. Extrinsic					
Age 18-44	-0.81	1.12	-0.73	0.47	0.44
Age 45-54	-0.72	0.87	-0.82	0.41	0.49
Age 55-64	-0.07	0.66	-0.11	0.91	0.93
Gender	-0.77	0.80	-0.97	0.33	0.46
Health Condition	-0.6	0.57	-0.40	0.23	0.51
African American	-0.30	0.60	-0.50	0.62	0.74
High Intrinsic (ref.) v. Moderate					
Age 18-44	0.18	0.28	0.64	0.52	1.20
Age 45-54	0.29	0.24	1.21	0.21	1.34
Age 55-64	0.01	0.22	0.05	0.98	1.01
Gender	-0.64	0.26	-2.46	**0.01**	**0.53**
Health Condition	-0.13	0.18	-0.72	0.46	0.87
African American	-0.19	0.18	-1.06	0.30	0.83
Extrinsic (ref.) v. Moderate Intrinsic					
Age 18-44	0.99	1.13	0.88	0.38	2.70
Age 45-54	1.01	0.88	1.15	0.25	2.75
Age 55-64	0.08	0.67	0.12	0.91	1.08
Gender	0.13	0.80	0.16	0.87	1.14
Health Condition	0.55	0.58	0.95	0.35	1.73
African American	0.11	0.61	0.18	0.85	1.12

Note. For age, the reference group is age 65 and older.

Chapter 5. Discussion

The primary aim of the present study was to investigate whether the 8 factors (Enjoyment, Mastery, Competition/Ego, Affiliation, Other's Expectation, Physical Condition, Psychological Condition, and Appearance) from the 40–item self-determination theory-based measure (PALMS) were clearly identifiable constructs in a diverse sample of line dance participants within a population of the United States. In addition, the study examined whether homogeneous profiles of exercise motivation would emerge among the line dancers based on the PALMS factor scores of 8 exercise motives. Lastly, the study investigated whether any demographic characteristics of the line dance participants could predict line dance profile membership.

Assessment of Factor Structure and Scale and Item Performance

Overall, the final measurement model of PALMS with 40 items in the present study was found to have an acceptable fit to the sample of U.S. adult line dancers. The high standardized factor loadings for most of the PALMS items on the 8 subscales indicate strong item-to-construct correlations, with the exception of item 2 (*because people tell me I need to)*, item 7 (*because it was prescribed by my doctor)*, and item 28 (*to manage medical condition*) from the Others' Expectations subscale. Exhibiting low factor loadings, these three items were problematic and decreased the internal consistency of the Others' Expectations subscale when 79%, 70%, and 40% of the line dance participants responded with "strongly disagree" to each of these three items, respectively. The CFA result in the current study is consistent with two previous research studies. Chowdhury (2018) distributed the original version of PALMS with 40 items to 202 volunteer participants, aged 18 to 71 years, from various organizations, clubs, and leisure centers in Australia. Results of a confirmatory factor analysis (CFA) indicated that the PALMS had a

robust factor structure (CMIN/DF = 2.22; NFI = 0.95; CFI = 0.97; RMSEA = 0.078). The CFA result in the present study is also in line with Molanorouzi et al. (2014), who administered the PALMS to 502 Malaysian participants from a variety of physical activity categories, including individual sports, team sports, martial arts and exercise, aged 17 to 67 years. Their CFA yielded a good fit of the 8-factor structure of PALMS and all 40 items remaining in the final model (CMIN/DF = 2.82; NFI = 0.90; CFI = 0.91; RMSEA = 0.06). This CFA result in the present study is inconsistent with Kueh et al. (2017), who distributed the 40-item PALMS-Malay version to 634 university undergraduate students. They found that item 19 (*because it helps me maintain a healthy body*) and item 28 (*to manage medical condition*) had to be deleted and that the error terms for item 29 (*to do my personal best*) and item 32 (*to keep current skill level*) had to co-vary before an acceptable fit could be achieved (RMSEA = .04, CFI = 0.91, TLI = 0.90, SRMR = .05).

Internal Consistency of the PALMS. The PALMS total score and most subscale scores demonstrated excellent internal consistency with a Cronbach's alpha (α) above 0.80, with the exception of the Others' Expectations subscale (0.63). This finding is consistent with Zach, Bar-Eli, Morris and Moore (2012) who validated the PALMS with 678 recreational exercise participants, aged 9 to 89 years, who exercised regularly in Israel. They reported that the PALMS demonstrated good internal consistency for each of the subscales, ranging from 0.84 to 0.96, with the exception of the Others' Expectations subscale yielding a score of 0.63. This finding is inconsistent with Molanorouzi et al. (2014) who administered the PALMS to 502 Malaysian participants from a variety of physical activity categories, including individual sports, team sports, martial arts and exercise, aged 17 to 67 years and found that the internal consistency for the PALMS was sound, with Cronbach's alphas for the 8 subscales ranging from 0.78 to 0.82.

The Mastery and Competition/Ego, Enjoyment, and Others' Expectations yielded a subscale alpha values of 0.78, 0.79, and 0.82, respectively.

Construct Validity. After confirming the factor structure of PALMS, it was appropriate to assess the construct validity to determine whether the measured items actually reflect the theoretical factors in a construct. The two components of construct validity assessed in the present study were convergent and divergent validity of PALMS. The Average Variance Extracted (AVE) accounted for loading in the range of 0.31 to 0.67. Although the AVE for some factors were less than 0.50, the convergent validity of the construct was still acceptable (Fornell & Larcker, 1981; Huang, Wu, & Wang, 2013) since the Composite Reliability (CR) was higher than 0.60. CR ranged from 0.66 to 0.91, which were above the recommended value of 0.60 and indicated a moderate to excellent construct reliability as suggested by Tseng et al. (2006). Findings from this present study provide some support to a previous study (Kueh et al., 2017) which found that convergent validity of a Malay language version of the PALMS was adequate. The Malay study had CR values ranging from 0.65 to 0.85.

Because the correlations between the factors were below the recommended value of 0.85, the present study also provided strong evidence of discriminant validity. This result means that each of the 8 factors of the PALMS is unique and captures some phenomena that other factors do not. Most of the subscale correlations were significant with the exception of Psychological Condition with Others' Expectations, Mastery with Others' Expectations, Competition/Ego with Affiliation, Competition/Ego with Physical Condition, and Physical Condition with Others' Expectations. Findings from the present study provide some support to a previous study (Kueh et al.,2017) which found that divergent validity of a Malay language version of the PALMS was good. All subscale correlations for the Malay study were also below

the recommended value of 0.85. Most of the factor correlations in the Malay study were significant, except for Others' Expectations with Physical Condition, Others' Expectations with Psychological Condition, and Others' Expectations with Enjoyment.

Latent Profile Analysis

Overall, three distinct motivational profiles were identified for the line dance participants in the current study. The profiles that emerged were Extrinsically Motivated, Moderately Intrinsically Motivated, and Highly Intrinsically Motivated. The Highly Intrinsically Motivated profile was the largest group and comprised 69% of the sample. The participants in this profile had the highest scores on the Enjoyment, Psychological Condition, Mastery, Affiliation, Physical Condition, and Appearance subscales of the PALMS. The Moderately Intrinsically Motivated group accounted for 29% of the sample and had slightly lower PALMS scores than the Highly Intrinsically Motivated group on the Enjoyment, Psychological Condition, Mastery, Affiliation, Physical Condition, and Appearance subscales. The pattern of responses for the Highly Intrinsically Motivated and Moderately Intrinsically Motivated profile groups was similar in nature but were distinct enough for each to be in their own class. A difference in these two profiles is that the participants in the Highly Intrinsically Motivated profile group were more interested in line dancing for physical activity while the participants in the Moderately Intrinsically Motivated profile group were more interested in the social nature of line dancing. Nevertheless, the Highly Intrinsically Motivated and Moderately Intrinsically Motivated profile groups were at the mean for all behaviors, indicating that enjoying physical activity, developing ability, improving health, and exercising for better mental health do occur simultaneously. With high scores in enjoyment, psychological condition, affiliation, physical condition, and appearance, it is not surprising that the majority of the line dancers in the sample were classified

in either the Highly Intrinsically or the Moderately Intrinsically Motivated groups because other studies have found the following: *enjoyment* was a chief motive for physical activity for adults across multiple contexts such as Greek dancers (Filippos et al.,2016), Zumba programs in the U. S. (Krishnan et al., 2015; Razon et al., 2019), Iranian recreational exercise and professional sports programs (Zarei et al., 2016), and fitness centers in Israel (Zach et al., 2012); *psychological condition* was the second highest motive among Turkish university students (Sorol et al., 2017), *affiliation* was a top motive for PA for both Greek dancers and students in a P. E. classes (Filippos et al., 2016; Fonseca & Maia, 2001), *physical condition* was a chief motive for PA for adults across multiple contexts, such as Portuguese ballroom dancers (Gomes da Cruz et al., 2017), Zumba program in the U. S. (Krishnan et al., 2015; Razon et al., 2019), and fitness centers in Israel (Zach et al., 2012) and *appearance* was a top motive for PA for adults in the area of recreational exercise and professional sports programs in Iran (Zarei et al., 2016).

Containing only 2% of the line dance participants, the Extrinsically Motivated group had higher Competition/Ego and Others' Expectations participation exercise motivation scores but much lower Enjoyment, Psychological Condition, Mastery, Affiliation, Physical Condition, and Appearance scores, relative to both Highly Intrinsically Motivated and Moderately Intrinsically Motivated groups. It is unsurprising that the Extrinsically Motivated profile group, which consisted of only 13 line dance participants, had high Others' Expectations and Competition/Ego scores because previous studies found that *competition/ego* was one of the least endorsed exercise motives of adult exercisers in fitness centers, recreational parks, and facilities in Israel (Zach et al., 2012) and that *others' expectations* was the least endorsed exercise motive of adult exercisers across multiple contexts, such as Greek dancing (Filippos, 2016), fitness centers in

Israel (Zach et al., 2012), Iranian recreational exercise and professional sports programs (Zarei et al., 2016), and Turkish university students (Sorol et al., 2017).

Multinomial Logistic Regression

Health condition, age, and race did not distinguish profile membership. Gender, however, was the only useful predictor for distinguishing between groups on profile membership. Female line dancers were 46.8% less likely to be in the Moderately Intrinsically Motivated profile group than the Highly Intrinsically Motivated profile group. The Moderately Intrinsically Motivated profile group contained 15.4% men and 84.6 % women, whereas the Highly Intrinsically Motivated profile group consisted of 8.8% men and 91.2% women. This result suggests that men who line dance in the study were relatively more likely to report lower intrinsic motivation levels than women line dance participants; that is, women line dance participants were more likely to have the higher Mastery and Enjoyment scores than men.

It is not surprising that the current findings showed that there is some evidence that males and females rate motivation differently because previous studies have found differences in motivation for physical activity across gender. Previous studies have shown that females consistently rated *psychological condition* more highly than their male counterparts (Chowdhury, 2018; Molanorouzi et al., 2015; Zervou et al., 2017). Several past research studies found that males had a lower *appearance* motive than female counterparts (Chowdhury, 2018; Molanorouzi et al., 2015; Zervou et al., 2017). Chowdhury (2018) found that Austrian females had a significantly higher *mastery* motive than the males, whereas Molanorouzi et al., (2015) found that Malaysian males had a significantly higher *mastery* motive than Malaysian females.

Limitations

The current study has several limitations. Due to COVID-19, one limitation was the selection of the sample and the limited access the researcher had to the line dance participants. Though a multi-prong approach to collecting data from U. S. line dancers was planned, the participants in the present study could only be recruited via Facebook. This may limit the generalizability of the findings to the line dancers who use this social media platform. Future studies should collect data on line dancing in natural line dancing environments (such as classes, parties, or events) using other methods such interviews, paper and online questionnaires, or observations. A second limitation might be in the length of the survey. It was noted that 25 participants were not included in the sample of this present study because these participants did not complete the motivation items and 16 participants stopped completing the survey when they came to personal questions about their education, income, marital status, sexual orientation, and health. Including the responses of these participants might have potentially affected the outcome of the results of the present study. Future studies should reduce the length of the survey by limiting the number of personal questions participants encounter. Another limitation is the use of self-reported data in the form of online survey. Self-report is subject to response bias or measurement bias which may decrease the accuracy of the data. Although the participants did not provide their names or knew that there was no way the researcher could identify them, participants may be subject to social desirability responding, where they may answer questions in a manner that is intended to make themselves look good (He & van de Vijver, 2013). The sample size further limited the possible complexity of the profiles. With a larger sample size, a class structure with more nuanced classes may have been more strongly favored and thus may have yielded classes with more between class differences. Furthermore, many of the line dance

participants were female and older. It is possible that some of the motivational differences are due to age and gender differences in motivation. Selecting similar participants could reduce the potential confounding effects. One last limitation of the present study was the cross-sectional design of the study. This type of study is limited in its ability to generalize and draw valid conclusions. The ability to make conclusions was further limited by the lack of previous research done in the area of line dance. Nonetheless, the present study is the first to use the PALMS to explore self-determination-based motivational profiles of line dancers across the United States, thus it provides a groundwork for future studies.

Implications for Practice

Several research implications emerged from the present study. Because the physical activity guidelines recommend that all adults engage in at least 150 minutes of moderate-intensity aerobic physical activity, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity (U. S. Department of Health and Human Service, 2018), it is vital to understand individuals' different motives for engaging in physical activity and their particular desires and needs. PALMS should be used as a guide to help individuals not only understand what their exercise physical activity motives are but also find appropriate physical activities according to their motives.

Previous research has shown that motivation for participation in physical activity varies across different cultures (Duda, 1985, 1986; Li, Harmer, Chi, and Vongjaturapat, 1996). Due to the changing demographics and generational characteristics of adults in the United States, it is important to continue to track reasons why people participate in physical activity and use this information to help drive health-related programming (Molanorouzi et al., 2015). In promoting

physical activity, health educators and professionals need to be cognizant of the differences across cultural groups and focus on the intrinsic factors to promote exercise adherence. Future research should, therefore, use PALMS to explore U. S. individuals' reasons for engaging in various types of physical activities in order to understand why people of different cultures are motivated to undertake physical activity as a basis for implementing interventions. PALMS can provide valuable information regarding the range of motives which individuals have for participation in physical activities across different cultures. By assessing individuals' exercise motives, health professionals can use PALMS to implement interventions and increase exercise participation rates. Gaining an insight into different aspects of individuals' motivation might help health professionals and fitness instructors develop effective interventions (Molanorouzi, Khoo, & Morris, 2015), increase the amount of physical activity people do, reduce a number of illnesses related to physical inactivity, and improve the overall quality of life of individuals among various culturally diverse populations.

Future Work

Though the motive statements in PALMS were generalized in a recreational exercise context, it is recommended that the structure of the PALMS scale, in general, be further confirmed by conducting confirmatory factor analysis in larger, more culturally diverse samples. Additionally, an examination of the psychometric properties of the PALMS should be extended to achieve a stable factor structure among different cultural groups within the U.S.

On the whole, the three latent profile showed different patterns of association with exercise motives; however, it is recommended that additional research test the examined models in other populations to determine whether the latent profiles are replicable as different profiles

could emerge. It may also be useful to include other variables, such as exercise frequency and diet, to see their impact on profiles.

Future work may want to split the Others' Expectations subscale into two factors. Splitting the Others' Expectations subscale could help individuals understand their own exercise motives more clearly and help them begin healthier exercise behaviors. One factor should be related to the expectations of family and friends ("Because I get paid to do it" and "To earn a living") and the other should be related to health professionals' expectations ("Because people tell me I need to", "Because it was prescribed by doctor, physician", and "To manage medical condition").

Conclusion

This study found that the PALMS has sound psychometric properties and provides validity evidence for the use of PALMS scores in line dance research. A person-centered approach identified three distinct motivational profile groups of adults who engage in line dancing that range from Extrinsically Motivated to Highly Intrinsically Motived. The vast majority of the line dancers were in the Highly Intrinsically Motivated and Moderately Intrinsically Motivated profile groups. Gender was the only demographic variable which predicted the membership of the line dancers in the Moderately Intrinsically Motivated profile group, as age, health condition, and race did not distinguish membership of the profiles. The present study was the first to apply confirmatory factor analysis, latent profile analysis, and multinomial logistic regression to specifically explore exercise participation motives for line dancing in the United States. Thus, this is an important opportunity for public health to engage in health promotion initiatives that have the likelihood of reaching a large number of people from different cultures. Findings from this study suggest fitness professionals and health authorities

should match individuals to appropriate exercise programs, which hopefully will lead to greater long-term adherence to physical activity, improved performance, reduced lifestyle-related illnesses, decreased drop-out rates, and overall enhanced quality of life. Because motivation plays a vital role in physical activity (Aaltonen, et al., 2014), the results of this study serve as a springboard for research assessing physical activity motives in other culturally diverse populations within the United States.

References

Aaltonen, S., Rottensteiner, M., Kaprio, J., & Kujala, U. (2014). Motive for physical activity among active and inactive persons in their mid-30s. *Scandinavian Journal of Medicine and Science*, *24*, 727-735.

Abdullah, N., Kueh, Y. C., Hanafi, M. H., Morris, T., & Kuan, G. (2019). Motives for participation and amount of physical activity among kelantan chinese adolescents. *Malaysian Journal of Medical Sciences*, *26*(6), 101-110.

Alter J. B. (1997) Why dance students pursue dance: Studies of dance students from 1953 to 1993. *Dance Research Journal*, *29*, 70–89.

American Diabetes Association. (2015). All about cholesterol. Retrieved from https://care.diabetes.org/are-you-at-risk/lower-your-risk/cholesterol.html.

Ames, C. (1984). Competitive, cooperative and individualistic goal structures: A motivational analysis. In R. Ames, & C. Ames (Eds.), *Research on motivation in education*. *Vol. 1*: Student motivation (pp. 177-207). New York: Academic Press.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*, 261-271.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M-plus. *Structural Equation Modeling*, *21*, 329-341.

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review, 64*(6, Pt.1), 359-372.

Bailey, M., & McLaren, S. (2005). Physical activity alone and with others as predicators of sense of belonging and mental health in retirees. *Aging & Mental Health*, *9*, 82-90.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New Jersey: Prentice-Hall, Inc.

Barnett, E., Ridker, P. M., Okechukwu, C., & Gortmaker, S. L. (2019). Integrating children's physical activity enjoyment into public health dialogue (united states). *Health Promotion International*, *34*(1), 144 – 153

Berg, B., Warner, S., & Das, B. (2015). What about sport? A public health perspective on leisure-time physical activity. *Sport Management Review*, *18*, 20 – 31.

Bergman, L. R., Magnusson, D., & El-Khouri, B. M. (2003). Studying individual development in an interindividual context: A person-oriented approach. In D. Magnusson, (Ed.), *Paths Through Life* (*Vol. 4*). Mahwah, N.J.: Erlbaum.

Braveman, P., Egerter, S., & Williams, D. R. (2011). The social determinants of health: Coming of age. *Annual Review Public Health*, *32*(1), 381-398.

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: NY: The Guilford Press.

Brownson, R. C., Boehmer, T. K., & Luke, D. A. (2005). Declining rates of physical activity in the united states: What are the contributors? *Annual Review of Public Health*, *26*, 441-443.

Brudzynski, L., & Ebben, W. P. (2010). Body image as a motivator and barrier to exercise participation. *International Journal of Exercise Science*, *3*(1), 14 – 25.

Byrne, B. (2001). *Structural equation modelling with AMOS: Basic concepts, applications, and programming*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Centers for Disease Control and Prevention. (2008). *Behavioral risk factor surveillance system: Prevalence and trends data, 2007*. Retrieved from http://apps.need.cdc.gove/brfss/display.asp

Cerar, K., Miran, K. & Josko, S. (2017). The profiling of university of Ljubljana students according to their motives for exercise participation. *Slovenian Journal of Public Health*, *56*(2), 107-114.

Chemtob, K., Rocchi, M., Arbour-Nicitopoulos, K., Kairy, D., Fillion, B., & Sweet, S. (2019). Using tele-health to enhance motivation, leisure time physical activity, and quality of life in adults with spinal cord injury: A self-determination theory-based pilot randomized control trial. *Psychology of Sport and Exercise*, *43*, 243 – 252.

Chowdhury, D. R. (2018). A comprehensive measure of participation motivation: Examining and validating the physical activity and leisure motivation scale (palms). *Journal of Human Sport & Exercise*, *13*(1), 231-247.

Cooper, N., Schuett, P., & Phillips, H. (2012). Examining intrinsic motivations in campus intramural sports. *Recreational Sports Journal*, *36*(1), 25 – 36.

Craike, M., Bourke, M., Hilland, T., Pascoe, M., Bengoechea, E., & Parker, A. (2019). Correlates of physical activity among disadvantaged groups: A systematic review. *American Journal of Preventive Medicine*, *57*(5), 700 – 715.

Dacey, M., Baltzell, A., & Zaichkowsky, L. (2008). Older adults' intrinsic and extrinsic motivation toward physical activity. *American Journal of Health Behavior*, *32*(6), 570 -582.

Daniel, A., & Manigandan, C. (2005). Efficacy of leisure intervention groups and their impact on quality of life among people with spinal cord injury. *International Journal of Rehabilitation Research*, *28*(1), 43 – 48.

Deci, E. L., & Gagne, M. (2004). Motivation, Intrinsic, and Extrinsic. *Encyclopedia of Leadership*, *3*, 1036-1041.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory in health care and its relation to motivational interviewing: A few comments. *International Journal of Behavioral Nutrition and Physical Activity*, *9*, 1-6.

DeVellis, R. F. (1991). *Scale development* (pp. 85). Newbury Park, NJ: Sage Publications.

Dhami, P., Moreno, S., & DeSouza, J. (2014). New framework for rehabilitation-fusion of cognitive and physical rehabilitation. *Frontiers in Psychology*, *5*, 1 – 15.

Duda, J. (1985). Goals and achievement of Anglo and Mexican adolescents in sports and classroom. *International Journal of Intercultural Relations*, *9*, 131-150.

Duda, J. (1986). Perceptions of sport success and failure among white, black, and Hispanic adolescents. In T. Riley, J. Watkins, and L. Burwitz (Eds.), *Sports science* (pp 214-222). London: E and S. F. Spon.

Egli, T., Bland, H. W., Melton, B. F., & Czech, D. R. (2011). Influence of age, sex, and race on college students' exercise motivation of physical activity. *Journal of American College Health*, *59*(5), 399-406.

Feldman, B. J., Masyn, K. E., & Conger, R. D. (2009). New approaches to studying problem behaviors: A comparison of methods for modeling longitudinal, categorical adolescent drinking data. *Developmental Psychology*, *45*(3), 652–676.

Ferrand, C., Perrin, C., & Nassare, S. (2008). Motives for regular physical activity in women and men: A qualitative study in french adults with type 2 diabetes, belonging to a patients' association. *Health and Social Care in the Community*, *16*(5), 511 – 520.

Filippos, F., Rokka, S., & Mavridis, G. (2016). Examining the motives for participating in dance activities using the physical activity and leisure scale (palms). *Sport Science*, *9*(1), 42-49.

Fleury, J., & Lee, S. (2006). The social ecological model and physical activity in african american women. *American Journal of Community Psychology*, *37*(1/2), 129 – 140.

Fonseca, A. M., & Maia, J. A. (2001). Confirmatory factor analysis of the portuguese version of the participation motivation questionnaire. *Fonseca AM*. FCDEF-UP and sport psychology: studies on motivation. Porto: Faculty of Sport Sciences and Physical Education, University of Porto.

Ford, J. K., MacCallum, R. C., & Tait, M. (1986). *The application of exploratory factor analysis in applied psychology: Critical review and analysis*. Personnel Psychology, *39*, 291-341.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*, 39–50.

Fortier, M. S., Duda, J. L., Guerin, E., & Teixeira, P. J. (2012). Promoting physical activity: Development and testing of self-determination theory-based interventions. *International Journal of Behavioral Nutrition and Physical Activity*, *9*, 1-14.

Frederick-Recascino, C. M., & Schuster-Smith, H. (2013). Competition and intrinsic motivation in physical activity: A comparison of two groups. *Journal of Sport Behavior*, *26*(3), 240 -254.

Gao, Z., & Xiang, P. (2008). College students' motivation toward weight training: An application of expectancy-value model. *Journal of Teaching in Physical Education*, *27*, 399-415.

Garber, S., Gates, S., Keeler, E., Vaiana, M., Mulcahy, A., Lau, C., & Kellermann, A. (2014). *Redirecting innovation in U.S. healthcare: Options to decrease spending and increase value*. Santa Monica, CA: RAND Corporation.

Geiser, C. (2013). *Data analysis with Mplus*. New York, NY: Guilford Press.

Gidlow, C., Johnston, LH., Crone, D., Ellis, N., & James, D. (2016). A systematic review of the relationship between socio-economic position and physical activity. *Health Education Journal*, *65*, 338–367.

Glover, J., Hetzel, D., & Tennant, S. (2004). The socioeconomic gradient and chronic illness and associated risk factors in Australia. *Australia and New Zealand Health Policy*, *1*,1-8.

Gomes da Cruz, C. J., Molina, G. E., Porto, L. G. G., & Junqueira, L. F. (2017). Resting bradycardia, enhanced post-exercise heart rate recovery and cardiorespiratory fitness in recreational ballroom dancers. *Research Quarterly for Exercise and Sport*, *88*(3), 371 -376.

Gonzalez-Cutre, D. Sicilia, A., & Aguila, C. (2011). Interplay of different contextual motivations and their implications for exercise motivation. *Journal of Sports Science & Medicine*, *10*, 274-282.

Gordon, S., Overend, T., & Vandervoort, A. (2001). Country line dancing: An aerobic activity for older women. *Journal of Aging and Physical Activity*, *9*(4), 364 – 371.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis*, 7th Edn. Upper Saddle River, NJ: Pearson Prentice Hall.

He, J., & van de Vijver, F. J. R. (2013). A general response style factor: Evidence from a multi ethnic study in the Netherlands. *Personality and Individual Differences*, *55*, 794-800.

Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York: Wiley.

Henderson, K. (2011). Physical activity among african american women: Change and ways of knowing. *Quest*, *63*, 73 – 84.

Hester, A. (2019). Encouraging participation in diabetes self-management education (dsme) programs for the patient with type 2 diabetes mellitus. *The Midwest Quarterly*, *60*(3), 319 - 328.

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53-59.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1-55.

Hu, L., Cheng, S., Lu, J., Zhu, L., & Chen, L. (2016). Self-efficacy manipulation influences physical activity enjoyment in chinese adolescents. *Pediatric Exercise Science*, *28*(1), 143 - 151.

Huang, C. C., Wang, Y. M., Wu, T. W., & Wang, P. A. (2013). An empirical analysis of the antecedents and performance consequences of using the moodle platform. *International Journal of Information and Education Technology*, *3*, 217-221.

Ingledew, D. K. & Markland, D. (2008). The role of motives in exercise participation. *Psychology and Health*, *23*, 807-828.

Izquierdo-Porrera, A., Powell, C., Reiner, J., & Fontaine, K. (2002). Correlates of exercise adherence in an african american church community. *Cultural Diversity and Ethnic Minority Psychology*, *8*(4), 389 – 394.

Jaakkola, T., Yli-Pilpari, S., Watt, A., & Liukkonen, J. (2016). Perceived physical competence towards physical activity, and motivation and enjoyment in physical education as longitudinal predictors of adolescents' self-reported physical activity. *Journal of Science and Medicine in Sport*, *19*(9), 750 – 754.

Katzmarzyk, P. T. (2010). Physical activity, sedentary behavior, and health: Paradigm paralysis or paradigm shift? *Diabetes*, *59*, 2717 – 2725.

Keogh, J. W. L., Kilding, A., Pidgeon, P., Ashley, L., & Gills, D. (2009). Physical benefits of dancing for healthy older adults: A review. *Journal of Aging and Physical Activity*, *17*(4), 479-500.

Kim, M. J., & Lee, C. W. (2016). Health benefits of dancing activity among Korean middle-aged women. *International Journal of Qualitative Studies on Health and Well-Being*, *11*, 1 – 7.

Kirkpatrick, M., Hebert, E., & Bartholomew, J. (2005). College students' motivation for physical activity: Differentiating men's and women's motives for sport participation and exercise. *Journal of American College Health*, *54*, 87-94.

Kline, R. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling*, 3rd Ed. New York, NY: The Guilford Press.

Kohl, H., Craig, C., Lambert, E., Inoue, S., Alkandari, J., Leetongin, G., & Kahlmeier, S. (2012). The pandemic of physical inactivity: Global action for public health. *Lancet*, *380*(9838), 294 – 305.

Krishnan, S., Griffin, K., & Esperat, C. (2015). Zumba dance improves health in overweight/obese or type 2 diabetic women. *American Journal of Health Behavior*, *39*(1), 109-120.

Kueh, Y. C., Abdullah, N., Chin, N. S., Morris, T., & Kuan, G. (2019). Motivation for physical activity among adolescent malay students in kelantan, malaysia. *Pertanika Journal of Social Science and Humanities*, *27*(1), 675-683.

Kueh, Y. C., Abdullah, N. Kuan, G., Morris, T. & Naing, N. N. (2018). Testing measurement and factor structure invariance of the physical activity and leisure motivation scale for youth across gender. *Frontiers in Psychology*, *9*, 1-12.

Kueh, Y. C., Kuan, G., & Morris, T. (2019). The physical activity and leisure motivation scale: A confirmatory study of the malay language version. *International Journal of Sport and Exercise Psychology*, *17*(3), 250-265.

Kueh, Y. C., Kuan, G., & Morris, T. (2017a). The physical activity and leisure motivation scale: A confirmatory study of the Malay language version. *International Journal Sport Exercise Psychology*. doi:10.1080/1612197X.2017.1321029

Kueh, Y. C., Kuan, G., Morris, T., & Naing, N. N. (2017b). Confirmatory factor analysis of the Malay version of the recreational exercise motivation measure. *Journal of Social of Science Humana*, *25*, 589-600.

Kushi, L., Doyle, C., McCullough, M., Rock, C., Demark-Wahnefried, W., Bandera, E., & Gansler, T. (2012). American cancer society guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity. *A Cancer Journal for Clinicians*, *62*(1), 30 – 67.

Kwasniewska, M., Pikala, M., Bielecki, W., Dziankowska-Zaborszczyk, E., Rebowska, E., Kozakiewicz, K., Pajak, A., Piwonski, J., Tykarski, A., Zdrojewski, T., & Drygas, W. (2016). Ten-year changed in the prevalence and socio-demographic determinants of physical activity among polish adults aged 20 to 74 years. *PloS One*, *11*(6), 1 – 14.

Lerner, L., Burns, C., & Roiste, A. (2011). Correlates of physical activity among college students. *Recreational Sports Journal*, *25*(2), 95-106.

Li, F., Harmer, P., Chi, L., & Vongjaturapat, N. (1996). Cross-cultural validation of the task and ego orientation in sport questionnaire. *Journal of Sport and Exercise Psychology*, *18*, 392-438.

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biomeirika*, *88*(3), 767-778.

MacCallum, R., Browne, M., & Sugawara, H. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130-149.

Maraz, A., Kiraly, O., Urban, R., Griffiths, M., & Demetrovics, Z. (2015). Why do you dance: Development of the dance motivation inventory (dmi). *PLoS ONE*, *10*(3), 1 – 12.

Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biomeirika*, *57*(3), 519-530.

Maehr, M. L., & Zusho, A. (2009). Achievement goal theory: The past, present, and future. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 77–104). New York: Taylor Francis.

Markland, D. & Hardy, L. (1993). The exercise motivations inventory: Preliminary development and validity of a measure of individuals' reasons for participation in regular physical exercise. *Personality and Individual Difference*s, *15*, 289-296.

Marquez, D. X., Neighbors, C. J., & Bustamante, E. E. (2010). Leisure time and occupational physical activity among racial or ethnic minorities. *Medicine and Science in Sports and Exercise*, *42*(6), 1086-1093.

Marsh, H. W., & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: first- and higher-order factor models and their invariance across groups. *Psychological Bulletin*, *97*, 562-582.

Martin-Ginnis, K., Heisz, J., Spence, J., Clark, I., Antflick, J., Ardern, C., Costas-Bradstreet, C., Duggan, M., Hicks, A., Latimer-Cheung, A., Middleton, L., Nylen, K., Paterson, D., Pelletier, C., & Rotondi, M. (2017). Formulation of evidence-based messages to promote the use of physical activity to prevent and manage alzheimer's disease. *BMC Public Health*, *17*, 1 – 17.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-396.

Mayers, D. G. (2008). *Psichologija*. Kaunas: Ausra.

McArthur, L. H., & Raedeke, T. D. (2009). Race and sex differences in college student physical activity correlates. *American Journal of Health Behavior*, *33*(1), 80-90.

McClelland, D. C. (1961). *The achieving society*. Princeton, N. J.: Van Nostrand.

McCutcheon, A. L. (1987). *Latent class analysis*. Thousand Oaks, CA: Sage Publications.

McLachlan, G., & Peel, D. (2000). *Finite mixture models*. New York, NY: Wiley Series.

McQuoid, J. (2017). Find joy in poor health: The leisure-scapes of chronic illness. *Social Science and Medicine*, *183*, 88 – 96.

Mereish, E., & Poteat, P. (2015). Let's get physical: Sexual orientation disparities in physical activity sports involvement, and obesity among a population-based sample of adolescents. *American Journal of Public Health*, *105*(9), 1842 – 1848.

Michaelidou, N., & Morales, C. (2014). An evolutionary psychology perspective on physical exercise motives: Implications for social marketing. *Journal of Nonprofit & Public Sector Marketing*, *26*, 162-183.

Molanorouzi, K., Khoo, S., & Morris, T. (2014). Validating the physical activity and leisure motivation scale (PALMS). *BMC Public Health*, *14*(1), 909.

Molamourouzi, K., Khoo, S., & Morris, T. (2015). Motives for adult participation in physical activity: Type of activity, age, and gender. *BMC Public Health*, *15*(66), 1-12.

Morales-Rojas, J., Lucia, A., & Pareja-Galeano, H. (2016). Physical exercise minimizes the toxic triad for cancer: Physical inactivity, low fitness, and obesity. *European Journal of Human Movement*, *36*, 1 -35.

Morin, A. J. S., & Wang, C. K. J. (2016). A gentle introduction to mixture modeling using physical fitness performance data. In N. Ntoumanis & N. Myers (Eds.), *An introduction*

to intermediate and advanced statistical analyses for sport and exercise scientists (pp. 183-210). Chichester, UK: Wiley.

Morris, T., & Roger, H. (2004). Measuring motives for physical activity. In *Sport and Chance of Life: Proceedings of 2004 International Sport Science Congress (pp. 242-250)*. Seoul, Korea: KAHPERD.

Murcia, J., De San Roman, M., Galindo, C., Alonso, N., & Gonzalez-Cutre, D. (2008). Peers' influence on exercise enjoyment: A self-determination theory approach. *Journal of Sports Science and Medicine*, *7*(1), 23 – 31.

Murillo, R., Katic, B., Gonzalez, T., Vasquez, E., & Echevarria, S. (2019). The association of prediabetes and diabetes risk perception with leisure-time physical activity and weight loss. *American Journal of Health Promotion*, *33*(4), 534 -540.

Muthen, L. K., & Muthen, B. O. (1998-2012). *Mplus User's Guide*, 7th Edn. Los Angeles, CA: Muthen & Muthen.

Nevid, J. S. (2013). *Psychology: Concepts and Applications*. Belmont, CA: Wadsworth, Cengage Learning.

Ng, J. Y., Ntoumanis, N., Thogersen-Ntoumanis, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta -analysis. Perspectives on Psychological Science: *A Journal of the Association for Psychological Science*, *7*(4), 325 – 340.

Ntoumanis, N. (2002). Motivational clusters in a sample of british physical education classes. *Psychology of Sport and Exercise*, *3*(3), 177-194.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, *14*(4), 535-569.

Omura, J., Carlson, S., Paul, P., Watson, K., Loustalbt, F., Foltz, J., & Fulton, J. (2015). Adults eligible for cardiovascular disease prevention counseling and participation in aerobic physical activity—united states, 2013. *Morbidity and Mortality Weekly Report*, *64*(37), 1047 – 1051.

Owen, N., & Bauman, A. (1992). The descriptive epidemiology of a sedentary lifestyle in adult Australians. *International Journal of Epidemiology*, *21*, 305 – 310.

Raposo, F. Z., Sanchez-Olivia, D., Veiga, C. E., Labisa, P. A., & Nunes, S. M. (2020). The darkside of motivational practices in exercise professional: Mediators of controlling strategies. *International Journal of Environmental Research and Public Health*, *17*(15), 1 -14.

Raykov, T., & Marcoulides, G. A. (2015). Scale reliability evaluation under multiple assumption violations. *Structural Equation Modeling*, *00*, 1-12.

Razon, S., Powers, S., Pursglove, L., Zupin, D., & Judge, L. W. (2019). Zumba in the postindustrial midwest: minority women and access to physical fitness. *The Physical Educator*, *76*, 813-831.

Rogers, C. J., Colbert, L. H., Greiner, J. W., Perkins, S. N., & Hursting, S. D. (2008). Physical activity and cancer prevention: Pathways and targets for intervention. *Sports Medicine*, *38*(4), 271 – 296.

Rosario, M., Corliss, H., Everett, B., Reisner, S., Austin, S., Buchting, F., & Birkett, M. (2014). Sexual orientation disparities in cancer-related risk behaviors of tobacco, alcohol, sexual behaviors, and diet and physical activity: Pooled youth risk behavior surveys. *American Journal of Public Health*, *104*(2), 245 – 254.

Rosas, L., Vasquez, J., Hedlin, H., Qin, F., Lv, N., Xiao, L., Kendrick, A., Atencio, D., & Stafford, R. (2020). Comparing enhanced versus standard diabetes prevention program among indigenous adults in an urban setting: A randomized controlled trial. *BMC Public Health*, *20*(1), 1 – 12.

Rosenburg-Yunger, Z., Verwheel, L., Gionfriddo, M., & MacCallum, L., (2018). Community pharmacists' perspective on shared decision-making in diabetes management. *International Journal of Pharmacy Practice*, *26*(5), 414 – 422.

Ryan, R.M., & Deci, E.L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54–67.

Ryan, R. M., & Deci, E. L. (2008). Self-determination theory and the role of basic psychological needs in personality and the organization of behavior. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (p. 654-678). The Guilford Press.

Ryan, R., & Deci, E. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: Guilford.

Schwartz, G. (1978). Estimating the dimension of a model. *Annals of Statistics*, *6*, 461-464.

Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika*, *52*(3), 333-343.

Silver, M. P., Easty, L. K., Sewell, K.M., Georges, R., & Behman, A. (2019). Perspectives on exercise participation among Canadian university students. *Health Education Journal*, *78*(7), 851 – 865.

Simpkins, S. D., Ripke, M., Huston, A. C., & Eccles, J. S. (2005). Predicting participation and outcomes in out-of-school activities: Similarities and differences across social ecologies. *New Directions for Youth Development*, *105*, 51 – 69.

Sorol, H., & Cimen, Z. (2017). Why people participate leisure time physical activity: A turkish perspective. *Pamukkale Journal of Sports Sciences*, *8*(1), 63-72

Stalsberg, R., & Pederson, A. (2018). Are differences in physical activity across socioeconomic groups associated with choice of physical activity variable to report? *International Journal of Environmental Research and Public Health*, *15*, 1-13.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioural Approach*, *25*, 173-180.

Stinson, S., Blumenfeld-Jones, D., & Van Dyke, J. (1990) An interpretive study of meaning in dance: Voices of young women dance students. *Dance Research Journal*, *22*, 13–22.

Tabachnick, B. G., & Fidell, L. S. (2013). Cleaning up your act: Screening data prior to analysis. In B.G.Tabachnick, & L. S. Fidell (Eds.). *Using multivariate statistics (pp. 60-116)* (6 ed.) New Jersey, USA: Pearson.

Thesleff, P. (2014). *Participation in dance finland: A study of motives and behavior regulation*. Master's Thesis in Sport and Exercise Psychology: Department of Sport Sciences University of Jyvaskyla.

Tseng, W. T., Dornyei, Z., & Schmitt, N. (2006). A new approach to assessing strategic learning: The case of self-regulation in vocabulary acquisition. *Applied Linguistics*, *2*7, 78-102.

Tsorbatzoudis, H., Alexandris, K., Zahariadis, P., & Grouios, G. (2006). Examining the relationship between recreational sport participation and intrinsic and extrinsic motivation and amotivation. *Perceptual Motor Skills*, *103*, 363–374.

Upchurch, D., & Rainisch, B. (2015). The importance of wellness among users of complementary and alternative medicine: Findings from the 2007 national health interview survey. *BMC Complementary and Alternative Medicine*, *15*, 1 – 10.

U. S. Census Bureau. (2009). *Source and accuracy statement for the survey of income and program participation 2004 wave 1 – wave 12 public use files.* Washington, DC: U. S. Department of Commerce.

U. S. Department of Health and Human Services. (1996). *Physical activity and health: A report of the surgeon general*. Atlanta, GA: Centers for Disease Control.

U. S. Department of Health and Human Services. (2008). *Physical activity guidelines for Americans*. Rockville, MD: U.S. Department of Health and Human Services.

U. S. Department of Health and Human Services. (2010). *Healthy People 2020*. Hyattsville, MD: CDC, National Center for Health Statistics.

U. S. Department of Health and Human Services. (2017). *Health United States 2*017. Hyattsville, MD: CDC, National Center for Health Statistics.

U. S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans*, 2nd edition. Washington, D. C.: U. S. Department of Health and Human Services.

Vlachopoulos, S. P., Karageorghis, C. I., & Terry, P. C. (2000). Motivation profiles in sport: a self-determination theory perspective. *Research Quarterly for Exercise and Sport*, *71*(4), 387-397.

Wang, J., & Wang, X. (2012). *Structural equation modeling applications using Mplus*. Chichester: John Wiley & Sons.

Wankel, L. M., & Kreisel, P. S. L. (1985). Factors underlying enjoyment of youth sports: Sport and age group comparisons. *Journal of Sport Psychology*, *7*(1), 51 – 64.

Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology*, *71*, 3–25.

Whitfield, G., Carlson, S., Ussery, E., Fulton, J., Galuska, D., & Peterson, R. (2019). Trends in meeting physical activity guidelines among urban and rural adults—united states, 2008 2017. *Morbidity and Mortality Weekly Report*, *68*(23), 513 – 518.

Yuan, K., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, *30*, 167-202.

Zach, S., Bar-Eli, M., Morris, T., & Moore, M. (2012). Measuring motivation for physical activity: An exploratory study of palms – the physical activity leisure motivation scale. *Athletic Insight*, *4*(2), 141-154.

Zarei, S., Memari, A. H., Moshayedi, P., Mosayebi, F., Mansournia, M. A., Khoo, S., & Morris, T. (2016). Psychometric properties of physical activity and leisure motivation scale infarsi: An international collaboration project on motivation for physical activity and leisure. *Achives of Iranian Medicine*, *1*9(10), 704-710.

Zervou, F., Stavrou, N. A. M., Koehn, S., Psychountaki, K. Z., & Psychountaki, M. (2017). Motives for exercise participation: The role of individual and psychological characteristics. *Cogent Psychology*, *4*, 1-12.

Ziebland, S., Robertson, J., & Jay, J. (2002). Body image and weight change in middle age: A qualitative study. *International Journal of Obesity and Related Metabolic Disorders*, *26*(8), 1083 – 1091.

Appendix
Items on Line Dance Survey

Physical Activity Leisure Motivation Scale (PALMS)

I participate in line dancing …

1. To do something in common with friends.
2. Because people tell me I need to.
3. Because it acts as a stress release.
4. To improve body shape.
5. To obtain new skill/activities.
6. Because it's fun.
7. Because it was prescribed by doctor, physician.
8. To work harder than others.
9. Because it keeps me healthy.
10. To compete with others around me.
11. Because it helps me relax.
12. Because it is interesting.
13. Because I enjoy spending time with others.
14. To get better at line dancing.
15. Because I perform better than others.
16. Because I get paid to do it.
17. To do line dancing with others.
18. To better cope with stress.
19. Because it helps maintain a heathy body.
20. To define muscle, look better.
21. Because it makes me happy.
22. Be physically fit.
23. To get away from pressures.
24. To maintain physical health.
25. To earn a living.
26. To improve existing skills.
27. To be the best in the group.
28. To manage medical condition.
29. To do my personal best.
30. To maintain trim, tone body.
31. To talk with friends who line dance
32. To keep current skill level.
33. To improve appearance.
34. To improve cardiovascular fitness.
35. Because I enjoy line dancing.
36. To take my mind off other things.
37. To lose weight, look better.
38. Because I have a good time.
39. To be with friends.
40. To be fitter than others.

Demographics

Which of the following describes you?

Man
Woman
Transgender Man (MTW)
Transgender Woman (WTM)
Gender Non-Conforming
Non-Binary
Other (Please specify)
Prefer Not to Say

What is your age?

18 - 24 years old
25 - 34 years old
35 - 44 years old
45 - 54 years old
55 - 64 years old
65 - 74 years old
75 years or older

Please specify your race/ethnicity.

American Indian or Alaska Native
Asian
Black or African American
Hispanic or Latino
Native Hawaiian or Pacific Islander
White
Multiple Races/Ethnicities
Other (Please specify)

You consider yourself to be:

a woman attracted to men
a man attracted to women
lesbian
gay
bisexual
pansexual
queer
homosexual

asexual
Which region of the United States do you reside as defined by the U.S. Census Bureau?

Midwest (Illinois, Iowa, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin)

Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont)

South (Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia, and West Virginia)

West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming)

What is the highest degree or level of school you have completed? If currently enrolled, please select the highest degree received.

No schooling completed
Nursery school to 8th grade
Some high school, no diploma
High school graduate, diploma or equivalent (GED)
Some college credit, no degree
Trade/Technical/Vocational training
Associate degree
Bachelor's degree
Master's degree
Professional degree
Doctorate degree

Which of the following describes your employment status?

Employed for wages
Self-employed
Out of work and looking for work
Out of work but not currently looking for work
A homemaker
A student
Military
Retired
Unable to work

What is your marital status?

Single
Not living with partner
Married
Living with a partner
Widowed
Divorced
Separated

Which best describes your annual household income from all sources before taxes?

Below $25,000
Between $25,000 and $50,000
Between $50,000 and $75,000
Between $75,000 and $100,000
Above $100,000

Dance Demographics

How many years have you line danced?

Less than 1 year
1 – 2 years
2 – 3 years
3 – 4 years
5 or more years

Which of the following best describes the PRIMARY type of line dancing in which you participate?

Country line dancer
Latin line dancer
Soul/ Hustle/ Urban line dancer
Other (Please specify)

Which describes your role(s) in your line dance community. (Mark all that apply.)

Line Dancer
DJ
Event Planner/Promoter
Choreographer

Videographer
Vendor
Other (Please specify)

Which of the following describes the level of dance which you are most skilled?

None
Beginner
Beginner/Intermediate
Intermediate
Intermediate/Advanced
Advanced

Are you a line dance instructor?

No
Yes

You indicated that you are a line dance instructor. Do you currently work or have you ever worked in the field of education in any capacity (Pre-School, K-12, Vocational/Career, Higher Education, etc…)?

No
Yes

Please select Agree as the answer to this item.

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Health/Medical Condition

How would you evaluate your overall health? Would you say that you are:

in good health (no illness or disabilities)
mildly physically impaired (minor illness or disabilities)
moderately physically impaired (requires substantial treatment)
severely physically impaired (requires extensive treatment)

totally physically impaired (confined to bed)
Have you ever been diagnosed with any of the following health conditions? (Mark all that apply.)

Alcoholism
Alzheimer's/Dementia/Memory Loss
Anxiety, Depression, or Stress
Asthma/Respiratory/Lung Disease
Arthritis
Back, Leg, Knee, or Feet Pain or Injuries
Cancers
Diabetes
Heart Disease, Hypertension (high blood pressure), or Stroke
Hearing/Vision Loss
Infectious Diseases: HIV/AIDS, STDs, Tuberculosis, etc…
Mental Health Issues
Obesity
Respiratory/Lung Disease
Smoking
Suicide
Other (Please specify.)
None

How many medications has your physician prescribed for you to take on a daily basis?

1
2
3
4
5
More than 5
None

COVID-19 Section

Prior to the COVID-19 pandemic, how much did you line dance per week?

0 hr
less than an hour per week
1 – 2 hours per week
3 – 4 hours per week

5 or more hours per week
Prior to COVID-19, where were your line dance class(es) held? (Mark all that apply.)

Private studio
Club
Restaurant
Gym or recreational center
Church
Community center
Library
School
Workshops (events)
Facebook, YouTube
Zoom
Work
Home
Other (Please specify.)

Now that most "in-person" line dance classes and events have been suspended due to the COVID-19 pandemic, which BEST describes the manner in which you are continuing to line dance?

Facebook
YouTube
Zoom
Socially-distance "in-person" class
Socially-distance class at home
Socially-distance class in the park
Socially-distance class in the neighborhood (street)
NOT currently line dancing
Other (Please specify.)

During the COVID-19 pandemic, how much are you currently line dancing per week?

0 hr
less than an hour per week
1 – 2 hours per week
3 – 4 hours per week
5 or more hours per week

As the country begins to open up again, how likely are you to continue participating in “in person” line dance class(es) or event(s)?

Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

As the country begins to open up again, how likely are you to continue to participate in “ONLINE” line dance class(es)?

Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely