2022

Successful Aging: A Comprehensive Outcome and Marital Relationship Processes

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SUCCESSFUL AGING:

A COMPREHENSIVE OUTCOME AND MARITAL RELATIONSHIP PROCESSES

By

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A Dissertation submitted to the
Department of Human Development and Family Science
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

2022

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To my family, friends, and colleagues. Without their support I never would have made it this far.
To my grandfather who taught me how to support the people you love.
To Artemis, and all my loving pets, who kept me going in the darkest of times.
You will always be my heart.

ACKNOWLEDGMENTS

I want to acknowledge the many people who have touched my life over the years and have contributed to my development as a scientist and a human being. First and foremost, I would like to thank Dr. Joseph Grzywacz for his support, advice, and invaluable knowledge. Your high expectations helped me to learn to expect more from myself and to strive to be a better scientist. I could not have asked for a better mentor, and I will always be thankful for your patience with me. You kept believing in me even when I had trouble believing in myself. I want to thank Dr. Ming Cui for making statistics approachable and for encouraging me all these years. I want to thank Drs. Marsha Rehm and Amy Burdette for their support. Thank you so much for serving on my committee. I also want to thank Dr. Gregory Harris for his invaluable advice. I want to give a special thanks to Tara Hartman for keeping me on the right track all these years. We would all be lost without you! I also want to thank the rest of the College of Human Sciences extended family of professors and support staff. The College will always be home to me.

I would like to thank my fellow students, colleagues and friends who have supported me like family. To Antoinette, Amy, Fiorella, Peipei, and Shannon, I wish you all the best of life and success in all your endeavors. Your care is like bright ray of sunshine in a dreary world. I want to thank my students for showing me how much I love teaching and connecting with the next generation of scientists. I want to thank the Florida Institute for Child Welfare and the wonderful people I have worked with over the last year. The experience I have gained will be instrumental to my success in my career. I look forward to what the future may bring.

I would like to thank my doctors and therapists who have literally kept me going throughout a myriad of health issues that I never expected to face so young. I hope to be a beacon of success for those who struggle with their health but wish to move forward with their

dreams to make the world a better and brighter place. Finally, I want to acknowledge myself. I know there were times you thought you might not make it to this day, but you did. You made it. Be proud of yourself. I cannot wait to see what else you will accomplish.

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ABSTRACT

The projected increase in the population of older adults (ages 65 and older) brings with it concerns about unavoidable loss through age-related chronic illnesses like dementia, cancer, or arthritis (Jaul & Barron, 2017). Successful aging is a multidimensional concept that acknowledges potential morbidity but offers a compelling alternative to unavoidable loss by incorporating dimensions of aging other than physical health (Rowe & Kahn, 1998). As successful aging is an inherently multidimensional concept it should not be limited to being explored in a unidimensional manner. However, there have been few attempts to study it comprehensively. Instead, many studies tend to examine unidimensional aspects of successful aging, particularly focusing on physical health (Cosco et al., 2014). Latent variable analysis offers a methodological approach that allows for a flexible understanding of successful aging. However, few studies have utilized such an approach (Mana & Bezdicek, 2020), leaving it ripe for further development.

There is potential in utilizing the marital relationship to promote successful aging through improving relationship processes. The marital relationship, specifically, is a critical focus as it has the possibility to shape health outcomes through the distinct processes of support and strain (House et al., 1988). However, outside of a few exceptions (Ko et al., 2007; Tracy & Utz, 2020), there has been little exploration of the marital relationship processes that may affect a person's overall health and well-being and subsequent ability to age well.

Based on the assumption that successful aging is a multidimensional concept, these two studies work together to better understand the multiple factors contributing to successful aging, particularly the marital processes of support and strain. As such, both papers are interrelated.

Study 1 was designed to apply the LPA statistical method as a strategy to produce a comprehensive outcome for successful aging. The samples included N=2,257 participants from the MIDUS 2 and N=3,351 participants from the MIDUS Refresher.

Latent profile analysis (LPA), a statistical method that allows for the grouping of individuals without using preconceived determinants, (Gibson, 1963), was applied to various indicators of the dimensions of physical, mental, and cognitive function and active engagement with life. To evaluate the criterion validity of the identified latent profiles in the MIDUS 2, the same measures were analyzed in a demographically matched cohort of adults from the MIDUS Refresher. To evaluate the content validity of the profiles, demographics including race, age, sex, ethnicity, and educational attainment were explored with the profile assignment for both MIDUS 2 and MIDUS Refresher, respectively.

Results from Study 1 indicated four distinct profiles two demographically matched data sets: the MIDUS 2 and the MIDUS Refresher. These profiles were reproduced in a demographically similar cohort of adults. Finally, the demographic correlates of the profiles of successful aging do follow patterns like those observed in single dimensional assessments of health, and identified latent profiles generally comport with descriptions of health in the general population. The results from Study 1 provided an expanded understanding of successful aging by verifying the validity of the latent profiles.

Study 2 used the profiles created in Study 1 and multinomial logistic regression to explore the contributing factors for spousal support and strain at time one (MIDUS 1), on the successful aging profile at time two (MIDUS 2). The goal of this study was to explore the impact of the relationship processes of marital support and strain on successful aging. The final sample included n=868 participants from the MIDUS 1 and MIDUS 2 who were married at time one and

had been married only once by time two. Marital dissolution (i.e., separation, divorce, widowhood) by time two was also explored as a covariate. Potential gender differences in the association of spousal support and spousal strain with successful aging were also explored as an interaction model.

Results from the multinomial logistic regression model for Study 2 indicated that spousal support at time one was not associated with less detrimental profiles of successful aging at time two, and spousal strain at time one was associated with more detrimental profiles of successful aging at time two. There was no significant relationship between spousal support, spousal strain, gender, and successful aging profiles in the interaction model. This study exemplified the potential to apply family science measures to a multidimensional successful aging outcome.

CHAPTER 1

INTEGRATIVE STATEMENT

"Successful aging" is understood in general terms as a combination of maintaining health, remaining independent, and continuing and growing positive social connections (Rowe & Kahn, 1998). As a concept, successful aging moved beyond the unitary focus on unavoidable physical disease and decline to recognize age-related gains that often occur in the domains of wisdom, psychological well-being, and social engagement (Rowe & Kahn, 1998). By acknowledging its multidimensional attributes, successful aging allowed for the possibility of aging well throughout the life course. For instance, a person can actively engage in social settings and maintain connections and cognitive health, even while managing a physical disease or disability. Thus, even if a person experiences functional loss, it is possible to age successfully (Baltes & Baltes, 1990).

Aging studies tend to focus on declines in physical health or cognitive functioning and can overlook the psychological and social domains of functioning. Even after calls to incorporate other dimensions of aging (Bowling & Dieppe, 2005; Rowe & Kahn, 2015), physical health remains the most studied aspect of aging (Cosco et al., 2014; Depp & Jeste, 2006). The tendency to focus on the physical dimensions of aging over psychological and social ones may be due to the profound demographic shift that the global elder population is experiencing. Within the next decade the global population of older adults (ages 65 and older) is projected to increase by 236 million people (He et al., 2016). Accordingly, the increase in the elder population brings with it concerns about age-related chronic illnesses like dementia, cancer, or arthritis, which can undermine quality of life (Jaul & Barron, 2017).

The concept of successful aging acknowledges potential morbidity (Rowe & Kahn, 1998), but its holistic appreciation for aging beyond the physical dimension offers a compelling alternative to unavoidable loss. Maintaining physical health is clearly important; however, it should not be treated as the only and most important feature of successful aging. Focusing on physical health alone leads to the assumption that the absence of physical decline indicates the presence of wellness (Rowe & Kahn, 1998). Furthermore, a purely physical understanding of successful aging suggests every person will eventually be unsuccessful in avoiding disease and disability. Instead, a holistic consideration of overall function across multiple aspects of aging offers the opportunity for alternative aging trajectories, including aging successfully.

Marriage, being one of the longest social relationships of a person's life (other than siblings), has the potential to impact multiple dimensions of successful aging (Kiecolt-Glaser & Newton, 2001; Kiecolt-Glaser, 2018). The marital relationship is a critical focus as it has one of the most substantial correlational linkages to health and often has long-term implications for health and wellbeing (Liu & Waite, 2014; Uchino et al., 1996; King & Reis, 2012). In the physical health domain, all-cause mortality has been linked to marital status (Curtin & Tejada-Vera, 2019; Manzoli et al., 2007); and health behaviors and their related outcomes, tend to be concordant among married couples (Meyler et al., 2007). In the cognitive sciences, marriage is associated with a reduced risk of dementia and greater retention of cognitive function (Sommerlad et al., 2018). In the mental health literature, married people tend to have better mental health than cohabiting or non-married individuals (Braithwaite & Holt-Lunstad, 2017). Finally, being married has been consistently associated with greater psychological well-being (Carr et al., 2014; Kamp Dush et al., 2008; Soulsby & Bennett, 2015). However, outside of a few exceptions (Ko et al., 2007; Tracy & Utz, 2020), there has been little exploration of the marital

relationship processes that may affect a person's overall health and well-being and subsequent ability to age well.

Marriage can shape health outcomes through the distinct processes of social support, strain, and control (House et al., 1988). Support and strain (along with control) are suggested by House and colleagues (1988) to be the main processes by which any social relationship, including marriage, may affect health outcomes. Support is typically understood as the positive aspects of a relationship, particularly the receipt or exchange of emotional, instrumental, or financial resources between individuals. Strain, by contrast, is conceived as the negative, obligatory, or possibly conflictive interactions in social relationships (House et al., 1988). Control refers to actions taken by one member of a social relationship, such as a spouse, to regulate another's behavior through the application of sanctions or rewards (House et al., 1988; Umberson, 1992; Sorkin et al., 2014). These social processes can independently influence health outcomes and, by extension, a multidimensional outcome like successful aging.

Most research surrounding the marital relationship and the dimensions of successful aging focuses on marital status alone, without delving deeper into marital quality (Burman & Margolin, 1992). Marital quality is defined as an overall appraisal of the marriage (Fincham & Bradbury, 1987), including support and strain (Burman & Margolin, 1992; Fincham, Beach, & Kemp-Fincham, 1997). However, simply saying that being married is beneficial for successful aging is problematic. Rather than just being married, it would stand to reason that being in a *good* marriage is paramount to seeing beneficial outcomes across the successful aging dimensions. Being in a low-quality relationship may affect a person's mental state or physical well-being (Tracy & Utz, 2020).

Successful aging needs to be studied comprehensively, but there have been few attempts to bring multiple dimensions of successful aging together (Mana & Bezdicek, 2020). Many studies have examined a single dimension of successful aging, such as cognitive functioning (Hamm et al., 2020), psychological function (Ryff et al., 2015), physical health (Kail & Carr, 2017), or active engagement with life (Douglas et al., 2017). Only a handful of studies have included each dimension of successful aging in some capacity but in a unidimensional manner. For example, a study by Chou and Chi (2002) included each of the four dimensions of successful aging in their study. Each of the four dimensions were analyzed independently of the other (not as a composite whole) and a participant was determined to be successfully aging if they separately met criteria in every dimension. This study was limited by the necessity for everyone to score "well" in all dimensions to be considered successfully aging. This method does not allow for nuance as a person is unlikely to be able to meet criteria among every dimension of successful aging; instead, they may score well on some dimensions and less well on others.

Instead of limiting "success" to scoring "well" on every dimension of aging, one methodological approach allows for a flexible understanding of successful aging. A recent systematic review by Mana and Bezdicek (2020) reported that out of 74 studies, only seven used some form of latent variable analysis. A couple of studies integrated the dimensions into a single characterization of the individual (Ko et al., 2007; Kok et al., 2017). These studies helped establish that people can be considered to age successfully if the concept is explored holistically.

Defining the Rowe and Kahn Model

There has been significant change in the research community since Havighurst (1963) advanced the view of aging well by limiting disease and disability. The change from Havighurst's (1963) view to a more contemporary one started when Rowe and Kahn (1987)

posited that aging is not simply about physical decline. Instead, Rowe and Kahn (1987) argued for the concept of "successful aging," reflecting several dimensions of aging, including physical, mental, and social well-being. To date, the Rowe and Kahn model is the most widely used conceptual model of successful aging. This dissertation acknowledges that there are several other theories of aging, however, these theories are beyond the scope of the current project.

Rowe and Kahn (1987; 1997) described successful aging as the combination of four distinct dimensions. The first dimension, low physical morbidity, is defined as freedom from disease or disability, which, does not necessarily indicate the presence of health. High cognitive and psychological functioning, the second and third dimensions of successful aging, are thought of as freedom from cognitive decline and mental illness, respectively. However, like with low physical morbidity, the absence of cognitive decline or mental illness alone does not indicate success. Active engagement with life, the fourth dimension of successful aging, is comprised of both social support and productive activity. Social support is the giving and receiving of different kinds of support, and productive activity is being involved in some form of industriousness (Everard et al., 2000; Rowe & Kahn, 1998).

All four dimensions of the model are important in their own way; however, successful aging is the combination of all four (Rowe & Kahn, 1998). To understand how all these parts work together, imagine a Rubik's Cube with its moving parts and many possible combinations. The distinct dimensions of successful aging are akin to the sides of the Rubik's Cube that align to solve the puzzle. While you may be able to complete one side of a Rubik's Cube individually, you cannot solve the puzzle unless you carefully consider all six sides of the cube. In successful aging terms, solving the puzzle for only the physical health side fundamentally ignores the other

sides to the cube, which may or may not be a vibrant mix of colors depending on the individual person.

Operationalizing Successful Aging

Successful aging is explored in a unidimensional manner, typically focusing on one dimension of the concept at a time (Cosco et al., 2014; Depp & Jeste, 2006). These studies provide an in-depth look into each dimension which is useful for understanding specific indicators of successful aging like episodic memory, restrictions to activities of daily living, or a person's quality of life. However, it is important to remember that these indicators are not independent of each other, and they often interact (Pruchno et al., 2010; Jeste et al., 2013). Therefore, successful aging as an inherently multidimensional concept should not be limited to being explored in a unidimensional manner. An assessment or analytic strategy for operationalizing successful aging, as elaborated by Rowe and Kahn (1998), would enable the understanding of successful aging as a whole concept. A concept that captures the multidimensional characteristics of successful aging could be used with various predictors to determine trajectories of aging and potentially how to maximize successful aging across the lifespan. Further, the use of such a concept does not need to be limited to family studies but could incorporate a host of other potential disciplines and theoretical predictors, allowing for the development of interventions and policies that support successful aging. However, the problem remains, how can a holistic realization of successful aging be operationalized?

Latent Profile Analysis

Latent profile analysis (LPA) offers a potential solution to the problem of quantifying and classifying "successful aging" as a unified multidimensional state. LPA allows the identification of distinct groups of people based on many observed attributes (Gibson, 1959). LPA groups

individuals without using preconceived determinants, allowing for more organic estimates of the proportions of groupings within a sample population (Gibson, 1963). The utility of the LPA would allow for the grouping of participants based on patterns of individual scores within and across the indicators for different dimensions of successful aging. As an illustrative example, an LPA would be "given" indicators of successful aging, such as the presence or absence of mental and physical health, cognition scores, and a self-assessment of active engagement with life. See Figure 1 for a conceptual model. As there are many ways the dimensions of successful aging can be measured, it is difficult to say how many groups these individuals may fall into.

Though LPA is rarely used in successful aging research, several studies have used some form of latent variable analysis to explore successful aging (Mana & Bezdicek, 2020). For example, Hsu and Jones (2012) effectively used a multiple - trajectory model to operationalize their understanding of successful aging in a nationally representative data set of two Taiwanese cohorts (older and younger). They delineated a 4-profile solution which they labeled "successful aging," "usual/insecure aging," "health declining," and "care demanding," respectively. The results indicated that 54.2% of the younger cohort were aging successfully, while 29% of the older cohort were classified as successfully aging. Hsu and Jones (2012) used measures of physical health, mental health, and perceived social support to classify members of the cohorts into discrete groups, yet these measures were not incorporated into an overall representation of successful aging.

In a national data set from Amsterdam, Kok and colleagues (2017) used latent class growth analysis to combine the indicators of physical, cognitive, and emotional functioning and a question asking how often the person engaged in social activities into discernible groups of successful aging. To be classified as successful, a trajectory had to show signs of limited decline

(cognitive and physical functioning), stability, and/or improvement over time. Generally, levels of successful aging were high among the participants as 39.6% of men and 29.3% of women were considered to have aged successfully on at least seven of the nine indicators of successful aging included in the study. They found that there were shifts across time in which indicators of successful aging were more strongly represented in latent growth analysis groups, and some of the more "successful" trajectories would still include some form of decline. Kok et al. (2017) showed that the process of successful aging can take different forms over time and still include decline.

There have been even fewer studies that have utilized LPA, specifically, to explore successful aging in a multidimensional manner (Mana & Bezdicek, 2020). A study by Pruchno and Wilson-Genderson (2015) used LPA to group subjective (e.g., self-assessment of successful aging) and objective (e.g., number of age-related chronic illnesses) indicators of successful aging. Their LPA delineated four groups of people: the "Unsuccessful" by both objective and subjective indicators, those who were "Subjective Only" or "Objective Only," those who were "successful" according to both objective and subjective indicators (Pruchno & Wilson-Genderson, 2015). They found that people were more likely to be classified as successful rather than unsuccessful for both objective (82% successful) and subjective indicators (83% successful). Though they only focused on physical health indicators, this study showed that it is essential to include objective and subjective indicators of successful aging in a latent variable analysis.

Ko and colleagues (2007) produced the only study that used LPA specifically to holistically include aspects of Rowe and Kahn's (1987) model of successful aging beyond physical heath. To date, this study is the only one that has explored married couples in the

explicit context of successful aging using LPA. Ko et al. (2007) used measures of cognitive function, physical health, personality, and perceived social support to classify married older adults into discrete groups. Ko and colleagues (2007) delineated a 4-profile latent solution which they labeled by the distinguishing feature of the profile. These labels were: "Generally Positive," "Maritally Unsatisfied," "Maritally Satisfied but Unhealthy," and "Low Cognitive." The results indicated that there are more couple dyads successfully aging than not. Further, Ko et al. (2007) found that spouses were often quite similar in their aging profiles, strongly linking the spousal relationship and successful aging. Ko and colleagues' (2007) results provide a concrete application of LPA in exploring not only the multidimensionality of successful aging but the applicability of successful aging to the marital relationship. Indeed, all of these studies were useful in establishing that using latent variable analysis to holistically explore successful aging is not only possible, but ripe for further development (Hsu & Jones, 2012; Ko et al., 2007; Kok et al., 2017; Pruchno & Wilson-Genderson, 2015).

Demographic Correlates

It would be feasible to assume that a latent profile solution should mirror the results found in unidimensional studies of successful aging or health studies. For example, people who are well educated are typically healthier than people with less education (Raghupathi & Raghupathi, 2020; Ross & Wu, 1995). Women tend to live longer than men but may experience more health problems (Austad, 2006). Women may also have a higher prevalence of anxiety, panic, and depressive disorders (Kessler et al., 2012; McLean et al., 2011). Around the globe, married people tend to be healthier than those not married (Fuchs, 2004). However, a systematic review by Depp & Jeste (2006) found that demographic variables such as gender, education, and marital status generally did not relate to successful aging. They propose that there may be a

sampling bias in which older adults who are less educated and have less economic resources may not be participating in these successful aging studies in high enough numbers (Depp & Jeste, 2006). Thus, a latent variable analysis would need to contain sufficient numbers of aging individuals to determine if demographic correlates of profiles of successful aging follow patterns like those observed in single-dimensional health assessments.

Marital Relationship and Successful Aging

The marital relationship is undoubtedly relevant to successful aging as marriage has several long-term implications for health and wellbeing (Liu & Waite, 2014; Uchino et al., 1996; King & Reis, 2012). The specific role marriage plays in successful aging can change throughout the lifetime. During the middle years (beginning in the mid 40's), the parental relationship tends to be prominent, which may affect the spousal relationship, as marital satisfaction at this age has been linked to successful aging outcomes (Ko et al., 2007). In the elder years (ages 60+), the marriage can be more influential as the children grow up and leave the family unit; and later life marriages tend to have less conflict, leading to higher marital satisfaction and lower health issues for wives (Levenson et al., 1993; Liu & Waite, 2014). For the oldest old (ages 85+), their caregivers are often spouses or family members at high risk for burnout (Alves et al., 2019). This, in turn, can lead to less-than-ideal living situations for our most vulnerable elders.

There is potential in utilizing the marital relationship to enable or promote successful aging through the relationship processes of support and strain. Support in relationships is meant to help sustain the quality of relationships by making partners feel listened to and cared for (House et al., 1988; Umberson & Montez, 2010). Having support within the marital relationship, specifically, has been previously found to be associated with various health outcomes (Khan et al., 2013; Song et al., 2010).

Though marriage is often the most accessible source of support, it can also be a source of burden or strain (Walen & Lachman, 2000). In fact, strain in the marriage might be even more strongly related to health and well-being than support (Rook, 1990; Guevara & Murdock, 2019). Research has shown that both mental and physical health can suffer in the context of relationship strain and poor marital quality has been associated with both depression and a compromised immune system (Kiecolt-Glaser, 2018).

Marital relationship processes may differentially impact women and men. Kiecolt-Glaser and Newton (2001) found that men and women were differentially affected by marital functioning across all domains of health and well-being. A meta-analysis of marital quality and health found gender differences to be either slight or non-significant; however, there was still a trend towards women seeing worse health outcomes than men (Robles et al., 2014). This relationship may be especially true for mental health as low marital satisfaction predicted depression more strongly for women than men in a study by Kendler and Gardner (2014). Women are also more likely than men to feel a responsibility to maintain the relationship and to tend to the emotional needs of others (Nolen-Hoeksema & Jackson, 2001). The burden that accompanies these feelings may lead to behaviors like rumination, which has been linked to depressive symptoms (Nolen-Hoeksema et al., 2008). The results of these studies indicate that women may be at greater risk in poor-quality marriages than men.

The Present Studies

The following studies were fundamentally based on the assumption that successful aging is a multidimensional concept. These two papers work together to better understand the multiple factors contributing to successful aging, especially the marital processes of support and strain. As

such, both papers are interrelated and further our understanding of successful aging and potential intervention methods.

Study 1 was designed to apply the LPA statistical method as a strategy to produce a comprehensive outcome for successful aging. The overall goal of this research was to advance understanding of successful aging as a multidimensional reality, which was achieved by accomplishing three aims. The first aim was to determine the best-fitting solution to a latent profile analysis by combining indicators of physical function, cognitive function, psychological function, and active engagement in life. Second, to evaluate the concurrent validity of the identified latent profile solution, it was determined if the same/a similar solution was obtained using the same measures in a demographically matched cohort of adults. Replicating the LPA in two different cohorts strengthens the profiles if similarities between cohorts were found. If the profiles were dissimilar, that could indicate a difference based on the distinct time-periods in which each cohort resides. Third, to evaluate criterion validity, the demographic distributions of successful aging profiles in both data files were explored. The primary hypotheses being tested were that: (1) discrete profiles of successful aging exist in the adult population, and (2) those profiles can be reproduced; and (3) the demographic correlates of profiles of successful aging will follow a pattern like those observed in single-dimensional assessments of health.

Study 2 explored the impact of the processes of support and strain within the marital relationship that may contribute to successful aging. This paper also exemplified the potential to apply family science measures to a multidimensional successful aging outcome. The goal of this study was to explore the impact of the relationship processes of marital support and strain on successful aging. The first aim was to fully operationalize latent profiles of successful aging at time two (MIDUS 2). The second aim was to determine if marital support and strain at time one

(MIDUS 1) predicted the profile group at time two (MIDUS 2). The third aim was to test for potential gender differences in the association of spousal support and spousal strain with successful aging. The primary hypotheses being tested were that: (1) discrete profiles of successful aging correlate with the marital processes of support and strain; and (2) spousal support at time one will be positively associated with a less detrimental profile of successful aging at time two, and spousal strain at time one will be associated with more detrimental profiles of successful aging at time two; and (3) gender will moderate the above relationships such that women who experience more spousal support will be more likely to be categorized into more positive aging profiles compared to men; and (4) women who experience more spousal strain will be more likely to be categorized into more negative aging profiles when compared to men. The null hypothesis is that there is no relationship between spousal support, spousal strain, gender, and successful aging profiles.

CHAPTER 2

STUDY 1: SUCCESSFUL AGING: A COMPREHENSIVE OUTCOME USING LATENT PROFILE ANALYSIS

Introduction

"Successful aging" is understood in general terms as a combination of maintaining health, remaining independent, and continuing and growing positive social connections (Rowe & Kahn, 1998). As a concept, successful aging moved beyond the unitary focus on unavoidable physical disease and decline to recognize age-related gains that often occur in the domains of wisdom, psychological well-being, and social engagement (Rowe & Kahn, 1998). By acknowledging its multidimensional attributes, successful aging allowed for the possibility of aging well throughout the life course. For instance, a person can actively engage in social settings and maintain connections and cognitive health, even while managing a physical disease or disability. Thus, even if a person experiences functional loss, it is possible to age successfully (Baltes & Baltes, 1990).

Aging studies tend to focus on declines in physical health or cognitive functioning often overlooking the psychological and social domains of functioning. Even after calls to incorporate other dimensions of aging (Bowling & Dieppe, 2005; Rowe & Kahn, 2015), physical health remains the most studied aspect of aging (Cosco et al., 2014; Depp & Jeste, 2006). The tendency to focus on the physical dimensions of aging over psychological and social ones may be due to the profound demographic shift that the global elder population is experiencing. Within the next decade the global population of adults aged 65 and older will increase by 236 million people (He et al., 2016). Accordingly, the increase in the elder population brings with it concerns about age-related chronic illnesses like dementia, cancer, or arthritis, which can undermine quality of life (Jaul & Barron, 2017).

The concept of successful aging acknowledges potential morbidity (Rowe & Kahn, 1998), but its holistic appreciation for aging beyond the physical dimension offers a compelling alternative to unavoidable loss. Maintaining physical health is clearly important; however, it should not be treated as the only and most important feature of successful aging. Focusing on physical health alone leads to the assumption that the absence of physical decline indicates the presence of wellness (Rowe & Kahn, 1998). Furthermore, a purely physical understanding of successful aging suggests every person will eventually be unsuccessful in avoiding disease and disability. Instead, a holistic consideration of overall function across multiple aspects of aging offers opportunity for alternative trajectories of aging, including aging successfully.

Successful aging needs to be studied comprehensively, but there have been few attempts to bring multiple dimensions of successful aging together (Mana & Bezdicek, 2020). Many studies have examined a single dimension of successful aging, such as cognitive functioning (Hamm et al., 2020), psychological function (Ryff et al., 2015), physical health (Kail & Carr, 2017), or active engagement with life (Douglas et al., 2017). Only a handful of studies have included each dimension of successful aging in some capacity but in a unidimensional manner. For example, a study by Chou and Chi (2002) included each of the four dimensions of successful aging in their study. Each of the four dimensions were analyzed independently of the other (not as a composite whole) and a participant was determined to be successfully aging if they separately met criteria in every dimension. This study was limited by the necessity for everyone to score "well" in all dimensions to be considered successfully aging. This method does not allow for nuance as a person is unlikely to be able to meet criteria among every dimension of successful aging; instead, they may score well on some dimensions and less well on others.

However, there is a methodological approach that allows for a more flexible understanding of successful aging. A recent systematic review by Mana and Bezdicek (2020) reported latent variable analysis as an emerging analytic technique that is uniquely suited to successful aging. They also noted that this method of analysis was underutilized in successful aging research (Mana & Bezdicek, 2020). Out of 74 studies in the review, only seven used some form of latent variable analysis (Mana & Bezdicek, 2020). The use of latent variable analysis is poised to be the forefront of successful aging research.

Defining the Rowe and Kahn Model

There has been a significant change in the research community since Havighurst (1963) advanced the view of aging well by limiting disease and disability. The change from Havighurst's (1963) view to a more contemporary one started when Rowe and Kahn (1987) posited that aging is not simply about physical decline. Instead, Rowe and Kahn (1987) argued for the concept of "successful aging," reflecting several dimensions of aging, including physical, mental, and social well-being. To date, the Rowe and Kahn model is the most widely used conceptual model of successful aging (Dillaway & Byrnes, 2009; Stowe & Cooney, 2015).

Rowe and Kahn (1987; 1997) described successful aging as the combination of four distinct dimensions. The first dimension, low physical morbidity, is defined as freedom from disease or disability, which does not necessarily indicate the presence of health. High cognitive and psychological functioning, the second and third dimensions of successful aging, are considered freedom from cognitive decline and mental illness, respectively. However, like with low physical morbidity, the absence of cognitive decline or mental illness alone does not indicate success. Active engagement with life, the fourth dimension of successful aging, comprises both social support and productive activity. Social support is the giving and receiving of different

kinds of support, and productive activity concerns being involved in industriousness (Everard et al., 2000; Rowe & Kahn, 1998).

All four dimensions of the model are important in their own way, yet successful aging is the combination of all four (Rowe & Kahn, 1998). Imagine a Rubik's Cube with its moving parts and many possible combinations to understand how all these parts work together. The distinct dimensions of successful aging are akin to the sides of the Rubik's Cube that align to solve the puzzle. While you may be able to complete one side of a Rubik's Cube individually, you cannot solve the puzzle unless you carefully consider all six sides of the cube. In successful aging terms, solving the puzzle for only the physical health side fundamentally ignores the other sides to the cube, which may or may not be a vibrant mix of colors depending on the person.

Operationalizing Successful Aging

Successful aging is often explored in a unidimensional manner, typically focusing on one dimension of the concept at a time (Cosco et al., 2014; Depp & Jeste, 2006). These studies provide an in-depth look into each dimension which is useful for understanding specific indicators if successful aging like episodic memory (e.g., Manenti et al., 2011), restrictions to activities of daily living (e.g., Freedman et al., 2017), or a person's quality of life (e.g., Sarla et al., 2020). However, these indicators are not independent of each other, and they often interact (Pruchno et al., 2010; Jeste et al., 2013). Therefore, successful aging as an inherently multidimensional concept should not be limited to being explored in a unidimensional manner. An assessment or analytic strategy for operationalizing successful aging, as elaborated by Rowe and Kahn (1998), would enable the understanding of successful aging as a whole concept. A concept that captures the multidimensional characteristics of successful aging could be used with various predictors to determine trajectories of aging and potentially how to maximize successful

aging across the lifespan. Further, the use of such a concept does not need to be limited to family studies but could incorporate a host of other potential disciplines and theoretical predictors allowing for the development of interventions and policies that support successful aging. However, the problem remains, how can a holistic realization of successful aging be operationalized?

Latent Profile Analysis

Latent profile analysis (LPA) offers a potential solution to the problem of quantifying and classifying "successful aging" as an integrated multidimensional state. LPA allows the identification of distinct groups of people based on many observed attributes (Gibson, 1959). LPA groups individuals without using preconceived determinants, allowing for more organic estimates of the proportions of groupings within a sample population (Gibson, 1963). The utility of the LPA would allow for the grouping of participants based on patterns of individual scores within the indicators for different dimensions of successful aging. For example, an LPA would be "given" indicators of successful aging, such as the presence or absence of mental and physical health, cognition scores, and a self-assessment of active engagement with life. As there are many ways the dimensions of successful aging can be measured, it is difficult to say how many groups these individuals may fall into.

Several studies have used some form of latent variable analysis to explore successful aging (Mana & Bezdicek, 2020). For example, Hsu and Jones (2012) effectively used a multiple - trajectory model to operationalize their understanding of successful aging in a nationally representative data set of two Taiwanese cohorts (older and younger). They delineated a 4-profile solution which they labeled "successful aging," "usual/insecure aging," "health declining," and "care demanding" respectively. The results indicated that 54.2% of the younger cohort were

aging successfully, while 29% of the older cohort were classified as successfully aging. Hsu and Jones (2012) used measures of physical health, mental health, and perceived social support to classify members of the cohorts into discrete groups, yet these measures were not incorporated into an overall representation of successful aging.

In a national data set from Amsterdam, Kok and colleagues (2017) used latent class growth analysis to combine the indicators of physical, cognitive, and emotional functioning, and how often the person engaged in social activities into discernible groups of successful aging. To be classified as successful, a trajectory had to show signs of limited decline (cognitive and physical functioning), stability, and/or improvement over time. Generally, levels of successful aging were high among the participants as 39.6% of men, and 29.3% of women were considered to have aged successfully on at least seven of the nine indicators of successful aging included in the study. They found that there were shifts over time in which indicators of successful aging were more strongly represented in latent growth analysis groups, and some of the more "successful" trajectories would still include some form of decline. Kok et al. (2017) showed that the process of successful aging can take different forms over time and still include decline.

There have been even fewer studies that have utilized LPA, specifically, to explore successful aging in a multidimensional manner (Mana & Bezdicek, 2020). A study by Pruchno and Wilson-Genderson (2015) used LPA to group subjective (e.g., self-assessment of successful aging) and objective (e.g., number of age-related chronic illnesses) indicators of successful aging. Their LPA delineated four groups of people: the "Unsuccessful" by both objective and subjective indicators, those who were "Subjective Only" or "Objective Only," those who were "successful" according to both objective and subjective indicators (Pruchno & Wilson-Genderson, 2015). They found that people were more likely to be classified as successful rather

than unsuccessful for both objective (82% successful) and subjective indicators (83% successful). Though they only focused on physical health indicators, this study showed that it is important to include both objective and subjective indicators of successful aging in a latent variable analysis.

Ko and colleagues' (2007) study is the only study that used LPA specifically to holistically include aspects of Rowe and Kahn's (1987) model of successful aging beyond physical heath. Ko et al. (2007) used measures of cognitive function, physical health, personality, and perceived social support to classify married older adults into discrete groups. Ko and colleagues (2007) delineated a 4-profile latent solution which they labeled by the distinguishing feature of the profile. These labels were: "Generally Positive," "Maritally Unsatisfied," "Maritally Satisfied but Unhealthy," and "Low Cognitive." The results indicated that there are more couple dyads successfully aging than not. Ko and colleagues' (2007) results provide a concrete application of LPA in exploring the multidimensionality of successful aging as it pertains to the Rowe and Kahn (1987) definition. Indeed, all of these studies were useful in establishing that using latent variable analysis to holistically explore successful aging is not only possible but ripe for further development (Hsu & Jones, 2012; Ko et al., 2007; Kok et al., 2017; Pruchno & Wilson-Genderson, 2015).

Demographic Correlates

It would be feasible to assume that a latent profile solution should complement results found in unidimensional studies of successful aging or health studies. For example, people who are well educated are typically healthier than people with less education (Raghupathi & Raghupathi, 2020; Ross & Wu, 1995). Women tend to live longer than men but may experience more health problems (Austad, 2006). Women may also have a higher prevalence of anxiety,

panic, and depressive disorders (Kessler et al., 2012; McLean et al., 2011). Around the globe, married people tend to be healthier than those who are not married (Fuchs, 2004). However, a systematic review by Depp & Jeste (2006) found that demographic variables such as gender, education, and marital status generally did not relate to successful aging. They propose that there may be a sampling bias in which older adults who are less educated and have less economic resources may not be participating in these successful aging studies in high enough numbers (Depp & Jeste, 2006). Thus, a latent variable analysis would need to contain sufficient numbers of aging individuals to determine if demographic correlates of profiles of successful aging follow patterns like those observed in single-dimensional health assessments.

The Present Study

The overall goal of this research was to advance understanding of multidimensional successful aging by accomplishing three aims. The first aim was to determine the best-fitting solution to a latent profile analysis by combining indicators of physical function, cognitive function, psychological function, and active engagement in life. Second, to evaluate the concurrent validity of the identified latent profile solution, it was determined if the same/a similar solution was obtained using the same measures in a demographically matched cohort of adults. Replicating the LPA in two different cohorts strengthens the profiles if similarities between cohorts were found. If the profiles were dissimilar, that could indicate a difference based on the distinct time-periods in which each cohort resides. Third, to evaluate criterion validity, the demographic distributions of successful aging profiles in both data files were explored. The primary hypotheses being tested were that: (1) discrete profiles of successful aging exist in the adult population, and (2) those profiles can be reproduced; and (3) the demographic

correlates of profiles of successful aging will follow a pattern like those observed in single-dimensional assessments of health.

Methods

Data for this study were collected for the Midlife in the United States (MIDUS), (Radler, 2014). The MIDUS is a national (United States) multi-wave longitudinal study whose purpose was to examine health aging in the U.S. (Radler, 2014). The MIDUS was a uniquely interdisciplinary project that lends itself to creating diverse assessments of each dimension of successful aging. The MIDUS study included measures for psychological, physical, cognitive, and social factors (Radler, 2014). The study also contained many demographic variables such as age, sex, race, education, marital status, household income, and various types of social relationship processes (Radler, 2014). The MIDUS study currently includes three waves collected in 1995/1996, 2004, and 2013, and the refresher sample collected between 2011 and 2014. The MIDUS Refresher cohort was intended to replenish the original MIDUS 1 cohort. These data were collected using a 30-minute phone interview and two mailed 50-page self-report questionnaires (Radler, 2014). Participants were selected via Random Digit Dial (RDD) in which contact was initiated by calling randomly generated phone numbers.

Data for the current study came from the MIDUS 2 (2004) and the MIDUS Refresher (2011-2014). The MIDUS 2 was chosen for these analyses as it was the first-time cognitive assessments were included in the MIDUS. The use of the MIDUS 2 and the MIDUS Refresher offered a chance to explore independent but comparable samples to determine if the profiles obtained were unique to a particular sample or time period (as these two cohorts occur 10 years apart). Thus, the use of independent yet comparable samples would show if the profiles obtained

are unique to a particular cohort, or if the profiles are more universal in nature despite cohort differences (Drewelies et al., 2018).

The current study included only participants who had responses for all indicators of successful aging (e.g. cognitive scores, BMI, etc.) for both the MIDUS 2 and Refresher cohorts. Siblings and twin pairs were not included. The sample from the MIDUS 2 included ages ranging from 30 to 84 (N =2,257). The sample from the MIDUS Refresher originally included ages ranging from 23 to 76 (N =3,577). To keep the two MIDUS data sets as demographically similar as possible, the age range for the MIDUS Refresher was limited to include only the ages of 30 to 76 (n =3,351). Institutional review board permission was granted from Florida State University for the secondary analysis of these data.

Measures

Measures were selected to operationalize each dimension of Rowe's and Kahn's (1998) conceptual model of successful aging. The dimensions include low physical morbidity, high cognitive and psychological functioning, and active engagement with life. The final selection of measures included six indicators covering four dimensions of successful aging. The mean score was imputed for missing data for both variables that made up psychological functioning, and the variable used to assess active engagement with life. The mean score was not imputed for any other variables.

Low Physical Morbidity

Physical Functioning. Physical functioning was assessed using two indicators. The first was an assessment of the participant's ability to function daily using a basic limitation to activities of daily living (ADLs) scale with two items. Participants were asked "How much does your health limit you in doing each of the following?" for two items including "Bathing or

dressing yourself" and "Walking one block." Participants could respond with 1 "alot," 2 "some," 3 "a little," and 4 "not at all." The variable was constructed by calculating the mean of all the reverse coded values of the two items in the scale, creating a summary score such that higher scores reflected a greater difficulty in performing daily activities. This score was then added to the LPA.

The second indicator of physical functioning was measured using a 7-item list of age-related chronic illnesses. Participants were specifically asked, "In the past 12 months, have you experienced or been treated for any of the following. . . ," Participants responded "Yes/No" to whether they had experienced "osteoporosis, hypertension, heart condition, cancer, diabetes, stroke, or lung conditions such as asthma or emphysema." An eight item, Body Mass Index (BMI), was obtained from self-reported height and weight, and converted to a binary variable "healthy BMI" (BMI < 24.9), "high BMI" (BMI > or equal to 25). The eight binary variables were then summed creating a composite score such that higher scores reflected worse physical function. The composite score was created before being added to the LPA.

High Cognitive and Psychological Functioning

Cognitive Functioning. Cognitive function was assessed using the Brief Test of Adult Cognition by Telephone (BTACT). The BTACT is made up of three component tasks of speed, reasoning, and short-term memory factors. Speed was assessed by the digit symbol substitution test of the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955) and a letter comparison task (Salthouse & Babcock, 1991). Reasoning was assessed with the Schaie-Thurstone letter series (Schaie, 1985) and Raven's Advanced Progressive Matrices (Raven, 1991). Short-term memory was measured with the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955). In this scale, the participant was given a task where they were required to count backwards in

increments of seven. Participants were also asked to complete a letter comparison task (Salthouse & Babcock, 1991) and digit symbol substitution task from the WAIS. A composite score was created by transforming the scores for all the tasks into standardized z-score and averaging them. Latencies were multiplied by (–1), so higher scores would correspond to faster reaction times. This composite measure of cognitive functioning has been used in other publications (Miller & Lachman, 2000).

Psychological Function. Mental health was assessed using two indicators. First, Ryff's (1989) six-factor Model of Psychological Well-being was used to assess psychological function. These aspects include self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and positive relations with others (Ryff, 1989). Respondents were asked to respond on a scale of 1-7 where 1= "Strongly agree"; 2 = "Somewhat agree"; 3= "A little agree"; 4= "Neither agree or disagree"; 5= "A little disagree"; 6= "Somewhat disagree"; and 7= "Strongly disagree." For positive relations with others, respondents were asked to respond to items such as "People would describe me as a giving person, willing to share my time with others". For personal growth, respondents were asked to respond to items such as "For me, life has been a continuous process of learning, changing, and growth." For purpose in life, respondents were asked to respond to items such as "Some people wander aimlessly through life, but I am not one of them." Responses to each set of three items were reverse coded and summed creating a composite score such that higher scores reflected better psychological function. The composite score was created before being added to the LPA (M2: $\alpha = 0.80$; MR: $\alpha = 0.79$).

The presence of mental illnesses, also referred to as psychiatric disorders, was the second indicator of psychological function. It was assessed using the Composite International Diagnostic Interview Short (CIDI-SF) form scale to indicate the presence of major depression, panic

disorder, and/or generalized anxiety disorder (GAD). Like the chronic health conditions measure, responses were summed creating a composite score such that higher scores reflected worse outcomes. This composite score was created before being added to the LPA.

Depression was assessed using a scale of 6 items with "Yes/No" responses to items such as "feel more tired out or low on energy than is usual", "feel down on yourself, no good, or worthless", or "think a lot about death." An answer of "yes" to at least four items indicated the presence of depressive symptoms. Panic disorder was assessed using a 6-item scale with "Yes/No" responses to items such as "your heart pounds," "you sweat," and "you tremble or shake." An answer of "yes" to at least three items indicated the presence of panic disorder. Generalized Anxiety Disorder (GAD) was assessed using a 10-item scale with "Yes/No" responses to items such as "had trouble falling asleep," "were low on energy," and "were irritable because of your worry." An answer of "yes" to at least three items indicated the presence of GAD.

Active Engagement with Life

Active engagement with life was assessed using a 34-item version of the Keyes' (1998) five-component model of social well-being questionnaire. These components include social integration, social contribution, social coherence, social actualization, and social acceptance. Each component was measured using six or seven items. Respondents were asked to respond on a scale of 1-6 where 1= "Strongly agree" and 6= "Strongly disagree." Responses to negative items were reverse coded so that higher scores reflected better outcomes and summed creating a composite score such that higher scores reflected better outcomes. The composite score was created before being added to the LPA (M2: $\alpha = 0.73$; MR: $\alpha = 0.74$).

Demographic Variables

Demographic variables included age, ethnicity, race, sex, educational attainment, and marital status. All demographic variables were self-reported.

Racial Origins. Race was recoded into "White," "Black/African American," "Native," and "Other."

Ethnicity. Ethnicity was a separate variable from race and was recoded into Hispanic (yes/no).

Age. Age was recoded from a continuous variable into a categorical variable of 10-year intervals from age 30 to age 84 (MIDUS 2) or 76 (MIDUS Refresher).

Educational Attainment. Educational attainment was separated into five groups: "Less than high school," "High School or GED," "Some College," "College Degree," and "Graduate School."

Marital Status. Marital status was separated into five groups: "Married," "Separated," "Divorced," "Widowed," and "Never Married."

Analysis

The selected indicators of successful aging were created from several items to reduce the overall number of variables in the analysis. These indicators were chosen based on previous health and aging studies involving the MIDUS data. Using the MIDUS data set, Grzywacz and Keyes (2004; Keyes & Grzywacz, 2002) modeled and operationalized the idea of "complete health," which is conceptually similar to successful aging in that it included the dimensions of physical and mental health and social well-being. They included a list of 29 chronic health problems, a limitations of daily living scale with six items, the CIDI-SF scales, Keyes' measures of social wellbeing, and Ryff 's measures of six dimensions of psychological well-being

(Grzywacz & Keyes, 2004). Pruchno and Wilson-Genderson (2015) also used a list of chronic health issues in their LPA that was limited to illnesses that were typically correlated with age (osteoporosis, hypertension, heart condition, cancer, diabetes, stroke, or lung conditions). Cognitive functioning is the second most used operationalization of successful aging (Cosco et al. 2014; Depp & Jeste, 2006). The MIDUS data set includes the BTACT composite score which has been used in previous studies as a measure of cognitive functioning (Miller & Lachman, 2000).

Of the six indicators used in the LPA, only the cognitive function score was already a standardized z-score. The five remaining indicators (restrictions to activities of daily living, number of chronic conditions, Ryff's positive psychological function, number of psychiatric disorders, and Keyes' dimensions of social well-being) were standardized into z-scores so that the results of the LPA could be better understood. The non-standardized scores vary largely and are not easily interpretable without standardization.

After standardization, the z-scores for each indicator of successful aging from the MIDUS 2 were submitted to an LPA in Mplus using the 'names are' and 'usevariables' commands, respectively along with the participant ID. Missing were identified as (-99). The default options for LPA are designated by the label %OVERALL%. Mplus uses a maximum likelihood procedure in a latent mixture model to identify potential groupings in the data (Lanza et al., 2003).

Results obtained from the LPA for both datasets were evaluated using several model fit statistics to determine the solution providing the best fit to the data (Lanza et al., 2003). These statistics included Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), Sample Adjusted BIC (SABIC), and entropy. The AIC, BIC, and SABIC are requested using the

"tech11" option for desired output in MPlus. Lower values for AIC, BIC, and SABIC indicate a good fitting model. Entropy, which is an index reflecting the accuracy of class membership assignment, was also used to evaluate the best fitting LPA solution wherein values closest to 1.0 are considered optimal (Wang et al., 2017). Additional model fit statistics included the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMRT) and Adjusted Lo-Mendell-Rubin likelihood ratio test (ALMRT, Lo, Mendell, & Rubin, 2001) which were used to compare the bigger profiles sizes to the smaller profile size models. Finally, a scree plot of the AIC, BIC, and SABIC values was generated for the MIDUS 2 LPAs to compare the overall pattern of results for the latent profiles. These plots assisted in determining the proper number of profiles based on which class numbers fell below the 'elbow' of the plot. For each person, Mplus estimated what class a person was likely to be classified into. The predictive probabilities of the profile a person belonged in were also requested from the LPA in Mplus.

To test the second aim and evaluate the criterion validity of the identified latent profiles in the MIDUS 2, the same measures were analyzed in Mplus in the same manner in a demographically matched cohort of adults from the MIDU Refresher. The same model fit statistics were used to evaluate the LPA results for the MIDUS Refresher. A scree plot of the AIC, BIC, and SABIC values was also created for the MIDUS Refresher to compare the overall pattern of results and help to determine the number of latent profiles. The predictive probabilities of the profile a person belonged in were also requested from the MIDUS Refresher LPA in Mplus. Finally, a chi-square test of independence was run on the latent profile results for the MIDUS 2 and the MIDUS Refresher together to test if the results were statistically similar (Franke et al., 2012).

To address the third aim, the predictive probabilities from the Mplus LPA outputs were transformed into a variable in SPSS for both the MIDUS 2 and the MIDUS Refresher. This variable indicated to which profile each participant belonged. From there, demographics including race, age, sex, ethnicity, and educational attainment were cross tabbed with the profile assignment variable for both MIDUS 2 and MIDUS Refresher, respectively. A chi-square test with a post hoc pairwise z-test was also run for each demographic variable to determine if there was a significant difference between categories (McHugh, 2013).

Results

Demographic Characteristics

The sample included N=2,257 participants from the MIDUS 2. MIDUS 2 participants were aged between 30 and 84 years (mean 55.84, SD 12.76) and were predominantly female (52.4%). Most of the participants identified as White (87.8%), 6.3% of participants identified as Black/African American, 1.7% identified as Native, and about 4.2% identified as another race.

The sample from the MIDUS Refresher included N=3,351 participants. MIDUS Refresher participants were aged between 30 and 76 years (mean 52.08, SD 13.48) and were predominantly female (52%). Most of the participants identified as White (84.4%), 7.2% of participants identified as Black/African American, 1.6% identified as Native, and about 7.8% identified as another race.

MIDUS 2 Latent Profile Analysis Results

Results from the LPA characterized four distinct profiles of successful aging, and it described the distribution of these profiles in the adult population. Table 1 includes the AIC, BIC, SABIC, VLMRT, AMLRT, and entropy values for the MIDUS 2 for the one to five profile solutions. The final decision for the number of profiles was determined based on the information

criteria cutoffs and the output. Visual inspection of the scree plot assisted in determining the proper number of profiles based on which profile numbers fell below the 'elbow' of the plot, which evened out at four profiles. See Figure 2 for the scree plot for the MIDUS 2.

Mplus estimated what profile a person was likely to be classified into. A plot of the means was created in which columns were clustered based on profile assignment. The best fitting model was found by starting with a single profile model and adding one additional profile at each step until stopping at a maximum of 5. The four-profile solution made the most sense theoretically as the fourth profile had distinguishing characteristics that differentiated it from the third profile. Additionally, the information criteria cutoffs were smaller than the other profiles for the four-profile solution, entropy was close to 1.00 (.94), and the AMLRT ($p < .01$) and VLMRT ($p < .01$) were significant. In an LMR, a significant value ($p < .05$) indicates that a solution with more profiles is better than a solution with fewer profiles The five-profile solution was no longer significant.

Based on the information criteria cutoff, a plot of the means of the standardized indicators was created. To visually explore the profiles, the columns were clustered based on profile assignment. Results indicate four distinct latent profiles for the MIDUS 2. See Figure 4. Profile 1 was characterized by highest sense of social wellbeing, few psychiatric disorders, no cognitive decline and high psychological functioning, and the reduced presence of chronic conditions and restrictions to daily living. Profile 1 was the most 'successful' group and were named the "Healthiest Overall." It was also the largest group with 78.6% of the sample. Those who were classified as "Healthiest Overall" had the highest cognitive scores, sense of well-being, and self-rated health; and had the lowest number of age-related physical disabilities (i.e. cancer, stroke, osteoporosis, etc.) and psychiatric disorders (depression, anxiety, and panic

disorder). Profile 2 accounted for 7.0% of the sample and was characterized by low social wellbeing, few psychiatric disorders, the lowest cognitive functioning scores, low psychological functioning, increased chronic conditions and restrictions to daily living. This group was distinguished by "Poor Physical and Cognitive Health/No Psychiatric Disorders" and had the highest amount of cognitive decline, number of chronic illnesses, and restrictions to daily living. Profile 3 accounted for 10.8% of the sample and were characterized by low social wellbeing, some presence of psychiatric disorders, some cognitive decline, low psychological functioning, and some chronic conditions and restrictions to daily living. Profile 3 was similar to Profile 4 but not as severe, so it was named "Poor Mental Health/Less Psychiatric Disorders." Profile 4 accounted for 3.6% of the sample and was characterized by the lowest psychological functioning and social wellbeing and a high number of chronic conditions and restrictions to daily living. While there was little to no cognitive decline in Profile 4, it was distinguished by having the highest number of psychiatric disorders and lowest psychological functioning and social wellbeing. Profile 4 was named "Poor Mental Health/High Psychiatric Disorders."

MIDUS Refresher Latent Profile Analysis Results

Again, results from the LPA characterized four distinct profiles of successful aging. Table 2 includes the AIC, BIC, SABIC, VLMRT, AMLRT, and entropy values for the MIDUS Refresher for the one to five profile solutions. Visual inspection of the scree plot showed that the suggested number of profiles again evened out at four profiles. See Figure 3 for the scree plot for the MIDUS Refresher.

A plot of the means was created in which columns were clustered based on profile assignment and visual inspection was used to explore the profiles. Like MIDUS 2, the four-profile solution made the most sense theoretically as the fourth profile had distinguishing

characteristics that differentiated it from the third profile. Additionally, the information criteria cutoffs were smaller than the other profiles The AIC, BIC, and SABIC for the four-profile solution, entropy was close to 1.00 (.94), and the AMLRT ($p < .01$) and VLMRT ($p < .01$) were significant as well. A significant value ($p < .05$) for the AMLRT indicates that a solution with more profiles is better than a solution with fewer profiles. The five-profile solution was significant ($p < .001$), but the entropy dropped to .78.

Visually, the profiles obtained were similar to the profiles in the MIDUS 2. See Figure 5. The profiles were once again classified as Profile 1 being the "Healthiest Overall" profile (78.0%), Profile 2 was the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile (6.3%), Profile 3 was again classified as "Poor Mental Health/Less Psychiatric Disorders" (10.9%); and Profile 4 was again classified as "Poor Mental Health/High Psychiatric Disorders" (4.8%). The only notable differences between the profiles make-up of the MIDUS Refresher from the MIDUS 2 were seen in Profiles 3 and 4. There was no cognitive decline in Profile 3 and some cognitive decline in Profile 4 in the MIDUS Refresher.

Chi-square Results

A chi-square test of independence was performed to examine the relationship between the sample groups (MIDUS 2 and MIDUS Refresher) and the latent profile groups (Profile 1, Profile 2, Profile 3, and Profile 4). The relationship between these variables was not significant ($x^2 = 5.77$, df = 3, $p = .123$). The profiles from these two sample groups are not significantly different from each other.

MIDUS 2 Latent Profile Demographics

The third aim of this study was to examine the profiles regarding demographic information such as age, racial origins, ethnicity, sex, educational attainment, and marital status.

The demographic correlates of the successful aging profiles for the MIDUS Refresher follow similar patterns to those of the MIDUS 2. While there were some slight differences in the distributions, generally they were similar. Pairwise comparisons run on racial origins, ethnicity, age, sex, educational attainment, and marital status yielded significant variation among differential demographic categories of these variables for both the MIDUS 2 and the MIDUS Refresher. See Table 3 and Table 4 for these classifications for the MIDUS 2 and MIDUS Refresher respectively.

Racial Origin and Ethnicity

In the MIDUS 2, by racial origin, Black/African Americans were more likely to be classified into the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile with the highest percentage (11.3%) of all the other racial groups. Interestingly, Native American was the least likely to be classified into a "less-successful" profile with around 90% in the "Healthiest Overall" profile. However, the number of Native Americans in the sample was very small (n=39). The ethnicity variable was similarly interesting in that the percentage of Hispanic (78.7%) and non-Hispanic (78.5%) people did not appear to vary much in the "Healthiest Overall" profile and non-Hispanics had the higher percentage of people (7.3%) in the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile compared to Hispanic people (2.1%). The chi-square tests for racial origins and ethnicity respectively against the latent profile variable were not significant ($x^2 = 14.56$, df = 9, $p = .104$; $x^2 = 5.02$, df = 3, $p = .170$).

Age

By age range, the oldest cohorts (ages 69-84) were more likely to be classified into the "Poor Physical and Cognitive Health/No Psychiatric Disorders." Interestingly, more of the younger cohorts (ages 30-59) were likely to be classified into the "Poor Mental Health/Less

Psychiatric Disorders" and "Poor Mental Health/High Psychiatric Disorders" profiles. The chi-square test for age against the latent profile variable was significant ($x^2 = 140.25$, df = 15, $p < .001$).

Sex

By sex, there appears to be a gender difference as 85% of males are in the "Healthiest Overall" profile versus only 72% of females. Women had the higher percentage (15%) in the "Poor Mental Health/Less Psychiatric Disorders" profile compared to men (7%). Similarly, in the "Poor Mental Health/High Psychiatric Disorders" profile, women had the higher percentage (5.5%) compared to men (1.6%). The chi-square tests for sex against the latent profile variable was significant ($x^2 = 68.75$, df = 3, $p < .001$).

Educational Attainment

By educational attainment, those with a high school degree or less were less likely to be in the "Healthiest Overall" profile versus those with at least a college degree or higher. Overall, those with a college degree or higher tended be the least likely to fall into a non-successful category. Those with a less than high school education had a higher percentage (18%) fall in to the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile than those with a college degree (4%) or higher (3%). The chi-square tests for educational attainment against the latent profile variable was significant ($x^2 = 81.85$, df = 12, $p < .001$).

Marital Status

By marital status, those who were married had the highest percentage (82%) in "Healthiest Overall" profile versus who were separated (60%), divorced (74%), widowed (68%), or never married (78%). Overall, those who were married were the least likely to fall into a non-successful category. Those who were widowed had the highest percentage (18%) fall in to the

"Poor Physical and Cognitive Health/No Psychiatric Disorders" profile. Those who were separated overwhelmingly had the highest percentage (24%) fall in to the "Poor Mental Health/Less Psychiatric Disorders" profile. Those who were separated also had the highest percentage (10%) fall into the "Poor Mental Health/High Psychiatric Disorders" profile, followed closely by widowed (9%). The chi-square tests for marital status against the latent profile variable was significant ($x^2 = 78.51$, df = 12, $p < .001$).

MIDUS Refresher Latent Profile Demographics

Racial Origin and Ethnicity

One notable difference For the MIDUS Refresher versus the MIDUS 2 was that the chi-square tests for the racial origins and ethnicity variables against the latent profile variable were now significant ($x^2 = 34.57$, df = 9, $p < .001$; $x^2 = 7.85$, df = 3, $p < .05$). For ethnicity, most Hispanics (73%) fell into in the "Healthiest Overall" profile, while non-Hispanics were around 78% in the same profile. Hispanics had a higher percentage (17%) of people in the "Poor Mental Health/Less Psychiatric Disorders" profile than non-Hispanics (11%). In racial origins, Whites now had the highest percentage (79%) in the "Healthiest Overall" profile when compared to minorities. Native Americans had the lowest (67%) followed by Black/African Americans (69%) and other racial origins (75%). Native Americans overwhelmingly had the highest percentage (19%) in the "Poor Mental Health/Less Psychiatric Disorders" profile, followed by Black/African Americans (12%). Black/African Americans had the highest percentage (13%) in the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile, followed by Black/African Americans (12%).

Age

By age range, the oldest cohorts (ages 60-79) were more likely to be classified into the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile. Again, more of the younger cohorts (ages 30-59) were likely to be classified into the "Poor Mental Health/Less Psychiatric Disorders" and "Poor Mental Health/High Psychiatric Disorders" profiles. The chi-square test for age against the latent profile variable was significant (x^2 =181.730, df = 12, p < .001).

Sex

By sex, there appears to be a gender difference as 85% of males are in the "Healthiest Overall" profile versus only 72% of females. Women (7%) were more likely to be classified into the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile than men (5%). Women had the higher percentage (14%) in the "Poor Mental Health/Less Psychiatric Disorders" profile compared to men (7%). Similarly, in the "Poor Mental Health/High Psychiatric Disorders" profile, women had the higher percentage (6%) compared to men (3%). The chi-square tests for sex against the latent profile variable was significant (x^2 = 82.896, df = 3, p < .001).

Educational Attainment

By educational attainment, those with a high school degree or less were less likely to be in the "Healthiest Overall" profile versus those with at least a college degree or higher. Overall, those with a college degree or higher tended be the least likely to fall into a non-successful category. Those with a less than high school education had a higher percentage (15%) fall into the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile than those with a

college degree (4%) or higher (3%). The chi-square tests for educational attainment against the latent profile variable was significant (x^2=143.64, df = 12, p < .001).

Marital Status

By marital status, those who were married had the highest percentage (84%) in "Healthiest Overall" profile versus who were separated (58%), divorced (68%), widowed (67%), or never married (78%). Overall, those who were married were the least likely to fall into a non-successful category. Those who were widowed had the highest percentage (15%) fall in to the "Poor Physical and Cognitive Health/No Psychiatric Disorders" profile. Those who were separated overwhelmingly had the highest percentage (22%) fall in to the "Poor Mental Health/Less Psychiatric Disorders" profile. Those who were separated also had the highest percentage (15%) fall into the "Poor Mental Health/High Psychiatric Disorders" profile, followed closely by widowed and divorced at 8% each. The chi-square tests for marital status against the latent profile variable was significant (x^2=151.17, df = 12, p < .001).

Discussion

Using selected assessments from each domain of successful aging, this study utilized a statistical technique that enabled the characterization of distinct profiles of successful aging and described the distribution of these profiles in the adult population. Overall, results indicated that older adults can be placed into one of four latent profiles of successful aging. These profiles were reproduced in a demographically similar cohort of adults. Finally, the demographic correlates of the profiles of successful aging do follow patterns like those observed in single dimensional assessments of health, and identified latent profiles generally comport with descriptions of health in the general population.

Distinct patterns of successful aging were effectively captured and operationalized as a holistic concept. The largest profile in the MIDUS 2, accounting for 78.6% of the population is the "Healthiest Overall" profile, followed by the "Poor Mental Health/Less Psychiatric Disorders" profile that accounted for 10.8% of the population. The smallest profiles were the "Poor Physical and Cognitive Health/No Psychiatric Disorders" and "Poor Mental Health/High Psychiatric Disorders" profiles, accounting for 7% and 3.6% respectively. Though there was an almost 10-year difference between the two cohorts, the sample distribution of the MIDUS Refresher was similar to that of the MIDUS 2 with the "Healthiest Overall" profile accounting for 78% of the population, followed by the "Poor Mental Health/Less Psychiatric Disorders" profile that accounted for 10.9% of the population. The smallest profiles were again the "Poor Physical and Cognitive Health/No Psychiatric Disorders" and "Poor Mental Health/High Psychiatric Disorders" profiles, accounting for 6.3% and 4.8% respectively. These results support the idea that successful aging is a nuanced concept that should be sensitive to multiple dimensions of aging (Bowling & Dieppe, 2005; Rowe & Kahn, 2015). Though there were differences in measures and methodologies, the profiles in this study were consistent with previous research that used latent variable analysis in that all the delineated profiles described nuanced forms of successful aging (Ko et al., 2007; Kok et al., 2017). These results lend support to the idea that "successful" aging is a fluid concept that can include various forms decline and success. Additionally, the profile makeup of this study mirrors that of other latent variable studies. Like Ko et al. (2007), the largest profile was generally positive and experienced minimal decline. Kok et al. (2017) also found a large percentage of "successful" agers with few participants who could be considered to have no successful trajectories. The findings of this study substantiate the growing amount of research that embraces a more positive and

multidimensional view of aging. Further, the results of this study expand previous research by being the first holistic LPA run in a large nationally representative United States sample (the MIDUS).

Strikingly, the results of the latent profile analysis were replicated in an independent and demographically matched cohort. Not only did the identified profiles align with previous studies (Ko et al., 2007; Kok et al., 2017), but the replication across time suggests the profiles have continuity across time. The similarity in the profiles across the cohorts is "striking" because the MIDUS Refresher cohort was accrued in the midst of the "Great Recession" (Patel, 2019), and at least psychological health tends to suffer during poor economies (Frasquilho et al., 2016). Therefore, the fact that the profiles were so similar, in both content and estimated segments of society offers compelling evidence of validity.

The demographic variables of age, sex, educational attainment, and marital status were all significantly associated with successful aging for both the MIDUS 2 and the MIDUS Refresher. Additionally, the patterns of association all comport with descriptions of unidimensional appraisals of successful aging the collective evidence suggests the profiles of successful aging are valid. The overwhelming similarity of these results in both data sets suggests that these profiles are accurate representations of individual indicators of health. These results contrast with the results of the systematic review by Depp & Jeste (2006), who found that demographic variables such as generally did not relate to successful aging. Depp & Jeste (2006) posited that a large enough sample might allow these associations to emerge. Indeed, the present study confirmed their supposition. These findings show that a latent profile solution is an appropriate means for exploring successful aging and for categorizing groups within the study

population. Therefore, the multidimensional concept of successful aging is valid when explored holistically.

Notably, the prevalence of Black/African Americans in the less "successful" groups was significant in the MIDUS Refresher, but not the MIDUS 2. This difference in the results may be due to the higher number of Black/African Americans in the MIDUS Refresher data set, which allowed for more accurate results for this group. Another possibility is that the Great Recession may have disproportionality detrimentally affected Black/African Americans by the time of the MIDUS Refresher. Regarding ethnicity, the results from the MIDUS Refresher are similar to previous unidimensional research that indicates a higher prevalence of mental and emotional well-being issues among Hispanics (Harris et al., 2005; McKnight-Eily et al., 2021). The results from the MIDUS Refresher are also consistent with statistics that show a high prevalence of physical illness and mental health disorders among Native American populations (Gracey & King, 2009).

Among the different age cohorts specifically, the older cohorts (ages 60-79) were more likely to show signs of poor physical health than their younger counter parts. This result was consistent with research as one of the major risk factors for disease and disability is simply age (Hubert et al., 1993). However, across both the MIDUS 2 and the MIDUS Refresher, more of the younger cohorts (ages 30-59) were likely to show signs of poor mental health and were more likely to have a psychiatric disorder. These results indicate that, while older cohorts may struggle more with their physical health, younger cohorts struggle more with their mental health. The stability of the profile makeup across both time periods by age cohort suggests that the phenomenon of the younger cohort's struggle with mental health is a consistent one, even when faced with an economic recession.

The findings of this study must be considered through its limitations. First, it is unknown if the use of different measures to quantify successful aging would produce comparable latent profiles. Second, the MIDUS 2 lacked enough participants from minority populations to conclusively categorize by racial origins and ethnicity, as such, they were underrepresented in this study. It is possible that racial and ethnic minorities may be susceptible to broader economic and environmental influences, which could affect how racial and ethnic minorities are classified in terms of successful aging. Third, the high number of "successful" agers could be attributed to the generally high socioeconomic status of the MIDUS sample. Finally, these data were self-reported which is reliant on the accuracy of the participant's perceptions and knowledge of their health statuses.

These findings confirm that LPA is a viable way to operationalize successful aging as a multidimensional concept. This study was the first to use used a robust measure of cognitive functioning in a large nationally representative data set to explore successful aging, whereas previous studies like Hsu and Jones (2012) were unable to explore cognitive function as a dimension of successful aging since the data were not available, as was noted in the limitations of their study. The systematic review by (Mana and Bezdicek (2020) also acknowledged the need to include robust measures of cognitive functioning in successful aging research. Thus far, the only other study that used LPA and included a measure of cognitive functioning was the one by Ko et al. (2007). A major strength of this study was the use of two different cohorts of demographically matched samples to explore successful aging indicators simultaneously. The findings showed that despite a nearly 10-year gap between the two data sets, there was viability in the captured profiles. Additionally, only one previous study had operationalized successful aging in a latent variable analysis in a nationally representative data set of two cohorts (Hsu &

Jones, 2012). These data were from Taiwan and explored successful aging in older versus younger adults. The current study is the only one to my knowledge that has replicated profiles of successful aging in a nationally representative sample of the United States population and the only one with a demographically matched sample. Finally, there was evidence that these latent profiles captured patterns of demographic characteristics that were comparable to unidimensional health outcomes, exemplifying the criterion validity of the profiles.

Directions for future research include exploring the life events and social relationships that may contribute to placement into specific profiles. The results of this study provided an essential first step in tracking successful aging across the life span. A longitudinal exploration of these data is necessary to delve into potential changes over time and assess potential causal relationships. Future studies using these profiles would benefit by separating the age groups of the participants to acknowledge the general differences in health as experienced by a younger adult as compared to older adults. Finally, as the marital relationship seems to affect successful aging, future research should delve further into the processes within the marital relationship.

In summary, these results have far-reaching implications for the ability of the scientific community to explore successful aging holistically. The creation and validation of these profiles allow for the further exploration of the processes that contribute to successful aging and identify malleable targets for promoting better multidimensional successful aging. The findings of this study have important implications for future research into the correlates and determinates of successful aging to aid in developing effective interventions.

CHAPTER 3

STUDY 2: SUPPORT, STRAIN, AND SUCCESSFUL AGING: LONGITUDINAL ANALYSIS OF PROCESSES WITHIN THE SPOUSAL RELATIONSHIP AND CORRESPONDING LATENT PROFILE

Introduction

Marriage, being one of the longest social relationships of a person's life (other than siblings), has the potential to impact multiple dimensions of successful aging (Kiecolt-Glaser & Newton, 2001; Kiecolt-Glaser, 2018). The literature linking marital status to health is well established (Robles et al., 2014). The marital relationship is an especially important focus as it is one of the strongest correlational linkages to health and often has long-term implications for health and wellbeing (Liu & Waite, 2014; Uchino et al., 1996; King & Reis, 2012). However, outside of a few exceptions (Ko et al., 2007; Tracy & Utz, 2020), there has been little exploration of the processes within the marital relationship that may be affecting a person's *overall* health and wellbeing and subsequent ability to age well.

Successful aging offers a means to explore the health-related effects of marital processes in a holistic manner. Successful aging is the term that many researchers use to label the notion of living healthy and well into the elder years (Rowe & Kahn, 1998). Rowe and Kahn (1987) introduced the idea that successful aging is characterized as maintaining mental and physical health, remaining independent, and continuing and growing positive social connections into later life. The fundamental idea is that aging well cannot and should not focus solely on morbidity related to physical health alone.

Across the individual dimensions of successful aging, there is evidence to support the notion that marriage is associated with better successful aging. In the physical health domain, all-cause mortality has been linked to marital status (Curtin & Tejada-Vera, 2019; Manzoli et al.,

2007); and health behaviors and their related outcomes tend to be concordant among married couples (Meyler et al., 2007). A systematic review by Meyler et al. (2007) suggests that couples who make better lifestyle choices together are more likely to succeed at making those changes. In the cognitive sciences, marriage is associated with a reduced risk of dementia and greater retention of cognitive function (Sommerlad et al., 2018). In the mental health literature, married people tend to have better mental health than non-married individuals (Braithwaite & Holt-Lunstad, 2017) or those who experienced divorce or widowhood (Williams et al., 2010). Finally, being married has been consistently associated with greater psychological well-being (Carr et al., 2014; Kamp Dush et al., 2008; Soulsby & Bennett, 2015).

However, simply saying that being married is good for successful aging is problematic. Rather than just being married, it would stand to reason that being in a *good* marriage is paramount to seeing beneficial outcomes across the successful aging dimensions. Being in a low-quality relationship may affect a person's mental state or physical well-being (Tracy & Utz, 2020). Most research surrounding the marital relationship and the dimensions of successful aging focuses on marital status alone, without delving deeper into marital quality (the subjective appraisal of one's relationship) and the processes that may affect it (Burman & Margolin, 1992).

Marital Processes

Marriage can shape health outcomes through the distinct processes of social support, strain, and control (House et al., 1988). Support and strain (along with control) are suggested by House and colleagues (1988) to be the main processes by which any social relationship, including marriage, may affect health outcomes. Support is typically understood as positive aspects of a relationship, particularly the receipt or exchange of emotional, instrumental, or financial resources between individuals. Strain, by contrast, is conceived as the negative,

obligatory, or possibly conflictive interactions in social relationships (House et al., 1988). Control refers to actions taken by one member of a social relationship, such as a spouse, for the purpose of regulating another's behavior through the application of sanctions or rewards (House et al., 1988; Umberson, 1992; Sorkin et al., 2014). Each of these social processes can independently exert influence on health outcomes, and by extension, a multidimensional outcome like successful aging. The present study will focus on the processes of support and strain.

Support

Support in relationships is meant to help sustain the quality of relationships by making partners feel listened to and cared for (House et al., 1988; Umberson & Montez, 2010 Social support may indirectly affect health by helping to reduce the impact of stressors and promoting healthy coping strategies to deal with those stressors (Cohen, 2004). For example, a study by Khan and colleagues (2013) found that spousal support was positively associated with healthy behaviors such as engagement in physical activities for older adults with Type 2 diabetes. Social support may also directly impact physical reactions to stressors by lowering heart rates and blood pressure (Uchino, 2006). A meta-analysis of 126 articles showed that support within the marital relationship, specifically, was associated with better physical health and strain was a risk factor for poor health outcomes (Robles et al., 2014).

Strain

Strain might be even more strongly related to health and well-being than support (Rook, 1990; Rook & Charles, 2017; Guevara & Murdock, 2019). Though marriage is often the most accessible source of support, it can also be a source of burden or strain (Walen & Lachman, 2000). Research has shown that physical and mental health can suffer in the context of

relationship strain (Umberson et al., 2006). For example, strain in the relationship has been associated with both depression and compromised immune function (Kiecolt-Glaser, 2018). Another recent study found that spousal strain was associated with psychological distress (Garcia & Umberson, 2019). The negative effects on health from strain in a marriage can also worsen with age (Umberson et al., 2006). It is possible that strain in couple relationships may negatively affect health through the physiological arousal that accompanies stress (Timmons et al., 2015). These responses to stress can include increased heart rate and blood pressure (Purves et al., 2001), which can be detrimental to health in the long term (Dhabhar, 2014).

Multiple Dimensions of Health and Wellbeing

Successful aging is a multidimensional concept that includes the dimensions of limited disease and disability, high physical, mental and cognitive functioning, and active engagement with life (Rowe & Kahn, 1998). Rowe and Kahn (1987), the most widely used model of successful aging (Dillaway & Byrnes, 2009; Stowe & Cooney, 2015), argue that the concept of "successful aging" should reflect several dimensions of aging, including physical, mental, and social well-being. In the Rowe and Kahn (1987) model, these dimensions are holistically understood as a characterization of the individual.

However, research on successful aging typically focuses on only one or two aspects of the model – most commonly physical disease or disability (Cosco et al., 2014; Depp & Jeste, 2006). While many studies have examined a singular dimension of successful aging such as physical health (Kail & Carr, 2017), psychological function (Ryff et al., 2015), cognitive functioning (Hamm et al., 2020), or active engagement with life (Douglas et al., 2017), few comprehensively explore the concept holistically. Although there has been some research using

multiple or multidimensional outcomes (Chou & Chi, 2002; Hsu & Jones, 2012), few combine all dimensions of successful aging into a comprehensive outcome (Mana & Bezdicek, 2020).

Instead of limiting "success" to scoring "well" on every dimension of aging, there is a methodological approach that allows for a flexible understanding of successful aging. The present study will use latent profile analysis (LPA) to operationalize successful aging holistically. LPA is a technique that uncovers groupings among a sample based on multiple variables (Gibson, 1959), thereby allowing the creation of distinctive categories reflecting a complete profile of the participant while not limiting "success" to a single definition.

To date, only one other study has explored married couples explicitly in the context of successful aging. The study by Ko and colleagues (2007) is the only one that used LPA specifically to holistically include aspects of Rowe and Kahn's (1987) model of successful aging beyond physical heath. Ko et al. (2007) used measures of cognitive function, physical health, personality, and perceived social support to classify coupled older adults into discrete groups. Ko and colleagues (2007) delineated a 4-profile latent solution which they labeled by the distinguishing feature of the profile. These labels were: "Generally Positive," "Maritally Unsatisfied," "Maritally Satisfied but Unhealthy," and "Low Cognitive." The results indicated that there are more couple dyads successfully aging than not. Further, Ko et al. (2007) found that spouses were often quite similar in their aging profiles, strongly linking the spousal relationship and successful aging. Ko and colleagues' (2007) results provide a concrete application of LPA in exploring not only the multidimensionality of successful aging but the applicability of successful aging to the marital relationship.

Gender Differences

Two decades ago, Kiecolt-Glaser and Newton (2001) found that men and women were differentially affected by marriage functioning across all domains of health and well-being. A more recent meta-analysis of marital quality and health found gender differences to be either slight or non-significant, however, there was still a trend towards women seeing worse health outcomes from marriage than men (Robles et al., 2014). This relationship may be especially true for mental health as low marital satisfaction predicted depression more strongly for women than for men in a study by Kendler and Gardner (2014). Women are also more likely than men to feel a responsibility to maintain the relationship and to tend to the emotional needs of others (Nolen-Hoeksema & Jackson, 2001). The burden that accompanies these feelings may lead to behaviors like rumination, which has been linked to depressive symptoms (Nolen-Hoeksema et al., 2008). The results of these studies indicate that women may be at greater risk in poor quality marriages than men and they may stand to gain more than men while in a supportive relationship.

There are two possible hypotheses regarding the potential cause of differences between women and men in the health-related consequences of marital relationship quality. Wanic and Kulik (2011) proposed the subordinate-reactivity hypothesis, which suggests gender differences may be due to women's relatively lower status in marital relationships and society at large. A recent study by Piovani and Aydiner-Avsar (2021) showed that women, who do most of the unpaid labor of married life, experienced more emotional distress than men. Therefore, the emotional and mental labor of married life tends to fall on the woman (Cook et al., 2011; Robertson et al., 2019), taking a greater toll on their physical and mental health, keeping them from the same health-protective benefits of marriage that men enjoy and adding mental burden.

Kiecolt-Glaser and Newton (2001) proposed the interpersonal-orientation hypothesis that suggests that women show greater physiological distress in response to relationship stressors since they are more in tune with close relationships than men. In one study, women were more concerned about losing connection to their spouse than men (Kwang et al., 2003). Another study found that arguments tended to be more psychologically distressing for women than for men (Almeida & Kessler, 1998). A study by Manne and Zautra (1989), focused on spousal criticism (a form of strain) and support, found that women with arthritis who had highly critical spouses were more likely to report poorer psychological adjustment and engage in maladaptive coping behaviors. Whereas women who perceived their husbands as supportive engaged in better coping mechanisms (Manne & Zautra, 1989). These studies show that women may be susceptible to the processes of support and strain within the marital relationship. So, whether through stress and burden or simply because the relationship matters more to women, there should be a stronger association between spousal support and strain and successful aging for women compared to men.

The Present Study

The goal of this study is to explore the impact of the relationship processes of marital support and strain on successful aging. The first aim was to fully operationalize latent profiles of successful aging in the MIDUS 2 dataset. The second aim was to determine if marital support and strain at time one (MIDUS 1) predicts the category of successful aging at MIDUS 2. The third aim was to test for potential gender differences in the association of support and strain with successful aging. The primary hypotheses being tested are that: (1) discrete profiles of successful aging correlate with the marital processes of support and strain; and (2) spousal support at time one will be positively associated with a less detrimental profiles of successful aging at time two,

and spousal strain at time one will be associated with more detrimental profiles of successful aging at time two; and (3) gender will moderate the above relationships such that women who experience more spousal support will be more likely to be categorized into more positive aging profiles compared to men; and (4) women who experience more spousal strain will be more likely to be categorized into more negative aging profiles when compared to men. The null hypothesis is that there is no relationship between spousal support, spousal strain, gender, and successful aging profiles.

Methods

The current study conducted a secondary data analysis of the existing Midlife in the United States (MIDUS) dataset. The MIDUS included three waves of data over several decades and a refresher wave intended to replenish the Wave 1 cohort (Radler, 2014). The purpose of the MIDUS was to examine health differences and development in Americans by age (Radler, 2014). To achieve its purpose, the MIDUS included measures for psychological, physical, cognitive, and social factors (Radler, 2014). The MIDUS was a uniquely interdisciplinary project that lent itself to creating diverse assessments of each dimension of successful aging. The MIDUS data set presented a unique opportunity to longitudinally explore all four dimensions of successful aging in the Rowe and Kahn (1987) model.

The MIDUS study currently includes three waves of data collected in 1995/1996, 2004, and 2013, and the refresher sample collected between 2011 and 2014 by the MacArthur Foundation Research Network on Successful Midlife Development. These data were collected using a 30-minute phone interview, and two mailed 50-page self-report questionnaires (Radler, 2014). Participants were selected via Random Digit Dial (RDD), in which contact was initiated by calling randomly generated phone numbers. Data for the current study came from MIDUS 1

(1995/1996) and MIDUS 2 (2009). Cognitive assessments were first included in MIDUS 2 (Radler, 2014).

The original sample from the MIDUS 1 included ages ranging from 25 to 74 (N=3,487). The recontacted sample for MIDUS 2 included ages ranging from 30 to 84 (N=2,257). The current study included only participants who had responses for all indicators of successful aging (e.g. cognitive scores, activities of daily living, etc.) for the MIDUS 2 cohort. Siblings and twin pairs were not included. The study was also limited to those participants who had been married only once by the time of MIDUS 2, were married at MIDUS 1, and had scores for both the spousal support and spousal strain measures. A dummy variable was created to control for those who experienced a change in marital status (i.e., separation, divorce, or widowhood) by time two. The data set was then filtered to only use those participants who completed the MIDUS 2 Self-Administered Questionnaire (SAQ). The final sample consisted of n=868 participants. Institutional review board permission was granted from Florida State University for the secondary analysis of these data.

Measures

Marital Relationship Processes

The independent variables of spousal support and spousal strain were taken from the MIDUS 1 dataset. The dependent variables that make up the LPA came from the MIDUS 2. The demographic variables were also from the MIDUS 2.

Spousal Support. Spousal support includes perceptions of care for one's partner. Spousal support was assessed using a scale of six items such as "How much does your spouse or partner really care about you?" The participant responded with either "A lot, Some, A little, or

Not at all." Responses were coded and summed to create a composite score in which a higher score indicated more spousal support (α = 0.90). The score was then mean centered.

Spousal Strain. Spousal strain includes negative interactions with one's spouse (House et al., 1988). Spousal strain was assessed using six items such as "How often does he or she argue with you?" with the possible answer choices of "Often, Sometimes, Rarely, and Never." Responses were coded and summed to create a composite score in which a higher score indicated more spousal strain (α = 0.87). The score was then mean centered.

Successful Aging Profiles

Variables reflecting each dimension of Rowe's and Kahn's (1998) conceptual model of successful aging were created using variables from the MIDUS 2 dataset. These dimensions are low physical morbidity, high cognitive and psychological functioning, and active engagement with life. The mean score was imputed for missing data for both variables that made up psychological functioning, and the variable used to assess active engagement with life. The mean score was not imputed for any other variables.

Low Physical Morbidity and Physical Function. Physical functioning was assessed using two indicators. The first was an assessment of the participant's ability to function daily using a basic limitation of activities of daily living (ADLs) scale with two items. Participants were asked "How much does your health limit you in doing each of the following?" for two items including "Bathing or dressing yourself" and "Walking one block." Participants could respond with 1 "alot," 2 "some," 3 "a little," and 4 "not at all." The variable was constructed by calculating the mean of all the reverse coded values of the two items in the scale, creating a summary score such that higher scores reflected a greater difficulty in performing daily activities. This score was then added to the LPA.

The second indicator of physical functioning was measured using a 7-item list of age-related chronic illnesses. Participants were specifically asked, “In the past 12 months, have you experienced or been treated for any of the following. . . ,” Participants responded “Yes/No” to whether they had experienced “osteoporosis, hypertension, heart condition, cancer, diabetes, stroke, or lung conditions such as asthma or emphysema.” An eighth item, Body Mass Index (BMI), was obtained from self-reported height and weight, and converted to a binary variable “healthy BMI” (BMI < 24.9), “high BMI” (BMI > or equal to 25). The eight binary variables were then summed creating a composite score such that higher scores reflected worse physical function. The composite score was created before being added to the LPA.

Psychological Functioning. Psychological functioning was assessed using two indicators. First, Ryff’s (1989) six-factor Model of Psychological Well-being was used to assess several aspects of psychological function. These aspects include self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and positive relations with others (Ryff, 1989). Respondents rated several items for each aspect using a scale of 1-7 where 1= “Strongly agree”; 2 = “Somewhat agree”; 3= “A little Agree”; 4= “Neither agree or disagree”; 5= “A little disagree”; 6= “Somewhat disagree”; and 7= “Strongly disagree.” For example, positive relations with others included items such as “People would describe me as a giving person, willing to share my time with others.” Personal growth included items such as “For me, life has been a continuous process of learning, changing, and growth.” Purpose in life included items such as "Some people wander aimlessly through life, but I am not one of them.” Responses to each set of three items were reverse coded and summed creating a composite score such that higher scores reflected better outcomes. The composite score was created before being added to the LPA ($\alpha = 0.81$).

The presence of mental illnesses, also referred to as psychiatric disorders, was the second indicator of psychological function. It was assessed using the Composite International Diagnostic Interview Short (CIDI-SF) form scale to indicate the presence of major depression, panic disorder, and/or generalized anxiety disorder (GAD). Like the chronic health conditions measure, responses were summed creating a composite score such that higher scores reflected worse outcomes. This composite score was created before being added to the LPA.

Depression was assessed using a scale of six items with "Yes/No" responses to items such as "feel more tired out or low on energy than is usual", "feel down on yourself, no good, or worthless", or "think a lot about death." An answer of "yes" to at least four items indicated the presence of depressive symptoms. Panic disorder was assessed using a 6-item scale with "Yes/No" responses to items such as "your heart pounds," "you sweat," and "you tremble or shake." An answer of "yes" to at least 3 items indicated the presence of panic disorder. GAD was assessed using a 10-item scale with "Yes/No" responses to items such as "had trouble falling asleep," "were low on energy," and "were irritable because of your worry." An answer of "yes" to at least three items indicated the presence of GAD.

Cognitive Functioning. Cognitive function was assessed using the Brief Test of Adult Cognition by Telephone (BTACT). The BTACT is made up of three component tasks of speed, reasoning, and short-term memory factors. Speed was assessed by the digit symbol substitution test of the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955) and a letter comparison task (Salthouse & Babcock, 1991). Reasoning was assessed with the Schaie-Thurstone letter series (Schaie, 1985) and Raven's Advanced Progressive Matrices (Raven, 1991). Short-term memory was measured with the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955). In this scale, the participant was given a task where they were required to count backwards in

increments of seven. Participants were also asked to complete a letter comparison task (Salthouse & Babcock, 1991) and digit symbol substitution task from the WAIS. A composite score was created by transforming the scores for all the tasks into standardized z-score and averaging them. Latencies were multiplied by (–1), so higher scores would correspond to faster reaction times. This composite measure of cognitive functioning has been previously used in other publications (Miller & Lachman, 2000).

Active Engagement with Life. Active engagement with life was assessed using a 34-item version of the Keyes' (1998) five-component model of social well-being questionnaire. These components include social integration, social contribution, social coherence, social actualization, and social acceptance. Each component was measured using six or seven items. Respondents rated several items for each aspect using a scale of 1-6 where 1 = "Strongly agree" and 6 = "Strongly disagree." Responses to negative items were reverse coded so that higher scores reflected better outcomes and summed creating a composite score such that higher scores reflected better outcomes.). The composite score was created before being added to the LPA (α = 0.74).

Demographics and Control Variables

All demographic and control variables were self-reported. The control variables included Sex, Race, Ethnicity, Age, Education (Johnson & Krueger, 2007; Bogg & Slatcher, 2015), and Marital Dissolution. "Marital Dissolution" is a dummy variable that was created to control for those who experienced a change in marital status (i.e., separation, divorce, or widowhood) by time two. Those who experienced a change in status were coded as 1, and those who stayed married were coded as 0. Race was classified into "White," "Black/African American," "Native," and "Other." Ethnicity was a separate variable from race and was recoded into

Hispanic (yes/no). Age was recoded from a continuous variable into a categorical variable of 10-year intervals from ages 30 to 83. The highest level of education achieved was classified into five categories: "Less than high school," "High School or GED," "Some College," "College Degree," and "Graduate School."

Analysis

To address the study's first aim and produce profiles of successful aging, six indicators of successful aging were used to run an LPA in Mplus for the MIDUS 2. Of the six indicators, only the cognitive function score was already a standardized z-score. The five remaining indicators (restrictions to activities of daily living, number of chronic conditions, Ryff's positive psychological function, number of psychiatric disorders, and Keyes' dimensions of social well-being) were standardized into z-scores so that the results of the LPA could be better understood. The non-standardized scores vary largely and are not easily interpretable without standardization.

After standardization, the z-scores for these indicators and the participant ID number were named and specified for use in Mplus with the 'names are' and 'usevariables' commands, respectively. The participant ID was not used when running the LPA. Missing were identified as (-99). Mplus uses a maximum likelihood procedure in a latent mixture model to identify potential groupings in the data (Lanza et al., 2003). The default options for LPA designated by the label %OVERALL%. The best fitting model was found by starting with a single profile model and adding one additional profile at each step until stopping at a maximum of 5.

Results obtained from the LPA were evaluated using several model fit statistics to determine the solution providing the best fit to the data (Lanza et al., 2003). These statistics included Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), Sample Adjusted BIC (SABIC), and entropy. The AIC, BIC, and SABIC are requested using the

"tech11" option for desired output in MPlus. Smaller BIC numbers. Lower values for AIC, BIC, and SABIC indicate a good fitting model. Entropy, which is an index reflecting the accuracy of class membership assignment, was also used to evaluate the best fitting LPA solution wherein values closest to 1.0 are considered optimal (Wang et al., 2017). Additional model fit statistics included the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMRT) and Adjusted Lo-Mendell-Rubin likelihood ratio test (ALMRT, Lo, Mendell, & Rubin, 2001) which were used to compare the bigger profiles sizes to the smaller profile size models. In an LMR, a significant value ($p < .05$) indicates that the solution with more profiles is better than the solution with fewer profiles.

Finally, a scree plot of the AIC, BIC, and SABIC values was generated to compare the overall pattern of results for the latent profiles. This plot assisted in determining the proper number of profiles based on which class numbers fell below the 'elbow' of the plot. Based on the information criteria cutoff, a plot of the means of the standardized indicators was created. To visually explore the profiles, the columns were clustered based on profile assignment. The final decision for the number of profiles was determined based on the information criteria cutoffs and on what made theoretical sense after visually exploring the profiles. For each person, Mplus estimated what profile a person was likely to be classified into.

To address the second aim, the predictive probabilities of the profile a person belonged in were also requested from the LPA in Mplus and transformed into a variable in SPSS. This categorical variable indicated which successful aging profile a participant was grouped into. A multinomial logistic regression was conducted to test if there was an association between either spousal support or spousal strain at time one on the probability of the successful aging profile at time two. To address the third aim, an additional model was run to test if there was a difference

by gender on the successful aging profile at time two. This was done by creating interaction variables with spousal support and spousal strain and gender, for a total of two interaction variables for each model.

Results

Demographic Characteristics

The final sample included n=868 participants from the MIDUS 1 and MIDUS 2. At the time of the MIDUS 2 participants were aged between 30 and 83 years (mean 57.8, SD 12.58) and were predominantly equally male and female (50%). Most of the participants identified as White (91.3%), 3.0% of participants identified as Black/African American, 1.7% identified as Native, and 3.8% identified as another race.

MIDUS 2 Latent Profile Analysis Results

Using key metrics from each domain of successful aging from the Midlife Development in the United States (MIDUS), this study characterized distinct profiles of successful aging. Table 5 includes the AIC, BIC, and SABIC values for the MIDUS 2 for the one to five profile solutions. See Figure 6 for the scree plot for the MIDUS 2.

Results indicate four distinct latent profiles for the MIDUS 2. See Figure 7. Profile 1 was characterized by the highest sense of social wellbeing, few psychiatric disorders, no cognitive decline and high psychological functioning, and the reduced presence of chronic conditions and restrictions to daily living. Profile 1 was the most ‘successful’ group and were named the “Healthiest Overall.” It was also the largest group with 78.6% of the sample. Those who were classified as “Healthiest Overall” had the highest cognitive scores, sense of well-being, and self-rated health; and had the lowest number of age-related physical disabilities (i.e. cancer, stroke, osteoporosis, etc.) and psychiatric disorders (depression, anxiety, and panic disorder). Profile 2 accounted for 7.0% of the sample and was characterized by low social wellbeing, few psychiatric

disorders, the lowest cognitive functioning scores, low psychological functioning, increased chronic conditions and restrictions to daily living. This group was distinguished by "Poor Physical and Cognitive Health/No Psychiatric Disorders" and had the highest amount of cognitive decline, number of chronic illnesses, and restrictions to daily living. Profile 3 accounted for 10.8% of the sample and were characterized by low social wellbeing, some presence of psychiatric disorders, some cognitive decline, low psychological functioning, and some chronic conditions and restrictions to daily living. Profile 3 was similar to Profile 4 but not as severe, so it was named "Poor Mental Health/Less Psychiatric Disorders." Profile 4 accounted for 3.6% of the sample and was characterized by the lowest psychological functioning and social wellbeing and a high number of chronic conditions and restrictions to daily living. While there was little to no cognitive decline in Profile 4, it was distinguished by having the highest number of psychiatric disorders and lowest psychological functioning and social wellbeing. Profile 4 was named "Poor Mental Health/High Psychiatric Disorders."

Multinomial Logistic Regression Results

Model 1

Model 1 tested the independent associations of spousal support and spousal strain with successful aging profile, while adjusting for covariates in a sample of participants who were married only once, using MIDUS 1 and MIDUS 2. A full description of Model 1 is included in Table 6.

Greater spousal strain at time one was more likely to be in the "Poor Mental Health/Less Psychiatric Disorders" profile (relative to the "Healthiest Overall" profile) at time two, but spousal strain at time one did not differ for those in the "Poor Physical and Cognitive Health/No Psychiatric Disorders" and "Poor Mental Health/High Psychiatric Disorders" profiles (relative to

the “Healthiest Overall” profile) at time two. More specifically, for every one-unit increase in spousal strain at time one, the multinomial log-odds of being grouped in the “Poor Mental Health/Less Psychiatric Disorders” profile at time two as opposed to the “Healthiest Overall” profile increased by 1.91 times ($p < 0.05$). However, the relationships between spousal support at time one and successful aging profile at time two were not found to be significant.

Notably, for every one-unit increase in Marital Dissolution, the multinomial log-odds of being grouped in the “Poor Mental Health/Less Psychiatric Disorders” profile and the “Poor Mental Health/High Psychiatric Disorders” profile as opposed to the “Healthiest Overall” profile increased by 2.23 times ($p < 0.05$) and 3.73 times respectively ($p < 0.05$).

Model 2

Model 2 included the addition of two interaction variables of sex with spousal support and sex with spousal strain. Neither interaction of sex and spousal support nor sex and spousal strain were significant. A full description of Model 2 is included in Table 7.

Greater spousal strain at time one was more likely to be in the “Poor Mental Health/Less Psychiatric Disorders” profile (relative to the “Healthiest Overall” profile) at time two. For every one-unit increase in spousal strain at time one, the multinomial log-odds of being grouped in the “Poor Mental Health/Less Psychiatric Disorders” profile at time two as opposed to the “Healthiest Overall” profile increased by 4.35 times ($p < 0.05$). Again, the relationships between spousal support at time one and successful aging profile at time two were not significant. Similarly to model 1, for every one-unit increase in Marital Dissolution, the multinomial log-odds of being grouped in the “Poor Mental Health/Less Psychiatric Disorders” profile and the “Poor Mental Health/High Psychiatric Disorders” profile as opposed to the “Healthiest Overall” profile increased by 4.78 times ($p < .05$) and 3.88 times ($p <.01$) respectively.

Discussion

Using selected assessments from each domain of successful aging, this study characterized distinct profiles of successful aging and explored these profiles as they correlated with the marital processes of spousal support and strain. Overall, results indicated that spousal support unrelated to successful aging over time, whereas spousal strain was related to successful aging over time. Finally, there was no significant relationship between spousal support, spousal strain, gender, and successful aging profiles.

The current study found no evidence that spousal support differentiates on profiles of successful aging across time. The results of this study are consistent with those of previous research that used LPA to operationalize successful aging and marital relationship processes (Ko et al., 2007), but differ from results of unidimensional studies of health in later life (Robles et al., 2014). Robles et al. (2014) noted that while cross-sectional studies tend to show greater marital quality as being related to better physical health, in longitudinal studies, marital quality generally predicts worse health outcomes. One explanation for this may be that the effects of strain are cumulative over time (Umberson et al., 2006).

Indeed, in the current study, strain within the marital relationship was found to have negative consequences across time. These results are consistent with previous research that suggests strain may be more meaningful to health and well-being than support (Rook, 1990; Guevara & Murdock, 2019). Notably, the profile that was consistently significantly associated with strain was characterized by low social wellbeing, some presence of psychiatric disorders, some cognitive decline, and low psychological functioning. These results suggest that strain is more meaningful for mental health. One possible explanation is that negative relational interactions may lead to behaviors like rumination, which has been linked to anxiety and depressive symptoms (Nolen-Hoeksema et al., 2008). Another possible explanation for this

outcome is that strain may have a stronger and longer hold on mental health than support. Rozin et al. (2001) would suggest that negativity bias, or the tendency for negative experiences to outweigh comparable positive ones, might be at play.

We also tested for differentiation by sex on the effects of support and strain but found no significant difference between women and men. This result is contrary to the conclusions of a systematic review by Kiecolt-Glaser and Newton (2001) which found some evidence of gender differences. This disparity may be due to a differentiation in the how the outcome of "health" was measured as the reported gender differences were mostly in the realm of mortality and not holistic health. The findings of the current study were consistent with the results of a more recent review by Robles and colleagues' (2014) which found that gender differences among the marital relationship and health outcomes were typically not significant. Another possible explanation is that while women experience more physiological distress in response to marital conflict (Kiecolt-Glazer et al. 1996), it is possible that over time the accumulation of strain in the relationship may reach a saturation point which does not differentiate by gender.

Notably, marital dissolution, or the loss of the marital relationship, was significantly associated with two profiles of successful aging: the "Poor Mental Health/Less Psychiatric Disorders" profile and the "Poor Mental Health/High Psychiatric Disorders" profile. These findings indicate that those who experienced a loss of the marital relationship during the 10-year gap, whether due to separation, divorce, or death of a spouse, more closely related to poor mental and emotional health than poor physical health. These results contrast with the vast number studies that link marital dissolution and negative physical health outcomes (Curtin & Tejada-Vera, 2019; Robards et al., 2012). Instead, these findings are consistent with studies that show that the loss of the marital relationship has negative implications for mental health (Hewitt et al.,

2012; Williams et al., 2010). Williams et al. (2010) advised that there has been some ambiguity as to whether these outcomes last beyond the initial dissolution. These results support the likelihood that there may be a longer-term impact of marital dissolution than previously thought. Overall, these findings show the importance of understanding the impact of negative marital transitions on psychiatric health.

The findings of this study must be considered through its limitations. First, it is unknown if the use of different measures to quantify successful aging would produce comparable latent profiles. Second, it is currently unknown if the marital processes of support and strain remained consistent across time. Therefore, it is hard to say if the results are being impacted by a consistently strain filled relationship over the long-term or one that just happened to be strained at time one. Third, the MIDUS 2 lacked enough participants from minority populations to conclusively categorize by racial origins and ethnicity or same-sex couples; as such, they were underrepresented in this study. Fourth, the high number of "successful" agers could be attributed to the generally high socioeconomic status of the MIDUS sample. Finally, these data were self-reported, which relies on the accuracy of the participant's perceptions and knowledge of their health statuses and their perceptions of their relationship.

Thus far, the only other study that used LPA to explore the marital relationship and successful aging was Ko et al. (2007). The current study went further than Ko et al. (2007) by exploring the relationships between marital quality and successful aging longitudinally. As such, these results allow for showing a causal linkage between spousal strain and the psychological dimension of successful aging. The persistence of this association over time lends strength to prior research (Rook, 1990) that suggests strain may be more detrimental to aging than support is beneficial. Most research surrounding marital quality and the dimensions of successful aging

typically focus on physical health and marital status alone (Burman & Margolin, 1992). Though mortality data suggests that the state of being married is beneficial (Curtin & Tejada-Vera, 2019; Manzoli et al., 2007), these results show that the spousal relationship can function as a liability, especially for mental health. Overall, this study expands current knowledge by offering a more nuanced look at the impact of these marital processes across all dimensions of aging and health.

Directions for future research include expanding the sample to have a more nuanced understanding of marital transition over time. Additionally, future research should account for whether spousal strain was consistent over time or limited to time one. Future studies using these profiles would benefit by separating the age groups of the participants to acknowledge the general differences in health as experienced by younger adults compared to older adults.

In summary, this longitudinal study was able to predict the profile of a multidimensional assessment of successful aging that was sensitive to aspects of martial quality ten years prior. The results imply that the marital process of spousal strain, and not support, has the power to effect lasting health consequences. These findings of this study have important implications for future research into the correlates and determinates of successful aging to aid in developing effective interventions.

CHAPTER 4

CUMULATIVE DISCUSSION

This cumulative discussion includes the implications of the research results for Study 1 and Study 2. Although Study 1 had its own results, Study 2's results were driven by the findings from Study 1, as such an interpretation of the connected studies was necessary for the present research. The findings from both Study 1 and Study 2 are considered and discussed as to how both manuscripts work together to advance our understanding of successful aging at large and how successful aging pertains to the marital relationship.

Overview of Main Goals and Research Aims

The present research had two main goals: 1) to advance understanding of successful aging as a multidimensional reality, and 2) to explore the impact of the relationship processes of marital support and strain on successful aging.

Study 1 was designed to apply the LPA statistical method as a strategy to produce a comprehensive outcome for successful aging. The first aim was to determine the best-fitting solution to a latent profile analysis by combining indicators of physical function, cognitive function, psychological function, and active engagement in life. Second, to evaluate the concurrent validity of the identified latent profile solution, it was determined if the same/a similar solution was obtained using the same measures in a demographically matched cohort of adults. Replicating the LPA in two different cohorts strengthens the profiles if similarities between cohorts were found. If the profiles were dissimilar, that could indicate a difference based on the distinct time-periods in which each cohort resides. Third, to evaluate criterion validity, the demographic distributions of successful aging profiles in both data files were explored. The primary hypotheses being tested were that: (1) discrete profiles of successful aging

exist in the adult population, and (2) those profiles can be reproduced; and (3) the demographic correlates of profiles of successful aging will follow a pattern like those observed in single-dimensional assessments of health.

Study 2 explored the impact of the processes of support and strain within the marital relationship that may contribute to successful aging. The first aim was to fully operationalize latent profiles of successful aging at time two (MIDUS 2). The second aim was to determine if marital support and strain at time one (MIDUS 1) predicted the profile group at time two (MIDUS 2). The third aim was to test for potential gender differences in the association of spousal support and spousal strain with successful aging. The primary hypotheses being tested were that: (1) discrete profiles of successful aging correlate with the marital processes of support and strain; and (2) spousal support at time one will be positively associated with a less detrimental profile of successful aging at time two, and spousal strain at time one will be associated with more detrimental profiles of successful aging at time two; and (3) gender will moderate the above relationships such that women who experience more spousal support will be more likely to be categorized into more positive aging profiles compared to men; and (4) women who experience more spousal strain will be more likely to be categorized into more negative aging profiles when compared to men. The null hypothesis is that there is no relationship between spousal support, spousal strain, gender, and successful aging profiles.

Results for Study 1

Results from Study 1 indicated four distinct profiles for the MIDUS 2. These profiles were named “Healthiest Overall,” “Poor Physical and Cognitive Health/No Psychiatric Disorders,” “Poor Mental Health/Less Psychiatric Disorders,” and “Poor Mental Health/High Psychiatric Disorders.” The profiles in this study were consistent with previous research that

used latent variable analysis in that all the delineated profiles described nuanced forms of successful aging (Ko et al., 2007; Kok et al., 2017). These results lend support to the idea that "successful" aging is a fluid concept that can include various forms decline and success.

This study was the first to holistically use a large nationally representative data set in the United States to holistically to explore successful aging and to replicate those findings in a demographically matched cohort (MIDUS Refresher). The similarity of the profiles in both content and estimated segments of society, offers compelling evidence of validity. Not only did the identified profiles align with previous studies (Ko et al., 2007; Kok et al., 2017), but the replication across time suggests the profiles have continuity across time. The similarity in the profiles across the cohorts remarkable because the MIDUS Refresher cohort was accrued during the "Great Recession" (Patel, 2019), and at least psychological health tends to suffer during poor economies (Frasquilho et al., 2016). Therefore, the fact that the profiles were so similar, in both content and estimated segments of society, offers compelling evidence of validity. Finally, the demographic correlates of the profiles of successful aging do follow patterns like those observed in single dimensional assessments of health, and identified latent profiles generally comport with descriptions of health in the general population.

The results from Study 1 provided an expanded understanding of successful aging by verifying the validity of the latent profiles. This study not only examined the successful aging profiles in one cohort but also identified similar patterns of profiles in a second demographically matched cohort.

Results for Study 2

Study 2 used those same profiles from Study 1 to exemplify the potential to apply family science measures to a multidimensional successful aging outcome. Specifically for this

dissertation, Study 2 used multinomial logistic regression to explore the contributing factors of spousal support and strain at time one (MIDUS 1), on the successful aging profile ten years later at time two (MIDUS 2). Marital dissolution (i.e., separation, divorce, widowhood) by time two was also explored as a covariate. Potential gender differences in the association of spousal support and spousal strain with successful aging were also explored.

Results from Study 2 indicated that spousal support at time one was not associated with profiles of successful aging at time two, and spousal strain was. The persistence of this association over time lends strength to prior research (Rook, 1990) that suggests strain may be more detrimental to aging than support is beneficial. Though mortality data suggests that the state of being married is beneficial (Curtin & Tejada-Vera, 2019; Manzoli et al., 2007), these results show that the spousal relationship can function as a liability, especially for mental health. Contrary to my hypotheses, there was no significant differentiation by sex on the effects of support and strain. One possible explanation is that while women experience more physiological distress in response to marital conflict (Kiecolt-Glazer et al., 1996) over time the accumulation of strain in the relationship may reach a saturation point which does not differentiate by gender.

Marital dissolution was significantly associated with the "Poor Mental Health/Less Psychiatric Disorders" profile and the "Poor Mental Health/High Psychiatric Disorders" profile. These findings indicate that those who experienced a loss of the marital relationship during the 10-year gap, saw more negative mental health outcomes over physical health outcomes. This finding was unexpected and expands current knowledge by showing that there may be a longer-term impact of marital dissolution than previously thought (Williams et al., 2010).

Cumulative Conclusion

This dissertation contributes to the literature by providing replicated and validated profiles of successful aging that we can have confidence are capturing various aspects of successful aging. This dissertation also contributes to the literature by using those profiles to demonstrate that social relationships, specifically the marital one, contribute to the variation in successful aging overtime. Overall, this study expands current knowledge by offering a more nuanced look at the impact of marital relationship processes across all dimensions of aging and health. The results of the second paper would not have been possible without the first. Additionally, we can have greater confidence in the results of not only the first study, but the second study as well since the outcome was replicated, not only in a separate cohort, but in one that experienced an economically dissimilar time period. The stability of the profiles speaks to their usability for further exploration of successful aging. The primary goals of the present research, 1) to advance understanding of successful aging as a multidimensional reality, and 2) to explore the impact of the relationship processes of marital support and strain on successful aging, were achieved.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Florida State
UNIVERSITY

Office of the Vice President for Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 02/28/2018

To: Kasey Longley [redacted]

Address: [redacted]

Dept.: FAMILY & CHILD SCIENCE

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
Work with MIDUS on Aging, Physical Activity, Mental Health, and Relationships

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Exempt per 45 CFR § 46.101(b)4 and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by No Expirat you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Joseph Grzywac [redacted] Advisor
HSC No. 2018.19847

APPENDIX B

CHAPTER 1 FIGURE

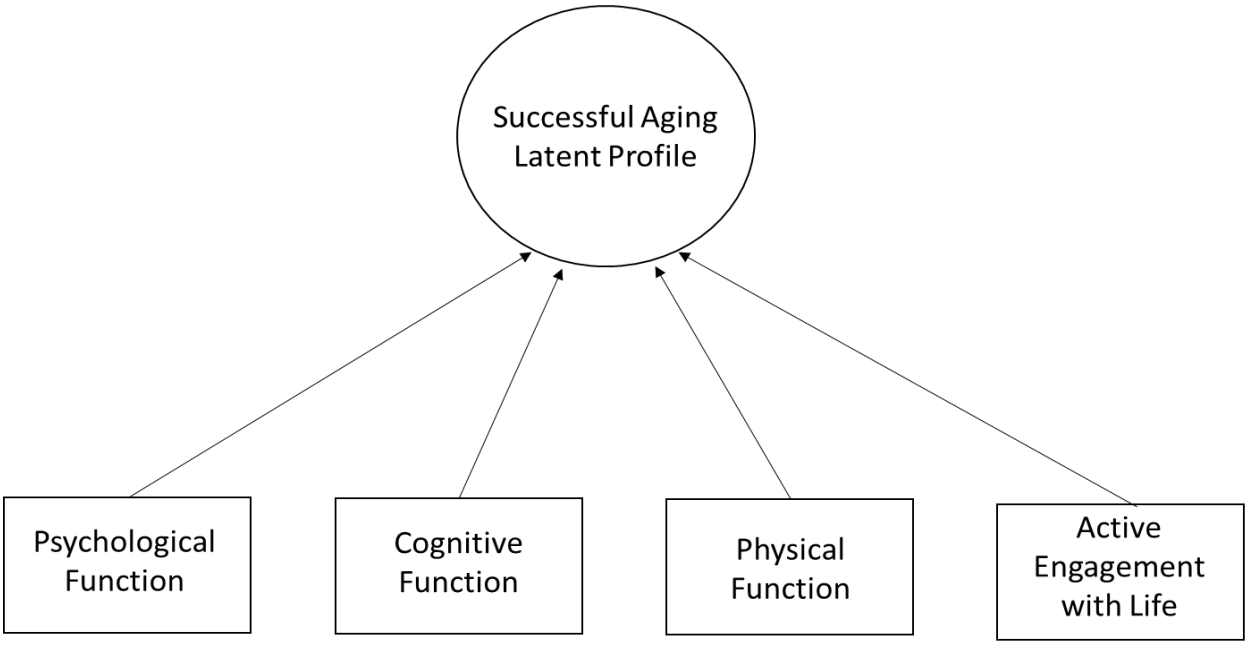

Figure 1. Successful Aging Latent Profile Analysis Conceptual Model.

APPENDIX C

CHAPTER 2 TABLES AND FIGURES

Table 1

Study 1: MIDUS 2 Latent Profile Analysis Information Criteria

No. of Profiles	AIC	BIC	SABIC	VLMRT *p* value	AMLRT *p* value	Entropy
1	31442.4	31511.0	31472.9	-	-	-
2	29083.9	29192.6	29132.2	0.018	0.019	1.00
3	24563.4	24712.1	24629.5	0.411	0.415	1.00
4	23556.4	23745.2	23640.3	0.006	0.006	0.94
5	23175.9	23404.8	23277.7	0.063	0.065	0.94

Note. AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; SABIC: Size Adjusted BIC; VLMR: Vuong–Lo–Mendell–Rubin likelihood ratio test; LMR: Lo–Mendell–Rubin adjusted likelihood ratio test.

Table 2

Study 1: MIDUS Refresher Latent Profile Analysis Information Criteria

No. of Profiles	AIC	BIC	SABIC	VLMRT *p* value	AMLRT *p* value	Entropy
1	43522.8	43596.2	43558.1	-	-	-
2	40358.3	40474.5	40414.2	<.001	<.001	.997
3	34150.3	34309.3	34226.7	0.144	0.148	1.00
4	32663.6	32865.4	32760.6	<.001	<.001	0.94
5	32250.3	32495.0	32367.9	<.000	<.000	0.78

Note. AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; SABIC: Size Adjusted BIC; VLMR: Vuong–Lo–Mendell–Rubin likelihood ratio test; LMR: Lo–Mendell–Rubin adjusted likelihood ratio test.

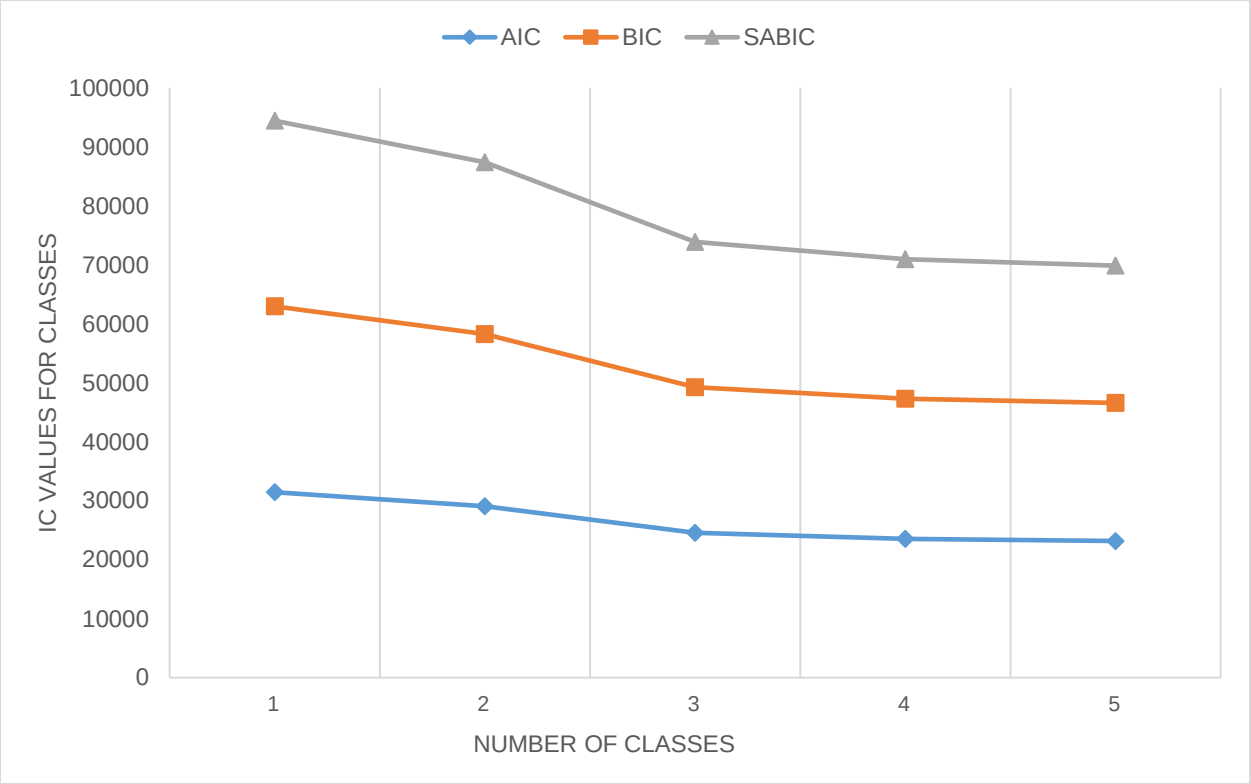

Figure 2. MIDUS 2 Scree Plot.

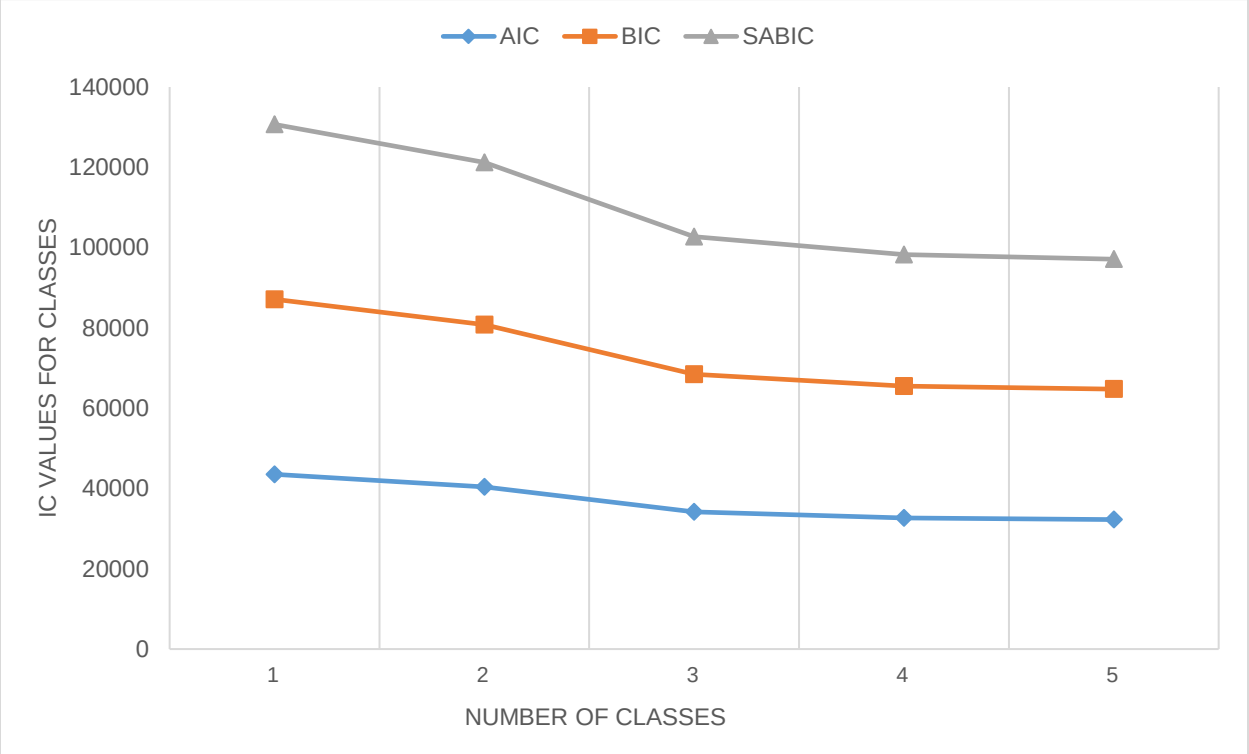

Figure 3. MIDUS Refresher Scree Plot.

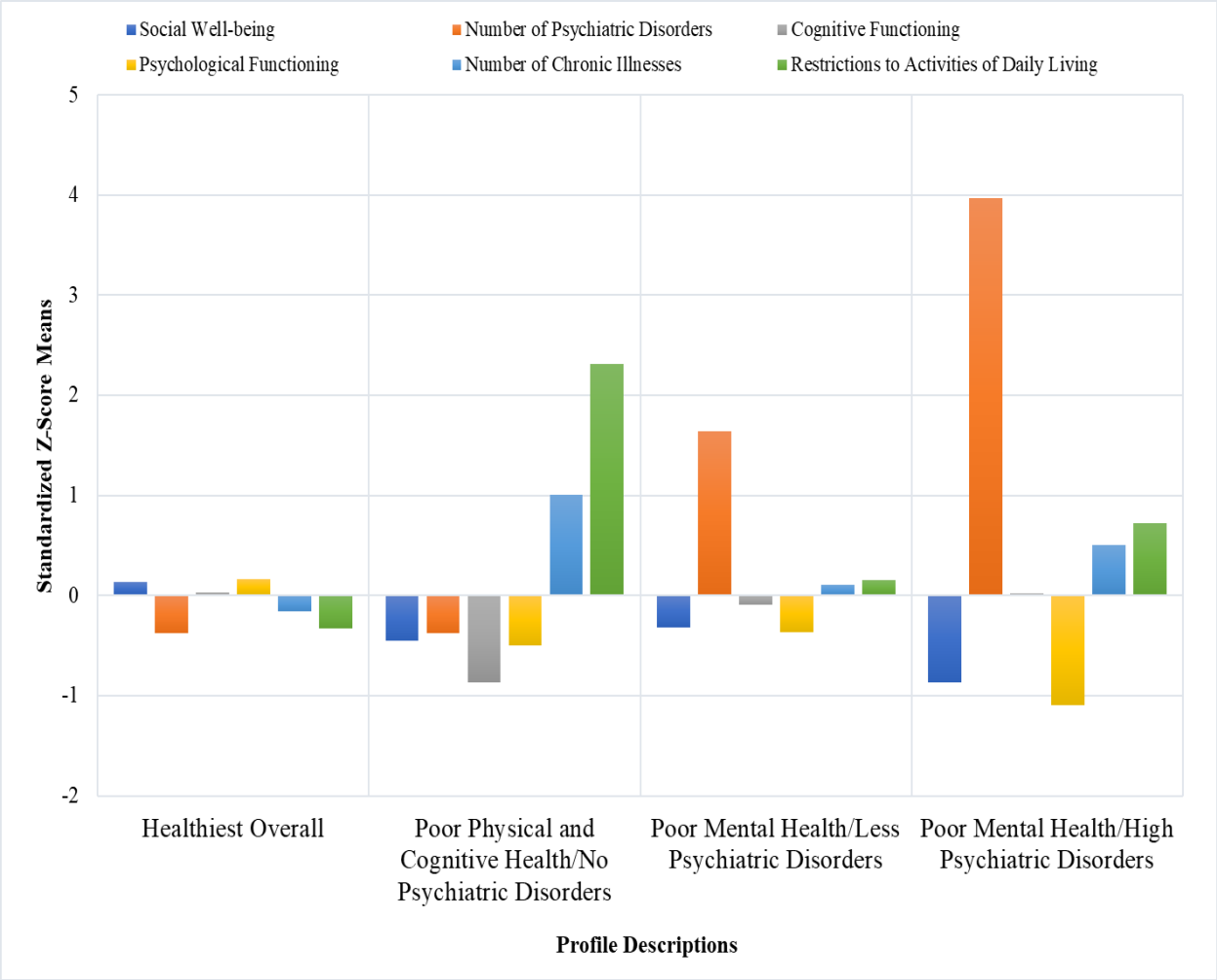

Figure 4. Standardized Scores for Each Successful Aging Indicator, by Identified Class MIDUS 2.

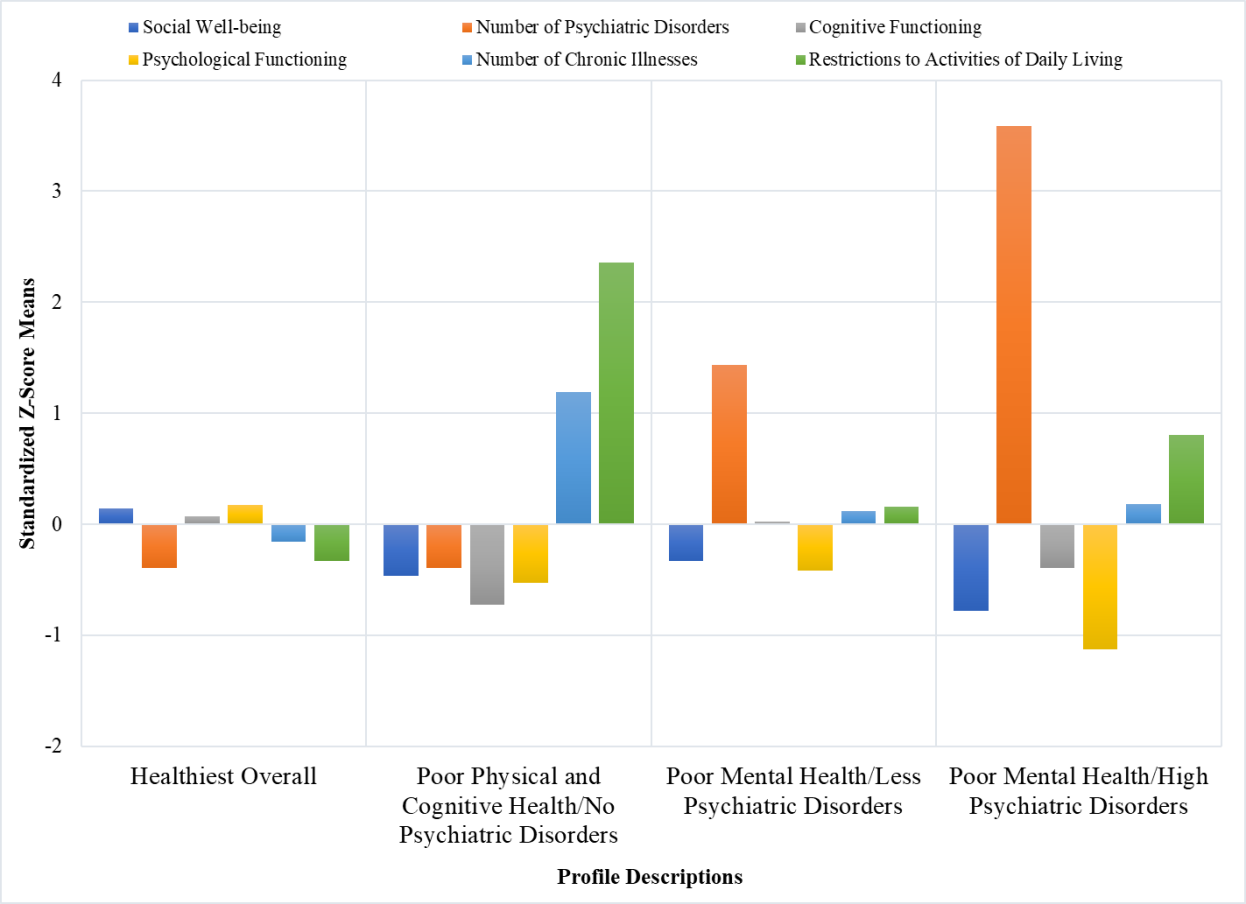

Figure 5. Standardized Scores for Each Successful Aging Indicator, by Identified Class MIDUS Refresher.

Table 3

Study 1: Demographic Makeup of Profile Groupings in MIDUS 2

Variable	Healthiest Overall	Poor Physical and Cognitive Health/No Psychiatric Disorders	Poor Mental Health/Less Psychiatric Disorders	Poor Mental Health/High Psychiatric Disorders
Racial Origins				
White	78.0%$_{a}$	7.0%$_{a}$	11.4%$_{a}$	3.6%$_{a}$
Black/AA	79.4%$_{a, b}$	11.3%$_{a}$	5.0%$_{a}$	4.3%$_{a}$
Native American	89.7%$_{a}$	5.1%$_{a}$	5.1%$_{a}$	0.0%$_{a}$
Other	81.9%$_{a}$	3.2%$_{a}$	10.6%$_{a}$	4.3%$_{a}$
Ethnicity				
Hispanic	78.7%$_{a}$	2.1%$_{a}$	13.8%$_{a}$	5.3%$_{a}$
Not Hispanic	78.5%$_{a}$	7.3%$_{a}$	10.7%$_{a}$	3.5%$_{a}$
Age				
30-39	76.4%$_{a}$	2.0%$_{b}$	16.4%$_{c}$	5.2%$_{a, c}$
40-49	79.1%$_{a}$	2.2%$_{b}$	12.5%$_{a, c}$	6.2%$_{c}$
50-59	78.6%$_{a}$	5.5%$_{a}$	12.2%$_{a}$	3.6%$_{a}$
60-69	80.9%$_{a, b}$	8.6%$_{b}$	8.8%$_{a, b}$	1.8%$_{a}$
70-79	75.3%$_{a}$	17.4%$_{b}$	5.6%$_{a}$	1.6%$_{a, c}$
80-85	79.3%$_{a}$	18.3%$_{b}$	2.4%$_{a}$	0.0%$_{a}$
Sex				
Male	85.4%$_{a}$	6.3%$_{a}$	6.7%$_{b}$	1.6%$_{b}$
Female	72.4%$_{a}$	5.5%$_{a}$	14.5%$_{b}$	5.5%$_{b}$
Educational Attainment				
Less than high school	62.8%$_{a}$	18.3%$_{b}$	12.2%$_{a, c}$	6.7%$_{b, c}$
High School or GED	73.8%$_{a}$	9.9%$_{b}$	11.4%$_{a, b}$	4.8%$_{a, b}$
Some College	77.1%$_{a}$	6.8%$_{a}$	12.9%$_{a}$	3.2%$_{a}$
College Degree	83.9%$_{a}$	4.0%$_{b}$	9.3%$_{a, b}$	2.8%$_{a, b}$
Graduate School	86.3%$_{a}$	2.8%$_{b}$	8.5%$_{a, b}$	2.3%$_{a, b}$
Marital Status				
Married	81.5%$_{a}$	6.0%$_{b}$	9.7%$_{b}$	2.7%$_{b}$
Separated	59.5%$_{a}$	7.1%$_{a, b}$	23.8%$_{b}$	9.5%$_{a, b}$
Divorced	73.6%$_{a}$	6.3%$_{a}$	14.4%$_{a}$	5.7%$_{a}$
Widowed	68.5%$_{a}$	17.7%$_{b}$	12.2%$_{a}$	1.7%$_{a}$
Never Married	77.7%$_{a}$	6.3%$_{a}$	7.4%$_{a}$	8.6%$_{b}$

Note. Each subscript letter denotes a subset of Profile categories whose column proportions do not differ significantly from each other at the .05 level.

Table 4

Study 1: Demographic Makeup of Profile Groupings in MIDUS Refresher

Variable	Healthiest Overall	Poor Physical and Cognitive Health/No Psychiatric Disorders	Poor Mental Health/Less Psychiatric Disorders	Poor Mental Health/High Psychiatric Disorders
Racial Origins				
White	79.4%$_{a}$	5.8%$_{b}$	10.3%$_{a, b}$	4.4%$_{b}$
Black/AA	69.0%$_{a}$	12.6%$_{b}$	11.7%$_{a, b}$	6.7%$_{a, b}$
Native American	67.3%$_{a}$	9.6%$_{a}$	19.2%$_{a}$	3.8%$_{a}$
Other	75.1%$_{a}$	4.6%$_{a}$	12.6%$_{a}$	7.7%$_{a}$
Ethnicity				
Hispanic	73.2%$_{a}$	4.2%$_{a}$	16.7%$_{a}$	6.0%$_{a}$
Not Hispanic	78.3%$_{a}$	6.4%$_{a}$	10.5%$_{a}$	4.8%$_{a}$
Age				
30-39	78.8%$_{a}$	1.2%$_{b}$	13.7%$_{a}$	6.3%$_{a}$
40-49	79.0%$_{a}$	2.3%$_{b}$	11.7%$_{a, c}$	7.0%$_{c}$
50-59	77.5%$_{a}$	5.9%$_{a}$	11.5%$_{a}$	5.2%$_{a}$
60-69	78.0%$_{a}$	9.7%$_{b}$	9.0%$_{a}$	3.3%$_{a}$
70-79	76.0%$_{a}$	16.8%$_{b}$	6.5%$_{a, c}$	0.7%$_{c}$
Sex				
Male	84.6%$_{a}$	5.3%$_{b}$	7.0%$_{b}$	3.1%$_{b}$
Female	72.0%$_{a}$	7.2%$_{b}$	14.4%$_{b}$	6.4%$_{b}$
Educational Attainment				
Less than high school	60.9%$_{a}$	15.4%$_{b}$	14.2%$_{a, b}$	9.5%$_{b}$
High School or GED	69.4%$_{a}$	12.6%$_{b}$	11.6%$_{a}$	6.4%$_{a, b}$
Some College	74.8%$_{a}$	7.3%$_{a}$	11.7%$_{a}$	6.2%$_{a}$
College Degree	81.3%$_{a}$	3.6%$_{b}$	10.5%$_{a}$	4.6%$_{a}$
Graduate School	85.9%$_{a}$	2.6%$_{b}$	9.6%$_{a}$	1.9%$_{b}$
Marital Status				
Married	83.6%$_{a}$	4.2%$_{b}$	9.0%$_{b}$	3.3%$_{b}$
Separated	58.0%$_{a}$	5.8%$_{a, b}$	21.7%$_{b}$	14.5%$_{b}$
Divorced	68.3%$_{a}$	10.7%$_{b}$	13.1%$_{a, b}$	7.9%$_{a, b}$
Widowed	67.3%$_{a}$	14.6%$_{b}$	12.6%$_{a}$	5.5%$_{b}$
Never Married	78.0%$_{a}$	8.5%$_{b}$	16.1%$_{b}$	8.0%$_{b}$

Note. Each subscript letter denotes a subset of Profile categories whose column proportions do not differ significantly from each other at the .05 level.

APPENDIX D

CHAPTER 3 TABLES AND FIGURES

Table 5

Study 2: Latent Profile Analysis Information Criteria

No. of Profiles	AIC	BIC	SABIC	VLMRT *p* value	AMLRT *p* value	Entropy
1	31442.4	31511.0	31472.9	-	-	-
2	29083.9	29192.6	29132.2	0.018	0.019	1.00
3	24563.4	24712.1	24629.5	0.411	0.415	1.00
4	23556.4	23745.2	23640.3	0.006	0.006	0.94
5	23175.9	23404.8	23277.7	0.063	0.065	0.94

Note. AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; SABIC: Size Adjusted BIC; VLMR: Vuong–Lo–Mendell–Rubin likelihood ratio test; LMR: Lo–Mendell–Rubin adjusted likelihood ratio test.

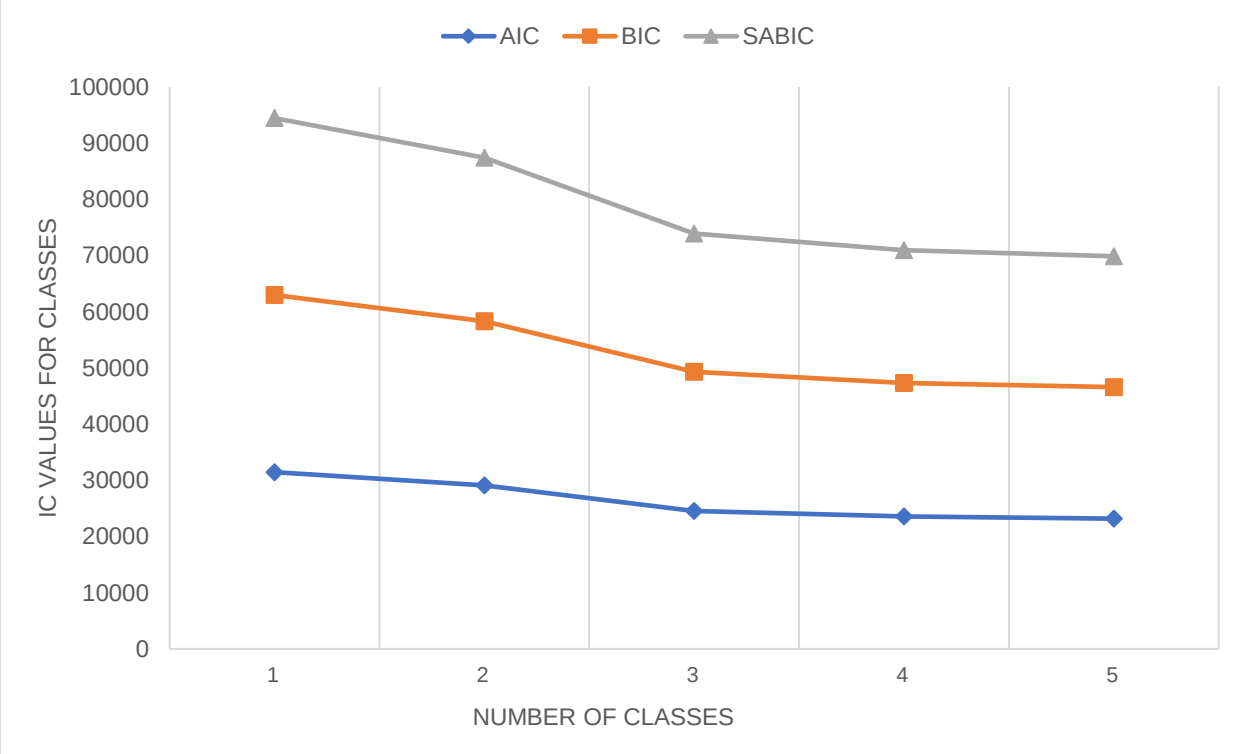

Figure 6. Scree Plot.

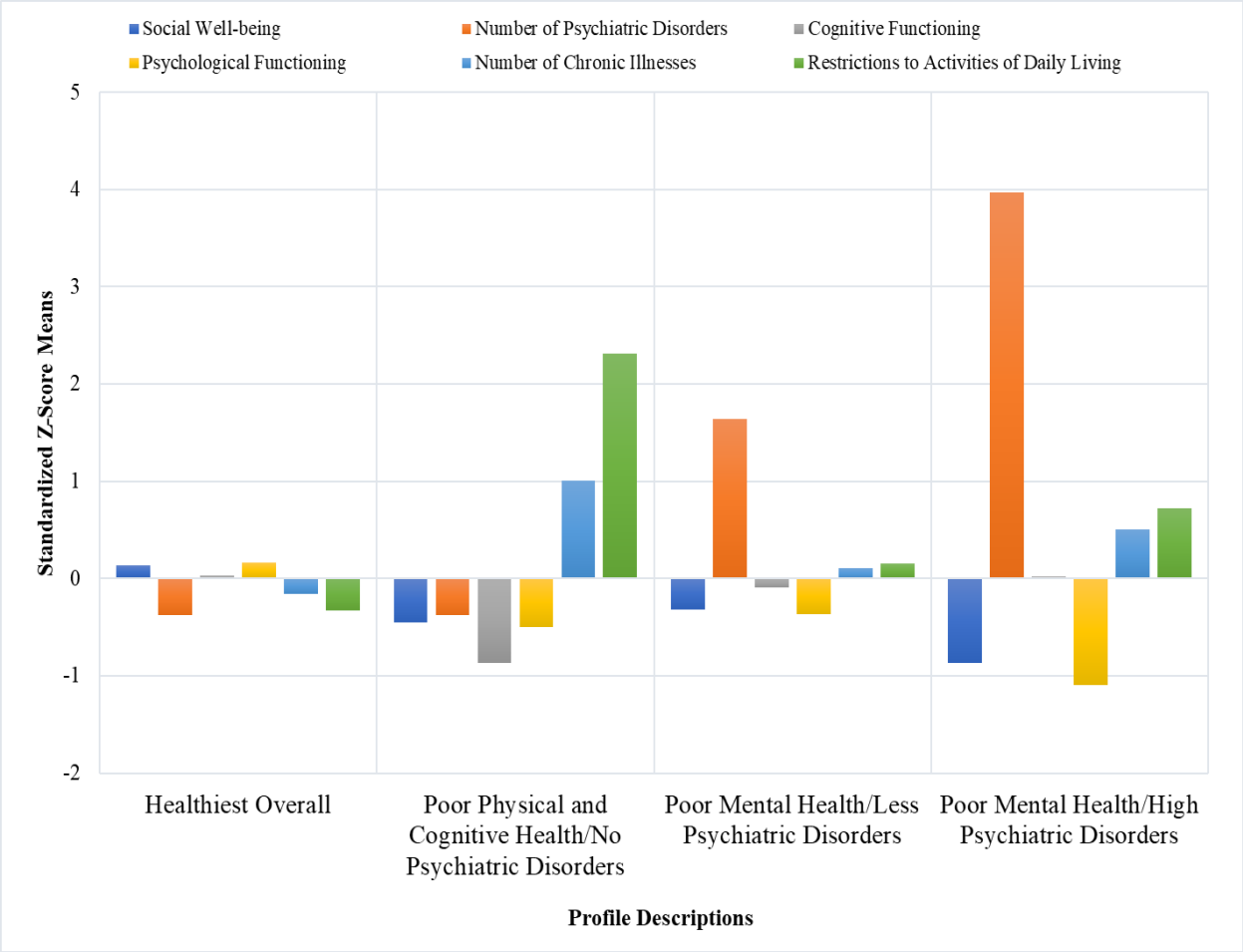

Figure 7. Standardized Scores for Each Successful Aging Indicator, by Identified Class.

Table 6

Study 2: Multinomial Logistic Regression Model of Successful Aging Regressed on Spousal Support and Strain

	Healthiest Overall v Poor Physical and Cognitive Health/No Psychiatric Disorders				Healthiest Overall v Poor Mental Health Low Psychiatric Disorders				Healthiest Overall v Poor Mental Health High Psychiatric Disorders			
Variables	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**
Support	.07	1.07	.59	1.95	.17	1.33	.76	2.34	.01	1.01	.41	2.45
Strain	.50	1.65	.96	2.84	.64*	1.91	1.13	3.24	.92	2.50	.97	6.48
Covariates												
Marital Dissolution	-.091	.91	.39	2.13	.80*	2.23	1.18	4.21	1.32*	3.73	1.38	10.10
Sex	.18	1.20	.72	2.01	1.41***	4.11	2.34	7.24	1.52**	4.58	1.49	14.02
Race	.26	1.30	.85	1.98	-.08	.92	.58	1.46	.242	1.27	.78	2.26
Ethnicity	.99	2.70	.31	23.64	.11	1.12	.21	5.97	-.46	.63	.08	4.79
Age	.45***	1.57	1.28	1.93	-.25**	.78	.65	.94	-.48*	.62	.43	.90
Education	-.57***	.56	.45	.71	-.24*	.78	.64	.96	-.37	.69	.47	1.01

*p<0.05 **p<0.01 ***p<.001

Table 7

Study 2: Multinomial Logistic Regression Model of Successful Aging Regressed on Spousal Support and Strain with Sex Interaction Terms

	Healthy Profile v Poor Physical and Cognitive Health/No Psychiatric Disorders				Healthy Profile v Poor Mental Health/ Low Psychiatric Disorders				Healthy Profile v Poor Mental Health/ High Psychiatric Disorders			
Variables	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**	**B**	**OR**	**CI (Lower Bound)**	**CI (Upper Bound)**
Support	.17	1.18	.44	3.20	.99	2.69	.645	11.24	.55	1.74	.07	41.99
Strain	.60	1.82	.78	4.25	1.47*	4.35	1.305	14.57	.09	1.09	.10	11.44
Support x Sex	-.16	.85	.24	2.92	-.86	.42	.09	1.99	-.58	.56	.02	15.25
Strain x Sex	-.17	.84	.28	2.92	-1.02	.36	.094	1.38	1.03	2.81	.22	36.55
Covariates												
Marital Dissolution	-.100	.91	.39	2.13	.80*	2.22	1.17	4.20	1.33**	3.79	1.39	10.36
Sex	.19	1.21	.72	2.03	1.56***	4.78	2.54	8.96	1.36*	3.88	1.19	12.64
Race	.26	1.30	.85	1.98	-0.89	.91	.58	1.45	.24	1.28	.72	2.27
Ethnicity	1.00	2.70	.30	23.26	.09	1.10	.21	5.82	-.44	.64	.08	4.96
Age	.45***	1.57	1.28	1.93	-.24*	.79	.65	.95	-.51**	.60	.42	.88
Education	-.57***	.57	.45	.71	-.24*	.78	.64	.96	-.37*	.69	.47	1.01

*p<0.05 **p<0.01 ***p<.001

REFERENCES

Almeida, D. M., & Kessler, R. C. (1998). Everyday stressors and gender differences in daily distress. *Journal of Personality and Social Psychology, 75*(3), 670–680. https://doi.org/10.1037/0022-3514.75.3.670

Alves, L. C. de S., Monteiro, D. Q., Bento, S. R., Hayashi, V. D., Pelegrini, L. N. de C., & Vale, F. A. C. (2019). Burnout syndrome in informal caregivers of older adults with dementia: A systematic review. *Dementia e Neuropsychologia*, *13*(4), 415–421. https://doi.org/10.1590/1980-57642018dn13-040008

Anglim, J., Horwood, S., Smillie, L. D., Marrero, R. J., & Wood, J. K. (2020). Predicting psychological and subjective well-being from personality: A meta-analysis. *Psychological Bulletin*, *146*(4), 279–323. https://doi.org/10.1037/bul0000226

Austad, S. N. (2006). Why women live longer than men: Sex differences in longevity. *Gender Medicine*, *3*(2), 79–92. https://doi.org/10.1016/S1550-8579(06)80198-1

Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). Cambridge University Press. https://doi.org/10.1017/CBO9780511665684.003

Bowling, A., & Dieppe, P. (2005). What is successful ageing and who should define it? *BMJ (Clinical Research Ed.), 331*(7531), 1548–1551. https://doi.org/10.1136/bmj.331.7531.1548

Braithwaite, S., & Holt-Lunstad, J. (2017). Romantic relationships and mental health. *Current Opinion in Psychology, 13*, 120–125. https://doi.org/10.1016/j.copsyc.2016.04.001

Burman, B., & Margolin, G. (1992). Analysis of the association between marital relationships and health problems: An interactional perspective. *Psychological Bulletin*, *112*(1), 39–63. https://doi.org/10.1037/0033-2909.112.1.39

Carr, D., Freedman, V. A., Cornman, J. C., & Schwarz, N. (2014). Happy marriage, happy life? Marital quality and subjective well-being in later life. *Journal of Marriage and Family*, *76*(5), 930–948. https://doi.org/10.1111/jomf.12133

Carr, D., & Springer, K. W. (2010). Advances in families and health research in the 21st century. *Journal of Marriage and Family, 72*(3), 743–761. https://doi.org/10.1111/j.1741-3737.2010.00728.x

Chou, K.-L., & Chi, I. (2002). Successful aging among the young-old, old-old, and oldest-old Chinese. *The International Journal of Aging and Human Development*, *54*(1), 1–14. https://doi.org/10.2190/9K7T-6KXM-C0C6-3D64

Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *7*(3), 269–297. https://doi.org/10.1037//0278-6133.7.3.269

Cohen, S. (2004). Social relationships and health. *American Psychologist*, *59*(8), 676–684. https://doi.org/10.1037/0003-066X.59.8.676

Cook, R. E., Brashier, E., & Hughes, J. L. (2011). Gender differences in the psychological impact of the dual-income lifestyle. *Psi Chi Journal of Undergraduate Research*, *16*(3), 129–133. https://doi.org/10.24839/1089-4136.JN16.3.129

Cosco, T. D., Prina, A. M., Perales, J., Stephan, B. C. M., & Brayne, C. (2014). Operational definitions of successful aging: A systematic review. *International Psychogeriatrics*, *26*(3), 373–381. https://doi.org/10.1017/S1041610213002287

Curtin, S., & Tejada-Vera, B. (2019). *Mortality Among Adults Aged 25 and Over by Marital Status: United States, 2010–2017*.

Depp, C. A., & Jeste, D. V. (2006). Definitions and predictors of successful aging: A comprehensive review of larger quantitative studies. *American Journal of Geriatric Psychiatry*, 15.

Dhabhar, F. S. (2014). Effects of stress on immune function: The good, the bad, and the beautiful. *Immunologic Research*, *58*(2), 193–210. https://doi.org/10.1007/s12026-014-8517-0

Dillaway, H. E., & Byrnes, M. (2009). Reconsidering successful aging: A call for renewed and expanded academic critiques and conceptualizations. *Journal of Applied Gerontology*, *28*(6), 702–722. https://doi.org/10.1177/0733464809333882

Douglas, H., Georgiou, A., & Westbrook, J. (2017). Social participation as an indicator of successful aging: An overview of concepts and their associations with health. *Australian Health Review*, *41*(4), 455. https://doi.org/10.1071/AH16038

Drewelies, J., Deeg, D. J. H., Huisman, M., & Gerstorf, D. (2018). Perceived constraints in late midlife: Cohort differences in the Longitudinal Aging Study Amsterdam (LASA). *Psychology and Aging*, *33*(5), 754–768. https://doi.org/10.1037/pag0000276

Everard, K. M., Lach, H. W., Fisher, E. B., & Baum, M. C. (2000). Relationship of activity and social support to the functional health of older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *55*(4), S208-212. https://doi.org/10.1093/geronb/55.4.s208

Fincham, F. D., Beach, S. R. H., & Kemp-Fincham, S. I. (1997). Marital quality: A new theoretical perspective. In *Satisfaction in close relationships* (pp. 275–304). The Guilford Press.

Fincham, F. D., & Bradbury, T. N. (1987). The assessment of marital quality: A reevaluation. *Journal of Marriage and the Family*, *49*(4), 797–809. https://doi.org/10.2307/351973

Franke, T. M., Ho, T., & Christie, C. A. (2012). The Chi-Square test: Often used and more often misinterpreted. *American Journal of Evaluation*, *33*(3), 448–458. https://doi.org/10.1177/1098214011426594

Freedman, V. A., Kasper, J. D., & Spillman, B. C. (2017). Successful aging through successful accommodation with assistive devices. *The Journals of Gerontology: Series B*, *72*(2), 300–309. https://doi.org/10.1093/geronb/gbw102

Fuchs, V. R. (2004). Reflections on the socio-economic correlates of health. *Journal of Health Economics*, *23*(4), 653–661. https://doi.org/10.1016/j.jhealeco.2004.04.004

Garcia, M. A., & Umberson, D. (2019). Marital strain and psychological distress in same-sex and different-sex couples. *Journal of Marriage and Family*, *81*(5), 1253–1268. https://doi.org/10.1111/jomf.12582

Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2011). Relationship separation and mental health problems: Findings from a 30-Year longitudinal study. *Australian & New Zealand Journal of Psychiatry*, *45*(2), 163–169. https://doi.org/10.3109/00048674.2010.529603

Gibson, W. A. (19630301). Class assignment in the latent profile model. *Journal of Applied Psychology*, *46*(6), 399. https://doi.org/10.1037/h0043541

Gracey, M., & King, M. (2009). Indigenous health part 1: Determinants and disease patterns. *The Lancet*, *374*(9683), 65–75. https://doi.org/10.1016/S0140-6736(09)60914-4

Grzywacz, J. G., & Keyes, C. L. M. (2004). Toward health promotion: Physical and social behaviors in complete health. *American Journal of Health Behavior*, *28*(2), 99–111. https://doi.org/10.5993/ajhb.28.2.1

Guevara, J. E., & Murdock, K. W. (2019). High social strain and physical health: Examining the roles of anxious arousal, body mass index, and inflammation. *Psychoneuroendocrinology*, *106*, 155–160. https://doi.org/10.1016/j.psyneuen.2019.04.005

Hamm, J. M., Heckhausen, J., Shane, J., & Lachman, M. E. (2020). Risk of cognitive declines with retirement: Who declines and why? *Psychology and Aging*, *35*(3), 449–457. https://doi.org/10.1037/pag0000453

Harris, K. M., Edlund, M. J., & Larson, S. (2005). Racial and ethnic differences in the mental health problems and use of mental health care. *Medical Care*, *43*(8), 775–784.

Havighurst, R. J. (1963). Successful aging. In *Processes of aging* (pp. 299–320). Atherton Press.

Hewitt, B., Turrell, G., & Giskes, K. (2012). Marital loss, mental health and the role of perceived social support: Findings from six waves of an Australian population based panel study. *Journal of Epidemiology and Community Health*, *66*(4), 308–314. https://doi.org/10.1136/jech.2009.104893

Hsu, H.-C., & Jones, B. L. (2012). Multiple trajectories of successful aging of older and younger cohorts. *The Gerontologist*, *52*(6), 843–856. https://doi.org/10.1093/geront/gns005

Hubert, H. B., Bloch, D. A., & Fries, J. F. (1993). Risk factors for physical disability in an aging cohort: The NHANES I Epidemiologic Followup Study. *The Journal of Rheumatology*, 20(3), 480–488.

Jaul, E., & Barron, J. (2017). Age-related diseases and clinical and public health implications for the 85 years old and over population. *Frontiers in Public Health*, *5*. https://doi.org/10.3389/fpubh.2017.00335

Jeste, D. V., Savla, G. N., Thompson, W. K., Vahia, I. V., Glorioso, D. K., Martin, A. S., Palmer, B. W., Rock, D., Golshan, S., Kraemer, H. C., & Depp, C. A. (2013). Association between older age and more successful aging: Critical role of resilience and depression. *American Journal of Psychiatry*, *170*(2), 188–196. https://doi.org/10.1176/appi.ajp.2012.12030386

Johnson, K. J., & Mutchler, J. E. (2014). The emergence of a positive gerontology: From disengagement to social involvement. *The Gerontologist*, *54*(1), 93–100. https://doi.org/10.1093/geront/gnt099

Kail, B. L., & Carr, D. C. (2017). Successful aging in the context of the disablement process: Working and volunteering as moderators on the association between chronic conditions and subsequent functional limitations. *The Journals of Gerontology: Series B*, *72*(2), 340–350. https://doi.org/10.1093/geronb/gbw060

Kamp Dush, C. M., Taylor, M. G., & Kroeger, R. A. (2008). Marital happiness and psychological well-being across the life course. *Family Relations*, *57*(2). https://doi.org/10.1111/j.1741-3729.2008.00495.x

Kendler, K. S., & Gardner, C. O. (2014). Sex differences in the pathways to major depression: A study of opposite-sex twin pairs. *The American Journal of Psychiatry*, *171*(4), 426–435. https://doi.org/10.1176/appi.ajp.2013.13101375

Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research*, *21*(3), 169–184. https://doi.org/10.1002/mpr.1359

Keyes, C. L. M. (1998). Social Well-Being. *Social Psychology Quarterly*, *61*(2), 121–140. https://doi.org/10.2307/2787065

Keyes, C. L. M., & Grzywacz, J. G. (2005). Health as a complete state: The added value in work performance and healthcare costs. *Journal of Occupational and Environmental Medicine*, *47*(5), 523–532.

Khan, C. M., Stephens, M. A. P., Franks, M. M., Rook, K. S., & Salem, J. K. (2013). Influences of spousal support and control on diabetes management through physical activity. *Health Psychology*, *32*(7), 739–747. https://doi.org/10.1037/a0028609

Kiecolt-Glaser, J. K. (2018). Marriage, divorce, and the immune system. *The American Psychologist*, *73*(9), 1098–1108. https://doi.org/10.1037/amp0000388

Kiecolt-Glaser, J. K., Newton, T., Cacioppo, J. T., MacCallum, R. C., Glaser, R., & Malarkey, W. B. (1996). Marital conflict and endocrine function: Are men really more physiologically affected than women? *Journal of Consulting and Clinical Psychology*, *64*(2), 324–332. https://doi.org/10.1037/0022-006X.64.2.324

Kiecolt-Glaser, J. K., & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin*, *127*(4), 472–503. https://doi.org/10.1037/0033-2909.127.4.472

King, K. B., & Reis, H. T. (2012). Marriage and long-term survival after coronary artery bypass grafting. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *31*(1), 55–62. https://doi.org/10.1037/a0025061

Ko, K. J., Berg, C. A., Butner, J., Uchino, B. N., & Smith, T. W. (2007). Profiles of successful aging in middle-aged and older adult married couples. *Psychology and Aging*, *22*(4), 705–718. https://doi.org/10.1037/0882-7974.22.4.705

Kok, A. A. L., Aartsen, M. J., Deeg, D. J. H., & Huisman, M. (2017). Capturing the diversity of successful aging: An operational definition based on 16-year trajectories of functioning. *The Gerontologist*, *57*(2), 240–251. https://doi.org/10.1093/geront/gnv127

Kwang, T., Crockett, E. E., Sanchez, D. T., & Swann, W. B. (2013). Men seek social standing, women seek companionship: Sex differences in deriving self-worth from relationships. *Psychological Science*, *24*(7), 1142–1150. https://doi.org/10.1177/0956797612467466

Lanza, S., Flaherty, B., & Collins, L. (2003). Latent class and latent transition analysis. In *Handbook of Psychology: Research Methods in Psychology*. https://doi.org/10.1002/0471264385.wei0226

Levenson, R. W., Carstensen, L. L., & Gottman, J. M. (1993). Long-term marriage: Age, gender, and satisfaction. *Psychology and Aging*, *8*(2), 301–313. https://doi.org/10.1037/0882-7974.8.2.301

Liu, H., & Waite, L. (2014). Bad marriage, broken heart? Age and gender differences in the link between marital quality and cardiovascular risks among older adults. *Journal of Health and Social Behavior*, *55*(4), 403–423. https://doi.org/10.1177/0022146514556893

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, *88*(3), 767–778. https://doi.org/10.1093/biomet/88.3.767

Mana, J., & Bezdicek, O. (2020). Cognition in successful aging: Systematic review and future directions. *Clinical Gerontologist*, *0*(0), 1–9. https://doi.org/10.1080/07317115.2020.1752346

Manenti, R., Cotelli, M., & Miniussi, C. (2011). Successful physiological aging and episodic memory: A brain stimulation study. *Behavioural Brain Research*, *216*(1), 153–158. https://doi.org/10.1016/j.bbr.2010.07.027

Manne, S. L., & Zautra, A. J. (1989). Spouse criticism and support: Their association with coping and psychological adjustment among women with rheumatoid arthritis. *Journal of Personality and Social Psychology*, *56*(4), 608–617. https://doi.org/10.1037/0022-3514.56.4.608

Manzoli, L., Villari, P., M Pirone, G., & Boccia, A. (2007). Marital status and mortality in the elderly: A systematic review and meta-analysis. *Social Science & Medicine*, *64*(1), 77–94. https://doi.org/10.1016/j.socscimed.2006.08.031

McLean, C. P., Asnaani, A., Litz, B. T., & Hofmann, S. G. (2011). Gender differences in anxiety disorders: Prevalence, course of illness, comorbidity and burden of illness. *Journal of Psychiatric Research*, *45*(8), 1027–1035. https://doi.org/10.1016/j.jpsychires.2011.03.006

Meyler, D., Stimpson, J. P., & Peek, M. K. (2007). Health concordance within couples: A systematic review. *Social Science & Medicine*, *64*(11), 2297–2310. https://doi.org/10.1016/j.socscimed.2007.02.007

Miller, L. M. S., & Lachman, M. E. (2000). Cognitive performance and the role of control beliefs in midlife. *Aging, Neuropsychology, and Cognition*, *7*(2), 69–85. https://doi.org/10.1076/1382-5585(200006)7:2;1-U;FT069

Ng, T. P., Broekman, B. F. P., Niti, M., Gwee, X., & Kua, E. H. (2009). Determinants of successful aging using a multidimensional definition among Chinese elderly in Singapore. *The American Journal of Geriatric Psychiatry*, *17*(5), 407–416. https://doi.org/10.1097/JGP.0b013e31819a808e

Nolen-Hoeksema, S., & Jackson, B. (2001). Mediators of the gender difference in rumination. *Psychology of Women Quarterly*, *25*(1), 37–47. https://doi.org/10.1111/1471-6402.00005

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *3*(5), 400–424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Patel, P. C. (2019). The Great Recession and allostatic load in the United States. *International Journal of Stress Management*, *26*(4), 411–417. https://doi.org/10.1037/str0000112

Piovani, C., & Aydiner-Avsar, N. (2021). Work time matters for mental health: A gender analysis of paid and unpaid labor in the United States. *Review of Radical Political Economics*, *53*(4), 579–589. https://doi.org/10.1177/04866134211035565

Pruchno, R. A., & Wilson-Genderson, M. (2015). A longitudinal examination of the effects of early influences and midlife characteristics on successful aging. *The Journals of Gerontology: Series B*, *70*(6), 850–859. https://doi.org/10.1093/geronb/gbu046

Pruchno, R. A., Wilson-Genderson, M., Rose, M., & Cartwright, F. (2010). Successful aging: Early influences and contemporary characteristics. *The Gerontologist*, *50*(6), 821–833. https://doi.org/10.1093/geront/gnq041

Purves, D., Augustine, G. J., Fitzpatrick, D., Katz, L. C., LaMantia, A.-S., McNamara, J. O., & Williams, S. M. (2001). Physiological changes associated with emotion. *Neuroscience. 2nd Edition*. https://www.ncbi.nlm.nih.gov/books/NBK10829/

Radler, B., T. (2014). The Midlife in the United States (MIDUS) Series: A national longitudinal study of health and well-being. *Open Health Data*, *2*(1). https://doi.org/10.5334/ohd.ai

Raghupathi, V., & Raghupathi, W. (2020). The influence of education on health: An empirical assessment of OECD countries for the period 1995–2015. *Archives of Public Health*, *78*(1), 20. https://doi.org/10.1186/s13690-020-00402-5

Raven, J. (1991). The raven progressive matrices: Implications for fostering abilities. *European Journal of High Ability*, *2*(2), 189–200. https://doi.org/10.1080/0937445910020208

Richards, M., Hardy, R., & Wadsworth, M. (1997). The effects of divorce and separation on mental health in a national UK birth cohort. *Psychological Medicine*, *27*(5), 1121–1128. https://doi.org/10.1017/S003329179700559X

Robards, J., Evandrou, M., Falkingham, J., & Vlachantoni, A. (2012). Marital status, health and mortality. *Maturitas*, *73*(4), 295–299. https://doi.org/10.1016/j.maturitas.2012.08.007

Robertson, L. G., Anderson, T. L., Hall, M. E. L., & Kim, C. L. (2019). Mothers and mental labor: A phenomenological focus group study of family-related thinking work. *Psychology of Women Quarterly*, *43*(2), 184–200. https://doi.org/10.1177/0361684319825581

Robles, T. F., Slatcher, R. B., Trombello, J. M., & McGinn, M. M. (2014). Marital quality and health: A meta-analytic review. *Psychological Bulletin*, *140*(1), 140–187. https://doi.org/10.1037/a0031859

Rook, K. S. (1990). Parallels in the study of social support and social strain. *Journal of Social and Clinical Psychology*, *9*(1), 118–132. https://doi.org/10.1521/jscp.1990.9.1.118

Rook, K. S., & Charles, S. T. (2017). Close social ties and health in later life: Strengths and vulnerabilities. *The American Psychologist*, *72*(6), 567–577. https://doi.org/10.1037/amp0000104

Ross, C. E., & Wu, C. (1995). The links between education and health. *American Sociological Review*, *60*(5), 719–745. https://doi.org/10.2307/2096319

Rowe, J. W., & Kahn, R. L. (1987). Human Aging: Usual and Successful. *Science*, *237*(4811), 143–149.

Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist*, *37*(4), 433–440. https://doi.org/10.1093/geront/37.4.433

Rowe, J. W., & Kahn, R. L. (1998). *Successful Aging*. Random House Large Print.

Rowe, J. W., & Kahn, R. L. (2015). Successful Aging 2.0: Conceptual expansions for the 21st century. *The Journals of Gerontology: Series B*, *70*(4), 593–596. https://doi.org/10.1093/geronb/gbv025

Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, *5*(4), 296–320. https://doi.org/10.1207/S15327957PSPR0504_2

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069

Ryff, C. D., Radler, B. T., & Friedman, E. M. (2015). Persistent psychological well-being predicts improved self-rated health over 9–10 years: Longitudinal evidence from MIDUS. *Health Psychology Open*, *2*(2), 2055102915601582. https://doi.org/10.1177/2055102915601582

Salthouse, T. A., & Babcock, R. L. (1991). Decomposing adult age differences in working memory. *Developmental Psychology*, *27*(5), 763–776. https://doi.org/10.1037/0012-1649.27.5.763

Sarla, E., Lambrinou, E., Galanis, P., Kalokairinou, A., & Sourtzi, P. (2020). Factors that influence the relationship between social support and health-related quality of life of older people living in the community. *Gerontology and Geriatric Medicine*, *6*, 2333721420911474. https://doi.org/10.1177/2333721420911474

Schaie, K. W. (1985). *Schaie-Thurstone Adult Mental Abilities Test manual*. Consulting Psychologists Press.

Sommerlad, A., Ruegger, J., Singh-Manoux, A., Lewis, G., & Livingston, G. (2018). Marriage and risk of dementia: Systematic review and meta-analysis of observational studies. *Journal of Neurology, Neurosurgery & Psychiatry*, *89*(3), 231–238. https://doi.org/10.1136/jnnp-2017-316274

Song, M., Lee, M., & Shim, B. (2010). Barriers to and facilitators of self-management adherence in Korean older adults with type 2 diabetes. *International Journal of Older People Nursing*, *5*(3), 211–218. https://doi.org/10.1111/j.1748-3743.2009.00189.x

Sorkin, D. H., Mavandadi, S., Rook, K. S., Biegler, K. A., Kilgore, D., Dow, E., & Ngo-Metzger, Q. (2014). Dyadic collaboration in shared health behavior change: The effects of a randomized trial to test a lifestyle intervention for high-risk Latinas. *Health Psychology*, *33*(6), 566–575. https://doi.org/10.1037/hea0000063

Soulsby, L. K., & Bennett, K. M. (2015). Marriage and psychological wellbeing: The role of social support. *Psychology*, *06*(11), 1349–1359. https://doi.org/10.4236/psych.2015.611132

Stowe, J. D., & Cooney, T. M. (2015). Examining Rowe and Kahn's concept of successful aging: Importance of taking a Life Course Perspective. *The Gerontologist*, *55*(1), 43–50. https://doi.org/10.1093/geront/gnu055

Thomas, P. A., Liu, H., & Umberson, D. (2017). Family relationships and well-being. *Innovation in Aging*, *1*(3), igx025. https://doi.org/10.1093/geroni/igx025

Timmons, A. C., Margolin, G., & Saxbe, D. E. (2015). Physiological linkage in couples and its implications for individual and interpersonal functioning: A literature review. *Journal of Family Psychology: JFP : Journal of the Division of Family Psychology of the American Psychological Association (Division 43)*, *29*(5), 720–731. https://doi.org/10.1037/fam0000115

Tracy, E. L., & Utz, R. L. (2020). For better or for worse: Health and marital quality during midlife. *Journal of Aging and Health*, *32*(10), 1625–1635. https://doi.org/10.1177/0898264320948305

Uchino, B. N. (2006). Social support and health: A review of physiological processes potentially underlying links to disease outcomes. *Journal of Behavioral Medicine*, *29*(4), 377–387. https://doi.org/10.1007/s10865-006-9056-5

Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, *119*(3), 488–531.

Umberson, D. (1992). Gender, marital status and the social control of health behavior. *Social Science & Medicine (1982)*, *34*(8), 907–917. https://doi.org/10.1016/0277-9536(92)90259-s

Umberson, D., & Montez, J. K. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, *51*(Suppl), S54–S66. https://doi.org/10.1177/0022146510383501

Umberson, D., Williams, K., Powers, D. A., Liu, H., & Needham, B. (2006). You make me sick: Marital quality and health over the life course. *Journal of Health and Social Behavior*, *47*(1), 1–16. https://doi.org/10.1177/002214650604700101

Walen, H., & Lachman, M. (2000). Social support and strain from partner, family, and friends: Costs and benefits for men and women in adulthood. *Journal of Social and Personal Relationships - J SOC PERSON RELAT*, *17*, 5–30. https://doi.org/10.1177/0265407500171001

Wang, M., Qiaowen, D., Bi, X., Ye, H., & wendengYang. (2017). Performance of the entropy as an index of classification accuracy in latent profile analysis: A Monte Carlo simulation study. *Acta Psychologica Sinica*, *49*. https://doi.org/10.3724/SP.J.1041.2017.01473

Wanic, R., & Kulik, J. (2011). Toward an understanding of gender differences in the impact of marital conflict on health. *Sex Roles: A Journal of Research*, *65*(5–6), 297–312. https://doi.org/10.1007/s11199-011-9968-6

Wechsler, D. (1955). *Manual for the Wechsler Adult Intelligence Scale* (pp. vi, 110). Psychological Corp.

Williams, K., Frech, A., & Carlson, D. L. (2010). Marital status and mental health. In *A handbook for the study of mental health: Social contexts, theories, and systems, 2nd ed* (pp. 306–320). Cambridge University Press.

Wilson-Genderson, M., & Pruchno, R. (2015). Functional limitations and gender differences: neighborhood effects. *The International Journal of Aging and Human Development*, *81*(1–2), 83–100. https://doi.org/10.1177/0091415015614843

BIOGRAPHICAL SKETCH

Florida State University has been my home for over a decade of my life. I have been immensely successful in my academic career during my time at FSU. I received my B.S. in Psychology from FSU in 2011 with a double minor in English and Philosophy. While working on this degree, I was heavily involved with the Social Psychology labs on campus as a DIS student. I was then accepted to the master's program in Family and Child Sciences at the FSU College of Human Science and graduated in 2013.

For two years after I graduated, I worked as a paralegal and a Florida Supreme Court Certified Family Mediator. I had also worked in family law as a legal assistant during high school and my undergraduate years. My experience in law gives me a unique ability to not only understand scientific research, but the policy and legal writing that research can affect. I began my PhD in Human Development and Family Science in 2015. I translated my legal knowledge into teaching my favorite class, Public Policy. I incorporated learning to read legalese into the class, which allowed my students to go straight to the source to understand and discuss policy comprehensively. I gained extensive experience in teaching various classes in several formats.

I also gained experience in research while working with Dr. Joseph Grzywacz and the Florida Institute for Child Welfare. Thanks to my time at the Institute, I have explored ways to incorporate my current interests with the needs I see affecting children in the foster care system. My research interests include successful aging and the effects of the family relationships on not only older adults, but also younger cohorts as well, since aging is a lifelong process. My extended research interests also include the effects of child-hood obesity and poor nutrition, romantic relationships, parent/child relationships, the role of psychiatric disorders in health, general family functioning, and social rejection/relationship loss by family or peers.

One of my proudest accomplishments was being published for my chapter on promoting healthy practices in the workplace in the *Oxford Handbook of Integrated Health Science.* I have several other papers that have been submitted for publication or will be submitted shortly. Throughout my time at FSU, I have been the recipient of multiple awards and grants, including being fully funded for my entire program of study for both my master's and PhD. I was awarded the Dissertation Research Grant in 2020 and I was a P.E.O. Scholar Award nominee. My undergraduate studies were fully funded as well through grants, scholarships, and the Florida Bright Futures Award.