

OLDER ADULTS' PHYSICAL IDENTITY DEVELOPMENT THROUGH LEARNING:
A GROUNDED THEORY STUDY

A Dissertation

by

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ABSTRACT

This study investigated physical identity development through learning among older adults. The purpose of this study was to examine older adults' perceptions of their physical identity through their engagement in learning about physical activity. Specifically, I examined the role that learning about and learning how to do particular activities plays in identity development for older adults, as well as the meanings older adults attach to their engagement in the physical activity. The study's conceptual framework drew from a contextual approach to adult development, identity-based theories, and the concept of the various adult learning contexts.

I employed grounded theory, informed by symbolic interactionism. I interviewed 15 adults aged 65 years and older, who were involved in physical activities on a regular basis. All participants maintained active (60%) or highly active (40%) levels of physical activity. Findings were developed using theoretical sampling, constant comparative analysis, three phases of coding, and memoing. Specifically, I employed the paradigm model (Strauss & Corbin, 1990) as an analytical tool for systematically organizing categories. For the final theoretical conceptualization, I provided a diagram to visualize the emergent categories and present a final theory.

Given the global trends toward an aging society and increased desire for healthy aging in late life, this study provided a final model depicting (a) divergent and convergent modes of strategies and socioemotional aspects of physical identity development in later life; (b) different strategies employed between younger-old versus older-old age groups, and between participants who have underlying conditions and those who do not; (c) nature of learning for older adults who

participate in exercise (i.e., assimilative, accommodative, and social learning); and additionally, (d) older adults' lives, where the unexpected COVID-19 pandemic threatened their health and normal activity, was considered as another important finding.

Finally, the findings of this study highlighted the importance of context in the study of aging and understanding the nature of the ongoing process of human development. Future aging studies need to take into consideration not only varied demographic information of the older population, but also the context of age subgroups and individual health-related factors. The present study can inform scholars and practitioners in the field of adult education and gerontology and further the educational agendas for late-life learning.

DEDICATION

To all older adults who were willing to share their wisdom with me and without whom my research would not have been possible. They are the most treasured generation.

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Contributors

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CHAPTER I

INTRODUCTION

This chapter provides an introduction to the topic of this dissertation and the overall purpose. I begin with a background of this study then address gaps in the existing literature and the problem. I continue with presenting an overview of the conceptual framework, purpose of the study, research questions, and the study's significance. I conclude by providing definitions of terms and a summary of this chapter.

Background

The proportion of older adults throughout the world is rapidly increasing (United Nations, 2019). Older adults are generally defined as having a chronological age of 65 years or older along with a range of characteristics—chronological age, change in social role, and changes in functional abilities (United Nations, 2017). The number of older adults in the United States will increase to over 95 million by 2060 (Administration for Community Living, 2019; Zaleski et al., 2016). Between 1950 and 2013, life expectancy in the United States had increased by more than ten years, from 68 years to 79 years (Administration for Community Living, 2019; Mather et al., 2015). One of the important consequences of these demographic changes and longevity in many aging societies is that people are likely to experience a longer period of older adulthood than previous generations (Mather et al., 2015; Settersten & Angel, 2011). This means that older adults live longer in a situation of post-retirement or reduced working hours and after their children have left home (Jovic & McMullin, 2011).

A biopsychosocial approach to adult development articulates how people in later life undergo the biological, psychological, and sociocultural changes and experience, and the

complex interplay between each process (Whitbourne & Whitbourne, 2014). Biological changes are driven by natural aging, the environment, personal health habits, and experiences with accidents or disease (Clark & Caffarella, 2011). At the same time, aging individuals notice and are cognizant of what is happening to their bodies and changes in their own psychological state (Erikson, 1963; Levinson & Levinson, 1996). All of these experiences and perceptions regarding the aging process occur within a social and cultural context (Gardiner & Kosmitzki, 2005; Shaffer, 2005).

As people age, they continue to accomplish developmental tasks and life responsibilities (Erikson, 1963; Kohlberg, 1973; Levinson & Levinson, 1996), but they also experience physical changes associated with the aging process (Findsen & Formosa, 2011), and gradually acknowledge the finitude of life and death (Moody, 1990). Most people in later life go through major life events including retirement, children leaving home, losing a job or being given reduced hours, sometimes divorce, loss of a near one, the onset of physical illness or injury, and thus signaling the end stage of life is approaching (Moos et al., 2006; Whitbourne & Whitbourne, 2014).

Such life-turning events often trigger adults' learning (Biasin & Evans, 2019). Facing life-changing events provides older adults with an opportunity to contemplate themselves and reflect on how and why they have made a right or a new decision to cope with the changes (Biasin & Evans, 2019; Jovic & McMullin, 2011). Specifically, undergoing critical life events and recognizing the limitation of time in their lives may catalyze older adults to develop new attitudes and personal motivation to become more involved in meaningful activities (Golding, 2011a; Jovic & McMullin, 2011), and thus spark their desire to learn in their later life (Merriam & Baumgartner, 2020; Russell, 2008). Vice versa, older adults' engagement in any learning

activity can suggest ways out of crisis life situations as they age (Findsen & Formosa, 2011). In this way, older adults tend to pursue a more holistic manner of understanding the world and seek out forms of existential learning (Schuller & Watson, 2009) in which they try to “understand cultural or social activities, to be something for others, for one’s partner, children or grandchildren, or for people in vulnerable situations or groups or movements with which one sympathizes” (Illeris, 2014, p. 90).

The unique nature of the desire to learn in later life contributes to different dimensions of learning than their experiences in earlier adulthood (Thang et al., 2019). As people reach older adulthood, they begin redefining their identities beyond their previous responsibilities (i.e., paid work or child-rearing) to which they had devoted their adulthood (Golding, 2011a; Whitbourne & Whitbourne, 2014). Due to the fact that older adults must work through unique identity issues, their process of continued identity development through engaging in adult learning presents a new frontier for theorizing identity development (Illeris, 2017; Jarvis, 2001; Kim & Merriam, 2010). Research concerning the connection between learning and adult learner’s identity emphasizes that “all learning takes place by change” (Illeris, 2014, p. 23) in a way that new understandings may challenge existing knowledge, provoke a sense of hostility, threaten personal security, and uncover suspicion of all things new (Youell & Canham, 2006). Thus, a learning process in which adult learners interact with their inherent dispositions and inertia can thereby influence their learning and identity (Illeris, 2014).

Considering this nature of psychological development in one’s later life, late-life learning needs to be directed by transcendental goals and objectives (Jarvis, 1992; Moody, 1986). One of the most important purposes of late-life learning and lifelong learning is that it enables older adults to pursue existential learning (Schuller & Watson, 2009) and obtain wisdom-related

knowledge that facilitates their reflective thinking in which they contemplate the meaning of life, negotiate with their past, seek self-fulfillment, and achieve spiritual advancement (Ardelt, 2000; Findsen & Formosa, 2011; Illeris, 2014; Tam, 2016). In this way, by engaging in late-life learning activities, older adults make meaning of their aging experiences by pursuing personally meaningful activities beyond mere monetary rewards or external incentives (Golding, 2011a; Yamashita et al., 2017). Furthermore, older adults' personal reflection on their earlier stages of life may enable further psychological development as adults continue to mature (Erikson, 1963, 1982; Merriam & Baumgartner, 2020).

Some of the most influential life circumstances that older adults grapple with are health-related issues (Moos et al., 2006). Particularly, maintaining physical activity is a critical element of older adults' perceived health, physical functioning, and overall wellbeing (Nelson et al., 2007). In older adulthood, health-related issues hold a central place in their everyday lifeworld in a way that requires older adults to become more attentive to the condition of their health and physical functions than in their younger years (Schuller & Watson, 2009, Song & Kong, 2015). In line with the older adults' desire to remain physically and mentally active without illness (Capalb et al., 2014; Stenner et al., 2016), regular physical activity for older adults needs to be emphasized because it contributes to the benefits of improving fitness (e.g., balance, cardiovascular function, and muscle and bone mass), preserving physical function (e.g., mobility, fewer falls, and independent living; Gray et al., 2018; Lübcke et al., 2012; Silver et al., 2018; U.S. Department of Health and Human Services, 2018), and supporting positive mental health and healthy aging (Centers for Disease Control and Prevention, 2019).

Older adults' learning regarding physical activity may occur in formal, nonformal, and informal learning settings (Centers for Disease Control and Prevention, 2019; U.S. Department

of Health and Human Services, 2018). Specifically, formal learning takes place in an “institutionalized, chronologically graded and hierarchically structured educational system (Coombs & Ahmed, 1974, p. 8) where typically, a teacher facilitates a course (Eshach, 2007). Nonformal learning occurs outside of the formal educational system that tends to be short-term, voluntary, and have few or no prerequisites (Schugurensky, 2000), but they typically have a curriculum and an instructor (Merriam & Baumgartner, 2020). Informal learning is any voluntary, self-paced learning occurring in various everyday situations including self-directed, incidental, and tacit learning (Marsick & Watkins, 2001; Schugurensky, 2000). In fact, older adults who want to improve their physical condition or exercise-related abilities generally become involved in nonformal or informal learning to acquire the relevant skills and knowledge (Glendenning, 2001; Stebbins, 2017). Even though many older adults do not participate in formal education programs to acquire new knowledge about physical activities (Wasserman, 2006), enrolling in a fitness certificate program offered by an institution of higher education would be one of the examples of a formal learning experience. Thus, older adults can engage in a variety of learning settings to further develop their exercise skills and knowledge when they desire to learn more about some specific activity or topic (Roberson, 2005).

When engaging in physical activity, older adults may experience a transformation of “feelings of control and autonomy and the development of an identity as an exerciser” (Hardcastle & Taylor, 2005, p. 186). In this metacognitive process of building physical self-concept, older adults develop a higher degree of commitment to behaviors that correspond with their desired physical identity (Kenter et al., 2015). Physical identity can be a large part of one’s overall identity that connects to other relevant identities in their larger self and social-related contexts (Rhodes et al., 2016; Strachan & Brawley, 2008). A sense of self in the physical

domain, such as perceptions of competence related to physical tasks or appearance of one's body, is an integral part of the self-concept (Anderson & Cychosz, 1994; Bocknek & Perna, 1994). Physical identity is directly tied to an adult's personal sense of autonomy, independence, not wanting to be a burden on others, desire to make meaningful contributions and to stay relevant, desire to be there for others as long as possible, and a sense of pursuing their life not yet lived while there is still time (Gardner, 2014; Graves & Larkin, 2006; Griffith et al., 2007).

Extant studies about physical identity among older adults have attempted to examine relationships or associations between older adults' physical identity and their physical activity or health behaviors. For instance, Strachan et al. (2010) showed that a stronger physically-active identity was associated with higher self-regulatory efficacy, more frequent physical activity, and greater life satisfaction. Pelssers et al. (2018) revealed that older individuals who internalize the stronger physical identity were also more likely to be autonomously motivated to exercise. However, few scholars have theorized or investigated the way in which older adults construct or maintain their physical identity by engaging in learning about physical activities. While there are a few studies focusing on engagement in physical activities and identity among older adults (Dionigi, 2010; Perras et al., 2016; Williams et al., 2018), few researchers have sought to investigate older adults' physical identity development through learning; I located one of the very few studies on engagement in learning about physical activity. In summary, studying the nature of late-life learning (i.e., existential learning/transcendental view and inextricable connection to health/physical activity issues) through the engagement in physical activities may provide evidence for the process of physical identity development and curative breakthrough for older adults in the face of aging.

Statement of the Problem

Considering the global trends of dramatic demographic changes within aging societies and the corollary increase in older adults' desire for learning in relation to their health, late-life learning within the context of physical activity and health maintenance has been insufficiently investigated (Findsen & Formosa, 2011; Jarvis, 2001; Mather et al., 2015; Schuller & Watson, 2009; Tulle & Phoenix, 2015). Previous studies about older adults' learning have mostly been focused on exploring the factors and aspects of formal learning contexts (Schuller & Watson, 2009; Withnall, 2000). For this reason, studies about nonformal and informal learning practices addressing various topical foci and cultivating skills for older adults are imperative (Boulton-Lewis et al., 2006; Findsen & Formosa, 2011; Jarvis, 2001; Livingstone, 2001). These less structured and flexible forms of learning may be most suitable for older individuals retaining varied developmental processes and heterogeneity (Kelley-Moore & Lin, 2011; Merriam & Bierema, 2014). This can provide an in-depth understanding of older individuals' actual learning aspects and their identity development processes in the face of aging that account for how they experience and perceive themselves by engaging in learning about physical activities.

Following the major adult developmental perspectives (Erikson, 1963; Kindermann & Valsiner, 1995; Levinson et al., 1978; Vygotsky, 1978), late-life learning is supposed to be predominantly guided by transcendental goals—in which people strive to expand self-concepts including spiritual experiences and considering themselves a part of the universe (Cloninger et al., 1993)—based on the nature of psychological development in later life (Jarvis, 1992; Moody, 1986). Informal or nonformal learning in one's later years may serve to fill gaps in older adults' learning remaining after formal learning programs (Brockett, 1985; Golding, 2011b; Jenkins & Mostafa, 2015). They compensate for the pronounced variability in older people's experiences in

aging, recognizing and acknowledging the heterogeneity and diversity of human development and lived experience (Kelcley-Moore & Lin, 2011). Furthermore, while physical activity is considered beneficial for older adults' health-related quality of life, 28% of adults aged 50 and older in the United States are still physically inactive (Centers for Disease Control and Prevention, 2019; U.S. Department of Health and Human Services, 2018). Thus, late-life learning, particularly in the physical activity domain, can play a significant role in identity development as they engaged in personally satisfying physical activity in daily life, while at the same time, enhancing older adults' health condition. Understanding the meanings older adults attribute to their participation in and learning about physical activities may contribute to enriching people's later life.

Conceptual Framework

This section describes the study's conceptual framework comprising a contextual approach to adult development, identity theory, identity process theory, and the concept of the various adult learning contexts (formal, nonformal, and informal). First, the integrative approach to adult development that combines the major perspectives on adult development of biological, psychological, and sociocultural aspects was adapted for this study to understand how older adult development occurs within the interplay with the environment. Next, two identity-related theories exploring older adults' identity development are identity theory (Burke & Stets, 2009; Stryker, 1968; Stryker & Burke, 2000; Stryker & Serpe, 1982) and identity process theory (Breakwell, 1986; Whitbourne, 1986). Lastly, I drew from the concept of adult learning based on various learning contexts to explore how older adults experience their learning process. In the following sections, I describe the selected theories, model, and concepts and how they informed the conceptual framework for this grounded theory study.

Before presenting these, I would like to acknowledge the concept of transformative learning and that it is commonly applied in the field of adult education when examining individuals' transformational experiences. Generally, transformative learning is understood to occur "when an individual encounters an alternative perspective and prior habits of mind are called into question" (Cranton, 2016, p. 23), which was originally named a *disorienting dilemma* (Mezirow, 1991). This theory of learning and transformation deals with how individuals change their perspectives and accommodate new knowledge and experiences in their lives. While at first glance the theory appears to lend itself well to exploring the learning experiences of older adults, I found that there are some considerable limitations in applying the concept of transformative learning to this study. Even though the studies employing transformative learning should encompass and be able to address the process when an individual's entire perspective changes, including the transformation of frames of reference (i.e., meaning schemes, habits of mind, and mindset), many studies have insufficiently addressed all types of meaning structures accompanying a deep structural shift (Kegan, 2018; Taylor & Snyder, 2012). In this study, I may see some changes in meaning schemes such as "sets of immediate, specific beliefs, feelings, attitudes, and value judgments" (Mezirow, 2000, p. 18) with the participants. However, changes and adjustments to their entire perspective (i.e., habits of mind and worldview) may be difficult to detect within the limited timeframe of this dissertation study. Thus, I approached my research by adopting the following conceptual framework.

Contextual Model of Adult Development

The contextual approach to development combines multiple dimensions of adulthood. Unlike the mechanistic and the organismic view, the contextual approach focuses on describing and explaining that "human development will be closely tied to our understanding of what

contexts are, how individuals and contexts become influential for one another, what contexts do to and with individuals, and how contexts and their influences change themselves across time” (Kindermann & Valsiner, 1995, p. 1). Contextualists mainly argue that traditional dichotomous views on development may misunderstand the relationship between individuals and their contexts or be culturally biased (Lerner, 1995). Context refers to both the current and historical context of an act (Morris, 1988). Contextualists do not assume that there is a universal developmental model; rather they emphasize understanding of the multilevel (e.g., person, family, and community) interactions involved in human development (Lerner, 1995). For example, this approach focuses on looking at how people change or grow based on their specific historical time and social place (Goldhaber, 2000).

Identity Theory

Identity theory was proposed by Sheldon Stryker in 1968. In this theory, identity can be understood as an iterative process of interactions between an individual’s role-related choice behavior and the social environment (Stryker, 1968). This theory attempts to explain how an individual’s identity or sense of self (Whitbourne & Collins, 1998) simultaneously is influenced by and influences the physical, psychological, and social environment (Whaley & Ebbeck, 2002). The profound questions in this theory are related to the “origins of differential salience of identities in persons’ self-structures and why identity salience may change over time” (Stryker & Burke, 2000, p. 287). From this view, motivation for a certain action is prompted by one’s identity and a situation where a person senses negative feelings or discomfort coming from a discrepancy between the personal standards and behaviors (Stryker, 1968).

Identity Process Theory

Identity process theory has been proposed by Whitbourne (1986) and Breakwell (1986), respectively in their specific fields of interest. This theory broadly defines identity as the biopsychosocial self-definitions (Whitbourne et al., 2002) that guide individuals' processes of identity (Breakwell, 1986). Whitbourne's (1986) identity process theory was based on the assumption that "the normal adult strives to feel loving, competent, and good" (p. 17). In satisfying these feelings, the individuals can feel happiness and well-being, otherwise, they may feel anxious or depressed (Sneed & Whitbourne, 2003; Whitbourne, 1986). Whitbourne's (1986) identity process theory emphasized how individuals negotiate identity-salient discrepancies through the central processes of assimilation, accommodation, and identity balance, particularly with advancing age.

Breakwell's (1986) identity process theory focused on how individuals cope with threats to the self by the assimilation–accommodation process and the evaluation process. Incorporating the concepts of gerontology and lifespan psychology, Spini and Jopp (2014) expanded the application of Breakwell's identity process theory to understand one's identity and mechanisms of self-processes in old age (Baltes et al., 1999; Heckhausen, 1999). Identity process theory, particularly in the context of identity development in later life, attempts to examining on the following questions: how do adults integrate the age-related threats into their existing identity; whether the main principles of identity (i.e., continuity and distinctiveness) have limits in functionality in later life; and whether older adults with a relatively high level of wellbeing can maintain their identity continuity and distinctiveness in spite of declines in cognitive capacity, health, and autonomy (Spini & Jopp, 2014).

Older Adults' Various Learning Contexts

Among various types of learning opportunities, older adults generally participate in either informal or nonformal learning. Late-life learning is inevitably grounded in informal and nonformal aspects of education because of older adults' learning purposes, interests, or educational institutions' priorities. In terms of older adults' learning purposes, they tend to seek the integration of health, resilience, and general life-satisfaction through learning (United Nations Educational, Scientific and Cultural Organization, 2010, 2016). Older adult learners are a lower priority for most educational institutions, and older adults may not be as interested in acquiring a certificate or credential in the form of formal education (Wasserman, 2006), which also contributes to many older adults' engagement in informal or nonformal learning activities (Glendenning, 2001). For example, the types of learning that older adults commonly participate in to acquire exercise skills and the relevant knowledge consist of enrolling in an exercise class offered by community-based senior centers or private fitness institutions (Jenkins, 2012; Joseph & Southcott, 2019; Stevens-Ratchford, 2016) or engaging in self-directed learning (Cheng & Pegg 2016; Lee & Payne, 2016). As the types of informal and nonformal learning have more relevance to the nature of older adults' learning, I will provide the definitions and the major concepts of these two specific settings.

Purpose of the Study

The purpose of this study was to examine older adults' perceptions of their physical identity through their engagement in learning about physical activity. Specifically, I examined the role that learning about and learning how to do particular activities plays in identity development for older adults, as well as the meanings older adults attach to their engagement in the physical activity.

Research Questions

The research questions guiding the study are as follows:

1. How does older adults' participation in physical activities affect their perceptions of aging?
2. What is the nature of learning for older adults who participate in physical activity?
3. How does older adults' engagement in learning about physical activity shape their identity in later life?

Significance of the Study

The significance of my study can be found in its contribution to three bodies of knowledge: (1) the field of adult education, (2) the literature on older adults' physical activity, (3) the broad literature on identity. First, this study contributes to the field of adult education, especially in older adulthood. Generally, the field of adult education originated from community and social justice initiatives (Ross-Gordon et al., 2016). However, less focus has been made on the older population despite the importance of continued learning in one's later life (Findsen & Formosa, 2011). Thus, this study expands the current knowledge of the adult education field, specifically in the physical and health context.

Second, in older adulthood, some of the most influential life circumstances are health-related issues (Moos et al., 2006). Particularly, maintaining physical activity is a critical element of older adults' perceived health, physical functioning, as well as overall wellbeing (Nelson et al., 2007). However, the area of a study examining the link between health/physical activity and late-life learning has been relatively underdeveloped because of its unclear direction or lack of overall framework (Findsen & Formosa, 2011). This study contributes to late-life learning especially regarding health and physical activity by (a) focusing on a marginalized population in

an understudied context, (b) providing the integrated process older adults used to respond to aging, (c) providing the specific strategies older adults used to learn the particular physical activities at their later life.

Third, this study contributes to the broader literature on identity development by adding a contextual explanation of identity development in later life. The existing literature assumes that people reach a more mature final stage as a balanced identity (Whitbourne, 1986; Whitbourne & Collins, 1998; Whitbourne & Sneed, 2002). By accentuating the recurring process of physical identity development—rather than in a teleological, linear way—this study describes the nature of identity development in later life and informs people’s understanding that constant maintenance of one’s physical self may be required until the end of the life.

Definition of Terms

The following is a list of key terms as I define them for this study.

Older adults: Older adults are generally defined as having a chronological age of 65 years or older along with a range of characteristics—chronological age, change in social role, and changes in functional abilities (United Nations, 2017). Although there is no global standard of numerical criterion referring to the older population, “traditionally, 65 years of age has been viewed as the entry point for ‘old age’” (Whitbourne & Whitbourne, 2014, p. 8).

Physical activity: Physical activity is “any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a base level” (U.S. Department of Health and Human Services, 2018, p. 107). In this study, physical activity refers to the subset of activity that enhances an individual’s physical activeness in daily life. Physical activity includes “more than one type of physical activity, such as aerobic, muscle strengthening, and balance training” (U.S. Department of Health and Human Services, 2018, p. 106).

Adult development: Adult development refers to the evolution of an individual's biological, psychological, and sociocultural aspects in which personality, occupational career, family structure, and physical conditions change as people age (Levinson, 1986).

Late-life learning: Late-life learning refers to any type of learning including formal, nonformal, and informal in one's later life within the complex interplay with the adult developmental process.

Identity: Identity is a psychosocial entity combining individuals' unique experiential factors and social forces (Erikson, 1963). An identity is a sense of self in a way that an individual occupies particular characteristics that identify that person to be unique, a member of specific groups, and a particular role in society (Burke & Stets, 2009).

Physical identity: Physical identity refers to the salience of an individual's identification with the physical aspects as an integral part of the self-concept (Anderson & Cychosz, 1994). An individual with salient physical identity frequently activates the sense of self, particularly in a physical domain, across different situations (Illeris, 2014; Stets & Burke, 2003).

Aging: Aging is the process of becoming older along with the accumulation of physical, psychological, and social changes.

Summary

This introductory chapter has provided the background to the problem, problem statement, purpose of the study, research questions, significance of the study, conceptual framework, and definition of terms for this study in which I examined older adults' perceptions of their physical identity through engaging in learning about physical activity. To address the purpose of the study, I employed a grounded theory methodology to conduct this study.

Upcoming chapters comprise a review of the literature, research methodology, findings, and discussion of the findings.

CHAPTER II

LITERATURE REVIEW

In chapter one, I discussed adults' developmental process and its inextricable connection to health/physical activity issues in their later life. Considering these, it is important to systemically review the academic literature on older adults' physical activity, participation, and initiation of their learning about physical activity, and physical identity. The purpose of this literature review is to provide an overview of the literature relevant to the major tenets of the conceptual framework as well as theoretical perspectives and current research pertaining directly to the various physical activities for older adults.

Conceptual Framework

The conceptual framework of this study, as previously discussed, is comprised of four components: (a) a contextual approach to adult development, (b) identity theory, (c) identity process theory, and (d) various adult learning contexts. In the following sections, I discuss literature for each of the major tenets of the adult developmental models, identity/identity process theory, and formal/nonformal/informal contexts of adults' learning. In addition, I discuss literature regarding physical activity among older adults.

Adult Developmental Models

The major paradigm of adult development is categorized under three prominent models: mechanistic, organismic, and contextual views (Pepper, 1942). To understand the prominent adult development models, I discuss the literature with a focus on each model in relation to an individual's genetics, the environment, and their interaction.

Mechanistic Model

In a mechanistic approach to adult development, “the person is a passive receiver of behaviors, roles, attitudes, and values which are shaped and maintained by the social environment through rewards and sanctions” (Tennant, 2006, p. 4). Considering the developmental perspective, an individual’s behavior changes gradually over time and is shaped by the external factors that cause them to adapt to their environments (Miller, 2002). Within this perspective, people’s development or changes arise through their experiences, which are equated with new learning opportunities throughout their life course (Whitbourne & Whitbourne, 2014). The mechanistic model of development views the nature of the change to be quantitatively measurable.

A mechanistic model aligns with behaviorism that is a psychological approach that emphasizes scientific and objective methods of investigation (Catania & Harnad, 1988). Behaviorism is consistent with the casual observations we make about human behavior (Tennant, 2006). Watson (1913, 1930) is best known for establishing behaviorism. Watson (1913) argued that behaviorism is “a purely objective experimental branch of natural science. Its theoretical goal is prediction and control” (p. 158). He viewed behavior to be the result of stimulus–response in which the situation or stimulus causes the reaction (Watson, 1930). Another influential psychologist of behaviorism is Skinner (1963) who examined the relationship between a behavior and its consequence using his operant conditioning model. Focusing on human development, Skinner’s operant model brought about an understanding of how an individual’s experiences influence their actions (Skinner, 1974). Thus, people learn behaviors by responding to stimuli and receiving positive or negative reinforcement (Miller, 2002).

A mechanistic approach has been criticized for the unidirectionality of cause and effects, which means that only linear relationships—one-way causality—exist in human development (Overton & Reese, 1973). When it comes to human development research, there has been an ongoing debate within the social sciences (Miller, 2002). This mechanistic model founded in behaviorist tenets has explanatory limits as applied to a wide range of human situations due to the restricted experimental environments as well as the laboratory-based technical vocabulary (Tennant, 2006).

Organismic Model

Like the mechanistic model, the organismic approach also holds that development is unidirectional. The model views human development as an active contribution of an organism, comprised of both intrinsic factors such as the main biological forces in development, but also qualitative values like the nature of change (Tudge et al., 2016). In the organismic model, “the organism is inherently and spontaneously active; the organism is the source of acts, rather than being activated by external or peripheral forces” (Overton & Reese, 1973, p. 70). The organismic model focuses on the assumption that heredity drives human development. People’s growth and changes take place over time because individuals are biologically programmed to achieve age-appropriate developmental tasks at certain stages of life (Erikson, 1963; Whitbourne & Whitbourne, 2014).

Organismic developmental theorists provided opposing explanations to counter the mechanistic approach. Scholars who espouse this approach regard learning as a change in knowledge rather than as a change in the behavioral response (Miller, 2002). One of the most influential developmental psychologists is Erik Erikson who integrated the life stage framework into psychology. Erikson (1963) believed that the human mind was more than drives and

instincts. This contextualized way of looking at the world is consistent with his main perspective of human development (Schlein, 1987). Specifically, Erikson’s developmental model proposed a series of eight psychosocial crisis stages (trust vs. mistrust; autonomy vs. shame; initiative vs. guilt; industry vs. inferiority; identity vs. confusion; intimacy vs. isolation; generativity vs. stagnation; and integrity vs. despair) that occur in a certain age range along with the development of psychological functions (Erikson & Erikson, 1998).

Similar to the mechanistic model’s limitation, the organismic model assumes human development is unidirectional in nature (Tudge et al., 2016). This approach acknowledges that human development is a directional process in which present development is built on past development (Miller, 2002). Due to this unidirectionality of human development, there has been a lack of explanation of the mechanisms that account for how an individual progresses through their development process (Goldhaber, 2000). Specifically, in Erikson’s model, although he explained what factors (e.g., physical maturation, cultural beliefs, and parents or family relations) influence individuals’ growth and changes, he did not articulate a detailed mechanism for how an individual moves from the initial stage to the next stage, or how the individual resolves the crisis within each stage (Miller, 2002).

Table 1

Major Adult Development Models

	Mechanistic	Organismic	Contextual
Feature of developmental change	Quantitative	Qualitative	Multidirectional, Multidimensional
Contribution of organism’s processes in changes	Passive	Active	Active
Major source of development	External/ Environmental	Intrinsic/ Biological	Reciprocal

Note. Adapted from Lerner, R. M. (1995). Developing individuals within changing contexts: Implications of developmental contextualism for human development research, policy, and programs. In T.A. Kindermann & J. Valsiner (Eds.), *Development of person-context relations* (pp. 13-37). Lawrence Erlbaum Associates.

Contextual Model

A contextual model posits both ontological and epistemological perspectives in contrast with the mechanistic and organismic models by seeking a more integrative approach that considers multiple influences on adult development (Kindermann & Valsiner, 1995; Lerner, 1995; Tudge et al., 2016). Unlike the mechanistic and the organismic view, the contextual model mainly argues that dichotomous approaches to development may misunderstand the relationship between individuals and their contexts (Lerner, 1995). This approach emphasizes that “human development will be closely tied to our understanding of what contexts are, how individuals and contexts become influential for one another, what contexts do to and with individuals, and how contexts and their influences change themselves across time” (Kindermann & Valsiner, 1995, p. 1). To be specific, this approach focuses on looking at how people change based on their specific historical time and social place (Goldhaber, 2000). In this respect, contextualists do not assume that there is a universal developmental model. Rather, they emphasize the multilevel interactions involved in human development (Lerner, 1995).

Vygotsky’s (1978) cultural-historical theory of human development is one of the prominent examples in this contextual approach. In Vygotsky’s view, a dialectical process leads to human development intertwining “history, sociology, economics, political science, linguistics, biology, art, and literature” into an individual’s psychology (Miller, 2002, p. 408). In this developmental stance, a cultural-historical context is crucial for understanding and defining an individual’s development, because culture shapes what people think about, what skills they acquire when they can participate in a certain activity, and who does or does not participate in that activity (Miller, 2002; Portes & Salas, 2011). For example, on one hand, in health and sports-related advertisements, older adults are portrayed as active and visible (Rudman, 2015).

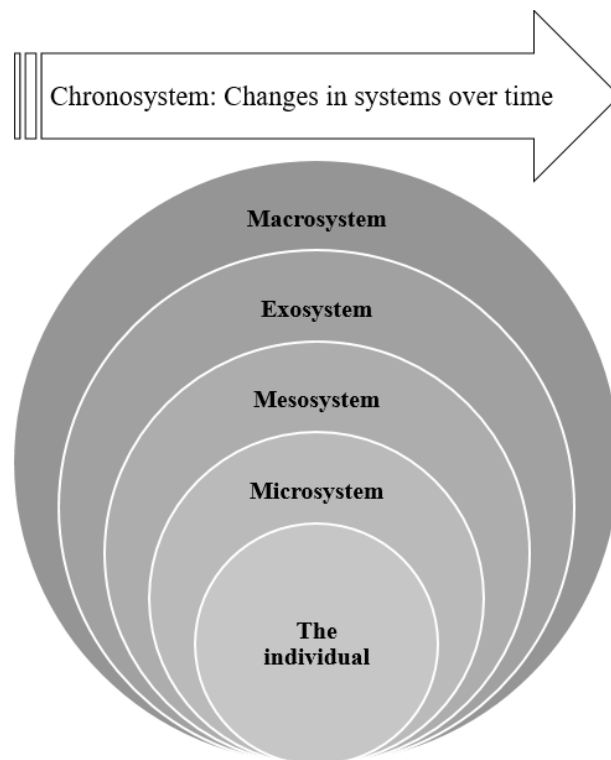
On the other hand, the contemporary cultural value of glorifying youthfulness can also reinforce ageist stereotypes (Donaghue & Allen, 2016; Fernández-Balboa & González-Calvo, 2018). Thus, these contextual and cultural cues may shift people's perspectives and what they believe is possible or shift their thinking about "what old people do." (Fougner et al., 2018; Loos & Ivan, 2018).

Another major contextualist, Urie Bronfenbrenner (1979), proposed an ecological systems approach where multiple levels of the environment affect individuals over time. This ecological perspective defines four levels of the environment (see Figure 1) that include the microsystem (e.g., family, peers, classroom, and co-workers), mesosystem (e.g., community, health agencies, school, and mass media), exosystem, and macrosystem (e.g., economics, society, culture, and political systems). In the innermost realm of the ecological model is the microsystem referring to "a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (Bronfenbrenner, 1979, p. 22). Within this environment, individuals closely interact with others who, therefore, have an immediate impact on their lives. The "mesosystem comprises the interrelations among two or more settings in which the developing person actively participates such as for a child, the relations among home, school, and neighborhood peer group; for an adult, among family, work, and social life" (Bronfenbrenner, 1979, p. 25). Within this level, for instance, individuals might link their experiences at home to their workplace. The "exosystem refers to one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person" (Bronfenbrenner, 1979, p. 25). In other words, this level involves environments that individuals do not experience on a regular basis, such as sleep deprivation

from taking care of a newborn baby may have an effect on a person’s experience in the workplace (Onwuegbuzie et al., 2013). In the outermost realm is a macrosystem referring to “consistencies, in the form and content of lower-order systems (micro-, meso-, and exo-) that exist, or could exist, at the level of the subculture or the culture as a whole, along with any belief systems or ideology underlying such consistencies” (Bronfenbrenner, 1979, p. 26). This highest level of environment involves the larger social institutions such as a “country’s economy, laws, and social norms” (Whitbourne & Whitbourne, 2014, p.24). Importantly, all four of these interacting systems are influenced by historical contexts (i.e., chronosystem). Thus, human change occurs over time within the four ecological systems and chronosystem (Whitbourne & Whitbourne, 2014).

Figure 1

Five Elements of Ecological Development



Note. Adapted from *Adult development & aging: biopsychosocial perspectives* (5th ed.). By S. K. Whitbourne & S. B. Whitbourne, 2014, p. 24. Copyright 2014 by John Wiley & Sons.

Identity Theory

In identity theory, an identity can be organized into three forms in which an individual takes part in (a) specific characteristics that identify that *person* to be unique from others; (b) a member of a specific *group*; and (c) a particular *role* in society (Burke & Stets, 2009). For example, an athletic person, a member of a marathon club, and the role of an elementary school teacher make this person unique. Fundamentally, this theory attempts to specify “how the meanings attached to various identities are negotiated and managed in interaction” (Stets & Serpe, 2013, p. 31). Particularly, identity theory accounts for how identities link with other part identities, the individual’s affect, physical/mental health, role performance, self-concepts, and social structure (Stets & Serpe, 2013). However, these three bases of identity cannot be completely separable in one’s daily life and often overlap with each other. In this way, organizing identity as three bases (i.e., person, group, and role) allows people to understand how individuals establish their distinctiveness as a human being, relate to their social position as a member of a group, or their role in wider society (Stets & Serpe, 2013).

Origin of Identity Theory

Identity theory has evolved based on three basic focuses—interactional, structural, and perceptual emphasis (see Table 2; Burke & Stets, 2009; McCall & Simmons, 1978; Owens et al., 2010; Serpe & Stryker, 2011; Stets, 2018; Stryker & Burke, 2000). These focuses can be compared by articulating how each approach accounts for identity performances or identity behavior (Burke & Stets, 2009). McCall and Simmons’s interactional perspective highlights the idiosyncratic dimension when explaining one’s identity; Stryker and Serpe’s structural emphasis underlines the conventional dimension of identities; and Burke’s perceptual approach pinpoints the meaning dimension of identities (Burke & Stets, 2009).

Table 2*Three Emphases in Identity Theory*

	Interactional emphasis	Structural emphasis	Perceptual emphasis
Major scholars	McCall and Simmons	Stryker	Burke
Focal dimensions	Idiosyncratic dimension of identities	Conventional dimension of identity	Meaning dimension of identities
Major tenets	Salience hierarchy <ul style="list-style-type: none"> • Prominence • Support • Rewards • Perceived opportunity structure Prominence hierarchy <ul style="list-style-type: none"> • Support • Commitment • Rewards 	Salience hierarchy <ul style="list-style-type: none"> • Commitment • Quantitative • Qualitative 	Perceptual control model <ul style="list-style-type: none"> • Identity standard • Perceptual input • Comparator • Behavior

Note. Adapted from *Identity theory*. By P. J. Burke & J. E. Stets, 2009, p. 53. Copyright 2009 by Oxford University Press.

Interactional Emphasis. McCall and Simmons’s (1978) interactionist perspectives are mainly grounded in symbolic interactionism, or the way one individual acts upon another within a reciprocal interaction. In this perspective, individuals’ attempts to make a connection with one another in a situation will determine their identity performances (McCall, 2011). For example, a teacher identifies themselves and acts in relation to the identity of students. A conflict between two identities emerges, for example, such as when a student expresses their confusion about the course contents because of the teacher’s vague instruction. In this situation, the teacher activates their negotiation strategies so that “each actor’s identity claim can be confirmed and interaction can proceed smoothly” (Burke & Stets, 2009, p. 54). In this way, the teacher may provide different examples to help the student.

Structural Emphasis. Stryker (1980) emphasized structural views of identity theory based on the assumption that social structure is relatively stable, patterned, and organized. This perspective highlights that “society shapes self, which shapes social interaction, although the

reciprocal nature of these relationships is also recognized” (Serpe & Stryker, 2011, p. 231). An identity is activated according to how salient that identity is in an individual’s overall hierarchy of identities (Burke & Stets, 2009). For example, if the identity of the teacher is salient to a woman, she frequently invokes what her students talked about, or she may talk as though her friends are her students. An important factor that mainly influences an identity’s salience is a person’s commitment to that identity by maintaining a large number of networks and strong ties within that social dimension (Stets & Burke, 2003; Stryker & Serpe, 1982).

Perceptual Emphasis. Burk (1980) focuses on the internal process of self-verification between perceived meanings of the self and an identity standard. When an individual perceives their identity in a certain situation to match with their identity standard, self-verification occurs, which can be accompanied by either negative or positive emotions (Burke & Stets, 2009; Stryker & Burke, 2000). Conversely, when the meanings attached to their identity in a certain situation are not congruent with their identity standard, that person attempts to modify their actions to reestablish the identity (Burke & Stets, 2009). In this way, the person establishes the state of self-verification via identity-nonverification. For example, a teacher who uses English as her second language receives feedback from her student that her lecture was not clearly delivered because of her accent, which may undermine her being verified in her identity as a teacher (Burke & Stets, 2009). In this way, the teacher can move her status of non-verification to self-verification by responding to the feedback, or she may fail to verify herself in that situation resulting in negative emotions (Higgins et al., 1986).

Major Concepts of Identity Theory

Regardless of the different emphases of each identity theory, the concepts of ‘identity,’ ‘verification,’ ‘identity salience,’ ‘centrality/prominence,’ and ‘commitment’ are considered the key concepts in identity theory. In the following section, I discuss the literature on each concept.

Identity (sense of self). The notion of self comes from a person’s mind and characterizes the individuals’ consciousness of their own being (Burke & Stets, 2009). An identity is a sense of self established in the way an individual occupies a particular role in society, a member of a particular group, or exhibits particular characteristics that identify that person as unique (Burke & Stets, 2009). An identity consists of four interconnected components: input (i.e., perceptions), identity standard (i.e., a set of meanings), comparator (i.e., comparing the input and the standard), and output (i.e., behavior in the situation; Burke & Stets, 2009). The self is structured by multiple parts of identities representing different roles (e.g., parent, husband, wife, daughter, teacher, employer, athlete, etc.). These identities serve as a marker for an individual’s standards of behavior and motivate behavioral action (Stryker & Burke, 2000).

Identity theory mainly examines the “nonrecursive nature of expected relationships between commitment, identity salience, and role-related choice behavior” (Stryker & Serpe, 1994, p. 20). When people explain a certain form of social behavior, in this theoretical framework, identity salience and commitment are important concepts (Stryker & Serpe, 1982). Individuals’ identities are connected to their consciousness of salience identity within the salience hierarchy, and in turn, show their quantities and qualities of commitment to those identities.

Verification. Identity verification refers to “individuals perceiving that others see them in a situation in the same way they see themselves” (Stets & Serpe, 2013 p. 35). Among the three

emphases of identity theory, as discussed above, the perceptual perspective takes the concept of the internal process of self-verification by any identity activating the perceptual control dynamics (Burke & Stets, 2009). People seek self-verification to promote their feelings of psychological coherence or to secure themselves for smooth interactions in a situation (Swann et al., 2003). The basic mechanism of verification is that people automatically and unconsciously verify their identity when their perceptual meanings (e.g., new experience) are congruent with an identity standard entailing positive emotion (McCall & Simmons, 1978; Stets & Serpe, 2013). On the other hand, when the individuals perceive a great disparity between their new situation and their identity standard, identity non-verification occurs along with negative emotions in a way that the individuals feel pressure to reduce the discrepancy between a new situation (i.e., input) and identity standard meanings (McCall & Simmons, 1978; Swann et al., 2003). This, in turn, spurs action to remedy the perceived tension and misalignment.

Identity Salience. A salience of identity can be defined as an identity that is frequently activated across different situations (Stets & Burke, 2003) so that it is important to define oneself (Hoelter, 1983). An individual's behavior depends on how their identity salience interacts with "defining characteristics of situations" and "other self characteristics such as self-esteem or satisfaction" (Stryker & Serpe, 1982, p. 207). In this way, an individual actively seeks out opportunities to perform in terms of that particular salient identity (Stryker & Serpe, 1982). For example, if physical identity is salient to an older adult, the desire or motivation related to their exercise interest will be more likely to be invoked in their daily situation, such as talking about what the instructor said to them and how they improved the exercise skill.

Identity is constructed through the process of 'identification' within a hierarchical structure that is organized by a multi-dimensional self-concept (Burke, 2006; Stets & Burke,

2000). In the hierarchical structure of self-concept, different part-identities interact within the person's core identity (Burke & Stets, 2009; Illeris, 2014). Stryker and Serpe (1982) explained identity salience and how it works in a salience hierarchy:

The probabilities each of the identities have of being invoked across a variety of situations ... An identity's location in a salience hierarchy will affect its threshold for being invoked in situations and thus the likelihood that behavior called for by the identity will ensue. (p. 206)

In this regard, the higher an identity is in the hierarchical structure, the more likely a person will be to interpret a given situation as an opportunity to perform in terms of the particular identity and, in turn, the person will spend more time in the relevant activities (Shamir, 1992).

Centrality/Prominence. Similar to identity salience, the concepts of centrality (Rosenberg, 1979) and prominence (McCall & Simmons, 1978) are considered pivotal in organizing various aspects of identity. Centrality reflects how important the components related to the self (e.g., dispositions or identities) are to a person (Rosenberg, 1979). Prominence reflects an identity ranking of what identities are important to that person (Stets & Serpe, 2013). The main differences between salience and centrality/prominence can be found in how each is measured; centrality and prominence are grounded on "the internalized importance of an identity," while salience represents "probable behavior" (Stets & Serpe, 2013, p. 37). For example, Stryker and Serpe (1994) examined whether identity salience and psychological centrality are equivalent, overlapping, or complementary concepts. As an example, a student's athletic/recreational and extracurricular identities can be both salient and central. However, the student's academic and personal involvement identities can be salient but not central, which

demonstrates that the concept of centrality and salience are not theoretically synonymous (Stryker & Serpe, 1994).

Commitment. One important factor that influences the identity salience is how much an individual commits to one of their part identities. This concept of commitment can be understood as the degree to which an individual's relationships with a certain person or activity interact with one's core identity (Burke & Stets, 2009). The concept of commitment is related to "a function of acting on choices" of the relationships with others or activities (Stryker, 1968, p. 560). In this sense, greater commitment shows how large and strong a person's social networks are (Burke & Stets, 2009; Stryker & Serpe, 1982).

Commitment consists of two dimensions: quantitative and qualitative aspects (Stets & Burke, 2003; Stryker & Serpe, 1982). Quantitative commitment can be understood by how many people are connected through a particular identity. For example, if an individual has a large number of relationships reflecting their identity as a teacher, they would show a high commitment to that identity. The qualitative dimension of commitment shows how deep the relationships are based on a particular identity (Stets & Burke, 2003; Stryker, 1968). For instance, if the teacher has deep or strong relationships with others based on their identity as a teacher, the higher commitment to the teacher identity would be dominantly presented.

Identity Process Theory

Another identity theory that I use to understand the process of how people negotiate between new experiences and identity standard is *identity process theory* as proposed by Whitbourne (1986) and Breakwell (1986), respectively in their specific fields of interest. Identity process theory is based on the concepts of assimilation and accommodation process from the theories of Piaget (1977) and Erikson (1963). People are psychologically motivated to enhance

their psychological coherence when detecting discrepant feelings from a new situation (Jaspal & Cinnirella, 2010; Jaspal & Siraj, 2011). Such emotional distress when people confront new experiences and situations that conflict with their identity standard can be understood as an “identity threat” (Breakwell, 1986; Jaspal & Cinnirella, 2010; Murtagh et al., 2014). It leads people to engage in certain coping strategies or defense mechanisms throughout development as the individuals interact with their experiences and environment (Jaspal & Breakwell, 2014; Whitbourne & Collins, 1998; Whitbourne & Whitbourne, 2014). Especially, considering aging and physical ability/appearance, individuals’ threat of aging or any age-associated body change may increase their discrepant feelings toward themselves.

To integrate aging into identity process theory, the concept of multiple thresholds needs to be addressed. Multiple threshold experiences refer to how “personal recognition of the physical and cognitive aspects of aging occurs in a stepwise process across the years of adulthood” (Whitbourne & Sneed, 2002, p. 254). As individuals grow older, they go through a set of thresholds of emotional and physical changes related to aging. For example, older adults experience bereavement, loss of someone close, physical changes, and thus regard themselves as mortal (Labouvie-Vief & Medler, 2002) in which they come to attach complex and negative self-descriptors to their self-representations with increasing age (Labouvie-Vief et al., 1995; Labouvie-Vief et al., 1989). When people are coping with such new experiences, basic mechanisms account for how individuals negotiate their new experiences of age-associated changes through unique processes (Breakwell, 1986, Whitbourne, 1986). Basic mechanisms to deal with threshold experiences with age (a discomfort situation) are (1) “a mature set of defense mechanisms or coping abilities,” (2) selection of “emotionally rewarding social” interactions with significant others than strangers, (3) “accommodation of goals by older adults in the face of

actual and impending age-related changes,” and (4) interpretation of experiences by preserving the information that is congruent with an existing sense of self (Whitbourne & Sneed, 2002, p. 251).

Major Concepts of Identity Process Theory

In both Whitbourne (1986) and Breakwell’s (1986) identity process theory two universal concepts of assimilation and accommodation mainly determine the process of identity construction. Breakwell’s theory includes distinctiveness and continuity as basic activities of adults’ identity change process as well as the underlined self-evaluation process that make meanings of the identity contents (Jaspal & Cinnirella, 2012). Whitbourn’s theory describes a more mature state of identity as a balanced identity. In the following section, I discuss the literature about the major concepts and key components of identity process theory: assimilation, accommodation, distinctiveness and continuity, evaluation, and identity balance.

Identity Assimilation. Assimilation refers to “the absorption of new components into the identity structure” (Breakwell, 1986, p. 23). Individuals use the identity assimilation process to *maintain* or *protect* a sense of self-consistency in response to discrepant experiences or information about the self (Whitbourne et al., 2002). It is natural that acknowledging changes associated with the aging process can be painful for everybody accompanied by fear of mortality and irreversible declines (Kalfoss et al., 2018; Sneed & Whitbourne, 2003). Assimilation helps individuals circumvent such negativity in an attempt to modify the negatively evaluated situation, for instance, by acquiring new skills or transforming their habits (Cappeliez & Robitaille, 2010; Rothermund & Brandstädter, 2003). In other words, to maintain a positive self-concept, assimilators tend to interpret the event or experience as a result of external factors. For example, an older woman with identity assimilation may attribute forgetting a dentist

appointment to situational factors such as poor sleep the previous night or a busy schedule in the morning (Hilgeman et al., 2017).

In the identity assimilation process, individuals tend to deal with the issues in a fixed way where they seek out information that is consistent with their currently held identity (Nelson, 2002; Whitbourne et al., 2002). Specifically, “deflection tactics entail the refusal to modify” the existing identity structure such as “denial, belief in the unreality of the self, fantasy” (Breakwell, 2015, p. 258). For example, in identity assimilation, older adults may resist acknowledging increasingly threatening images of aging in an attempt to keep the youthful identity they wish to retain (Baltes & Baltes, 1990; Whitbourne et al., 2002). Older adults who are prone to identity assimilation may feel insecurity or fear, particularly related to aging, although they outwardly show high self-regard (e.g., perceiving themselves as healthy; Sneed & Whitbourne, 2003).

Identity Accommodation. Identity accommodation refers to a process where individuals *adjust* their identity to better fit the new situation when facing discrepant experiences or information (Breakwell, 1986; Whitbourne et al., 2002). Accommodation helps individuals deal with negative life situations by revising their values and priorities in a way that they reevaluate the nature of limitations, construct new meanings, and thus transform their identity (Frazier et al., 2007; Whitbourne, 1986). For example, when an older adult uses identity accommodation, they may attribute an incidence of forgetting a doctor’s appointment to internal or personal factors such as their laziness or signs of dementia (Hilgeman et al., 2017).

In an accommodative process, individuals are susceptible to seeing their personal deficiency and making negative self-evaluations because they are easily influenced by outside factors. Here, they look outside of themselves for inner guidance when dealing with threatening events or life changes (Sneed & Whitbourne, 2003; Whitbourne et al., 2002). To be specific,

“acceptance strategies act to modify the identity structure” such as “transient depersonalization, reconstrual and reattribution, or compromise changes” (Breakwell, 2015, p. 258). In this way, older adults with identity accommodation can quickly detect their first sign of age-related changes in a way that they overgeneralize the consequences of changes in physical or cognitive functioning (Whitbourne & Collins, 1998; Whitbourne et al., 2002). For example, older adults who find wrinkles and frequently experience their forgetfulness more than before would see themselves as “over the hill.”

Identity assimilation and accommodation are not completely separable processes. While in assimilation, people ensure their identity to keep the continuity, in accommodation they allow for change to identity structures (Block, 1982). Initially, identity assimilation is activated when experiencing identity discrepancy. If the individuals find this strategy ineffective, they may use identity accommodation to manage the situation that is threatening to their identity (Block, 1982; Piaget, 1977). For instance, an older adult who is short of breath after a few minutes of running up the stairs may first attribute their fatigue to their physical condition or uncomfortable shoes rather than the aging process (Sneed & Whitbourne, 2005). Then, after repeated experiences of failure to quickly run up the stairs, this person would begin questioning their identity standard and begin adjusting their physical identity based on their inability to complete the physical tasks that they used to do easily (Sneed & Whitbourne, 2003, 2005).

Distinctiveness and Continuity. The two basic activities of identity assimilation and accommodation can be sustained by each individual’s uniqueness and continuity across time and situation (Breakwell, 1986). Distinctiveness refers to an individual’s uniqueness and differentiation from relevant others (Breakwell, 1986). The concept of *distinctiveness* is grounded on the assumption that individuals have two fundamental and competing drives for

inclusion and differentiation: a need for belonging in social groups as well as for differentiation from others (Brewer, 1991). Specifically, as group membership becomes more inclusive, the personal need for inclusion may be satisfied, but the need for differentiation may be activated (Brewer, 1991). Conversely, as inclusiveness decreases, the need for differentiation may be reduced triggering the need for inclusion (Leonardelli et al., 2010). Another key tenet that works to construct and maintain identity is continuity. *Continuity* refers to a desire to preserve existing self-concept across time and situations (Breakwell, 1986), which comprises adults' coping mechanisms in the aging process (Spini & Jopp, 2014). Considering the concept of continuity in middle and later life, adults "attempt to preserve and maintain existing internal and external structures" based on accumulated past experiences as "a primary adaptive strategy" as they age (Atchley, 1989, p. 183). In this way, if individuals fail to achieve distinctiveness and their continuity identity is threatened, they are likely to strive to mitigate the identity threats (Jaspal, 2013).

Evaluation. The evaluation process refers to the "allocation of meaning and value/affect to identity contents, new and old" (Breakwell, 2014, p. 30). Evaluation is an idiosyncratic and individualized psychological process in which an individual simultaneously attaches meanings and is constrained by societal valuation (Breakwell, 2015). When individuals are exposed to unexpected situations where a discrepancy between the individual's and societal valuation is evident, it creates instability in the identity evaluation (Breakwell, 2015). Then, the interplay with identity assimilation and accommodation shapes how individuals change identity content and value over the lifespan, in which the individuals (re)define the meanings of their identity aspects and thus evaluate the changing patterns (Breakwell, 2014; Vignoles, 2014). For example, in Rusi and Marco's (2010) study examining how gay men in non-gay affirmative religious

context negotiate and construct their identities, the individuals went through the process of evaluating how “good” or “bad” the new identity is.

Identity Balance. The identity-balanced approach is flexible to change individuals in the face of identity-salient discrepancies (Whitbourne et al., 2002). Identity balance is activated by a dynamic process of maintaining, evaluating, and adjusting beliefs about the self through both assimilation and accommodation (Whitbourne & Collins, 1998). Identity-balanced individuals adjust age-related physical, psychological, and social role changes in an optimistic manner. To be specific, rather than deflection or acceptance strategies for responding to a threatened identity, another type of strategy entails “the revision of the salience” in a way that rearranges the priorities in one’s identity structure. This process can “shift the emphasis from threatened to unthreatened components of identity” (Breakwell, 2015, p. 258). For example, if an older man feels that he cannot physically and psychologically adjust to his age-related changes, he might be open to trying alternatives or seek psychological and physical therapy to overcome the discomfort (Whitbourne & Sneed, 2002). For comparison, the identity assimilator may deny the significance of the age-associated physical declines; the identity accommodator might be quick to conclude their end-of-life is coming soon; and identity-balanced individuals may acknowledge the changes, but do not dwell on their limitations (Kalfoss et al., 2018; Whitbourne et al., 2002).

Strengths of Identity-based Theory

Two identity-based theories, as previously discussed, may have some strengths and weaknesses. Identity is one of the most fundamental constructs in the social sciences (Brubaker & Cooper, 2000; Côté, 2006) because it allows people to make better life decisions (Kroger, 2007) as well as derive strength from their social relationships (Schildkraut, 2007). Identity research broadly aims to understand the aspects of individuals’ future self for wellbeing and their

goal attainment, which contributes to a reasonable level of positive self-regard and personal development (Karniol & Ross, 1996; Oyserman & James, 2011). Specifically, the strength of identity commitments, one of the major tenets of identity theory, has a lot to do with the aspects of an individual's wellbeing such as their self-esteem, sense of personal agency, and absence of depressive symptoms (Schwartz et al., 2011). For this reason, identity theory can provide explanatory power in describing how individuals set their identity goals, pursue the goals, and accommodate their thoughts and behaviors to create a balance between their current and future self (Carver & Scheier, 1998).

Limitations of Identity-based Theory

There has been a continuous argument about identity research (Brodwin, 2002; Haslam et al., 2004; Markus & Kitayama, 2009; Sedikides & Green, 2000). Considering identity as an avenue of scholarly inquiry, people argue that sometimes meanings of identity are “too much (when understood in a strong sense), too little (when understood in a weak sense), or nothing at all (because of its sheer ambiguity)” (Brubaker & Cooper, 2000, p. 1). Such divergent views on identity research can be understood from different philosophical stances. A constructivist stance on identity research is based on the notion that individuals form and develop their identity through social interactions, and thus their identity is neither a fixed essence nor a stable object of scholarly inquiry (Brodwin, 2002). On the other hand, the essentialist stance on identity debates the complexity and sheer ambiguity of identity research in terms of theoretical, methodological, and application (Schwartz, 2005). Brubaker and Cooper (2000) are concerned about the following:

If identity is fluid, how can we understand the ways in which self-understandings may harden, congeal, and crystalize? If it is constructed, how can we understand the

sometimes coercive force of external identifications? If it is multiple, how do we understand the terrible singularity that is often striven for—and sometimes realized—by politicians seeking to transform mere categories into unitary and exclusive groups? (p. 1)

Identity research may imply the possibilities that identity is a key concept to understand individuals in relation to their social performance, but at the same time, the term entails boundless ambiguities.

Another consideration in identity research is related to the methodology (Schwartz et al., 2011; Stryker & Burke, 2000). Identity theorists acknowledge that there has been great skepticism toward the value of measurement strategies, which mainly relies on individuals' self-reported outcomes (Schwartz et al., 2011). Individuals may not be able to distinguish their true selves, regardless of whether it is self-discovery, personal construction, or social construction (Waterman, 1984). Thus, further developing methodologies that can lead to a greater theoretical and empirical understanding of the bases of identity is crucial (Stryker & Burke, 2000). For example, experimental methods can determine the extent to which an individual is aware of precisely what they are discovering (Schlenker & Weigold, 1990). Furthermore, conducting qualitative research would be useful to better understand how individuals experience the process of self-construction and self-discovery (Marcia & Archer, 1993). In addition, there is another methodological challenge when adopting identity process theory. In terms of methodological implementation, generally, longitudinal data collection strategies would be best for examining the individuals adopting 'identity process theory' since one's identity development is a continuous process throughout the individual's whole lifespan (Breakwell, 1986; Whitbourne, 1986).

Adult Learning Contexts

On the basis of the previous section that addressed contextual adult development and identity-based theories, I continue to discuss literature on the various contexts of adults' learning. Due to the natural human aging process that accompanies by biological, psychological, and sociocultural changes, adults begin redefining their identities as they get older. Older adults' process of continued identity development has a lot to do with their involvement in varied types of learning (Golding, 2011a; Kim & Merriam, 2010; Whitbourne & Whitbourne, 2014) supporting the notion that learning entails some degree of changes in the learner's identity (Illeris, 2014; Jarvis, 2009). Adult learning generally occurs in various contexts including formal institutions, nonformal community-based centers, and informal nature (Merriam & Baumgartner, 2020). People have a wide selection among these three forms of learning depending on their availability, access, or need throughout their lifetime (La Belle, 1982). In the following sections, I discuss various adult learning environments to explore the scope of adult learning opportunities.

Formal Learning

Formal education is defined as learning that takes place in an "institutionalized, chronologically graded and hierarchically structured educational system, spanning lower primary school and the upper reaches of the university" (Coombs & Ahmed, 1974, p. 8). Formal learning programs specify course qualifications prior to taking part in the program such as admissions requirements, compulsory attendance, standardized or age-graded curricula, prerequisites, and certification (Illich, 1971; La Belle, 1982). Typically, a teacher facilitates a course by guiding materials, pacing, and interaction with the learners (Eshach, 2007) in which processes of learning and teaching are "highly intentional and explicit: the student is informed as to what to learn and

how to learn it” (Veblen, 2018, p. 247). For example, adults take degree programs or training courses in community colleges, vocational institutes, and colleges and universities (Merriam & Baumgartner, 2020). However, studies regarding the formal settings in the context of adult or older adult education have indicated the conflicting issues around the nature of formality and the learners (Goodrow, 1975; Livingstone, 2008). Thus, caution is warranted when it comes to promoting such policies and programming (Wasserman, 2006). Furthermore, socially underrepresented adult populations such as older adults, ethnic minorities, and people with disabilities regularly rely on the informal mode of learning activities to enhance their knowledge and skills (Glendenning, 2001; Livingstone, 2008; Smith & Smith, 2008).

Nonformal Learning

Nonformal learning is a form of organized education that takes place outside of the formal educational system that tends to be short-term, voluntary, and have few or no prerequisites (Schugurensky, 2000), but they typically have a curriculum and an instructor (Merriam & Baumgartner, 2020). Generally, nonformal education is offered by local and community-based organizations. For example, nonformal learning is often carried out by adult learners in a wide array of programs such as second language programs, cooking classes, art classes, and workshops (Schugurensky, 2000). When it comes to learning about physical activity, for example, older adults may participate in classes for yoga, dance, tai chi, aquatics, aerobic exercise, or body-weight control exercise under a personal trainer’s guidance (U.S. Department of Health and Human Services, 2018). In comparison with informal learning, nonformal settings can provide more social aspects of learning for older adult learners by promoting a greater sense of belonging and social inclusion (Åberg, 2016).

Informal Learning

Informal learning has been defined by many scholars in the field of adult education. Coombs (1985) defined informal learning as “the spontaneous, unstructured learning that goes on daily in the home and neighborhood, behind the school and on the playing field, in the workplace, marketplace, library and museum, and through the various mass media” (p. 92). This definition denotes informal learning as any voluntary, self-paced learning occurring in various everyday situations. For example, older adults might participate in informal exercise learning such as jogging, strengthening exercises, bicycle riding, golf, or gardening (U.S. Department of Health and Human Services, 2018).

To be specific, three types of informal learning (see Table 3) can be conceptualized based on a learner’s intentionality of learning and awareness at the time of learning experience (Foley, 1999; LaBelle, 1986). The forms of informal learning are self-directed (intentional and conscious), incidental (unintentional and conscious), and tacit learning (unintentional and unconscious; Marsick & Watkins, 2001; Schugurensky, 2000). First, self-directed learning is a conscious process in which the learners initiate their learning project alone or as part of a group without an educator’s assistance, and they are aware of what they are learning (Schugurensky, 2000). Second, incidental learning takes place when the learners have no intention of learning about the topic, but they become aware that some learning has occurred after the experience (Schugurensky, 2000). Third, tacit learning may occur in our everyday life as a gradual internalization of values, attitudes, or skills without the intention of acquisition of knowledge or information (Schugurensky & Myers, 2003).

Table 3*Types of Informal Learning*

Modes of informal learning	Learner's intention	Learner's awareness	Examples
Self-directed	Intentional	Conscious	Individual or group project initiated by the learners
Incidental	Unintentional	Conscious	Becoming aware that some learning happened after backpack traveling
Tacit	Unintentional	Unconscious	Language learning in early childhood

Older Adults and Physical Activity

Physical activities are one of the key aspects of the present study. I continue to discuss literature pertaining directly to the various physical activities for older adults. Generally, physical activity can be defined as “any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a base level” (U.S. Department of Health and Human Services, 2018, p. 107). In this study, physical activity refers to the subset of activity that enhances an individual’s physical activeness in daily life. Physical activity includes “more than one type of physical activity, such as aerobic, muscle strengthening, and balance training” (U.S. Department of Health and Human Services, 2018, p. 106).

Older adults (aged 65 years and older) are encouraged to engage in a certain level and intensity of physical activity to obtain health benefits—that is, an easier performance of daily living activities, fall prevention, preservation or improvement of physical function, and mobility (Gray et al., 2018; Haripriya et al., 2018; Lübcke et al., 2012; Silver et al., 2018). The physical activity guidelines for Americans suggested the following guidelines for adults and older adults (U.S. Department of Health and Human Services, 2018):

- Adults and older adults should move more and sit less throughout the day.

- Adult and older adults should do at least 150 minutes to 300 minutes a week of moderate-intensity, or 75 minutes to 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity.
- Adults and older adults should also do muscle-strengthening activities of moderate or greater intensity and that involve all major muscle groups on two or more days a week.
- Older adults should do multicomponent physical activity that includes balance training as well as aerobic and muscle-strengthening activities.
- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.
- When older adults cannot do 150 minutes of moderate-intensity aerobic activity a week because of chronic conditions, they should be as physically active as their abilities and conditions allow. (p. 68)

Not only do older adults receive physical benefits from regular physical activity, but they also experience psychological effects in which they strengthen their self-perception associated with physical activity and thus develop a higher degree of commitment in corresponding behaviors (Kenter et al., 2015; Son et al., 2011). Older adults can experience a transformation of “feelings of control and autonomy and the development of an identity as an exerciser” (Hardcastle & Taylor, 2005, p. 186). For example, individuals with a strong physical sense of self may frequently engage in physical activity, discuss their exercise-related goals with congenial people, and establish the exercise equipment (Perras et al., 2016). Furthermore, physical identity is directly tied to older adults’ personal sense of autonomy, independence, not wanting to be a burden on others, desire to make meaningful contributions and to stay relevant,

desire to be there for others as long as possible, and a sense of pursuing their life not yet lived while there is still time (Gardner, 2014; Graves & Larkin, 2006; Griffith et al., 2007).

Taken together, the literature reviewed in this chapter regarding each component of my conceptual framework ties the important issues around older adults' learning to the individual's identity development in later life, particularly in the physical activity domain. Types of adult learning range from formal, nonformal, and informal—subdividing into conscious and unconscious aspects. Such learning entails some degree of changes in the individual's identity (Illeris, 2014; Jarvis, 2009) in which the learner's existing knowledge, a sense of hostility, and personal security may be provoked by new understandings (Youell & Canham, 2006). In this way, the process of learning something in which individuals interact with their inherent dispositions and inertia and go through their age-associated threshold experiences leads to continued identity development (Illeris, 2014). Thus, how the role learning plays in a relationship with identity development in later life by engaging in personally satisfying physical activities warrants further study.

Summary

In this chapter, I have discussed the three bodies of literature situating the conceptual frameworks of this study: a contextual approach to adult development, identity-related theories, various adult learning contexts, and older adults' physical activity. First, the body of literature pertaining to adult development highlighted three major adult developmental models, mechanistic, organismic, and contextual models. The mechanistic model has been developed by behaviorists with the belief that the individual's behavior changes gradually and shaped by external forces. In the organismic model, a human can be understood as an active contribution of an organism and internal force shapes them. Unlike both the mechanistic and the organismic

view, the contextual model emphasizes that human development occurs in the interaction between individuals and their contexts.

Second, the literature on identity presented the major concepts associated with identity theory and identity process theory. Identity theory was proposed to explore older adults' core identity and part identities as this theory accounts for one's sense of self by describing identity salience, which is predominantly activated across different situations and commitment to that identity. Identity process theory was proposed to examine the process of older adults' identity formation or maintenance through the central processes of assimilation and accommodation. The benefit of adopting these theories is that people can understand the aspects in relation to individuals' future self for wellbeing. Also, the complexity and ambiguity of identity research and methodological challenges were addressed.

Third, the literature regarding adults' learning environment highlighted the scope of adult learning opportunities including formal, nonformal, and informal learning. Formal learning takes place in an institutionalized, chronologically graded, and hierarchically structured educational system; nonformal learning occurs outside of the formal education as short-term and voluntary programs; and informal learning can be organized by learner's intentionality of learning and awareness at the time of learning experience as a form of self-directed (intentional and conscious), incidental (unintentional and conscious), and tacit learning (unintentional and unconscious).

The synthesis of the literature has underlined some major considerations of the topics and will inform the research design, data generation, data analysis, interpretations, and recommendations.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine older adults' perceptions of their physical identity through their engagement in learning about physical activity. Specifically, this study examines the role that learning about and learning how to do particular activities plays in identity development for older adults, as well as the meanings older adults attach to their engagement in the physical activity. The following research questions will guide this study:

1. How does older adults' participation in physical activities affect their perceptions of aging?
2. What is the nature of learning for older adults who participate in physical activity?
3. How does older adults' engagement in learning about physical activity shape their identity in later life?

In this chapter, I describe the methodology I employed to address the research questions of this study, previously discussed in Chapter I. I begin with a description of my positionality addressing both philosophical and personal perspectives. I then explain the methodology, methods, including the rationale for using grounded theory, and the background of grounded theory. Lastly, I explain the methods for data collection and data analysis followed by a section on the trustworthiness of this study.

Researcher's Positionality

I, as an inquirer, acknowledge that my philosophical assumptions are “the first ideas in developing this study and relate to the overall research process” by considering “what I bring to the inquiry, such as my personal history, views of myself and others, and ethical and political

issues” (Creswell, 2013, p. 18). Philosophical assumptions comprise ontology, epistemology, methodology (Denzin & Lincoln, 1998), and guide method (Hesse-Biber, 2017). Ontology raises basic questions about the nature of reality by asking “what is out there to know?”; epistemology asks “what and how can we know about it?”; methodology asks “how can we go about acquiring that knowledge?”; and methods seek the answer to “which precise procedures can we use to acquire it?” (Hesse-Biber, 2017, p. 7). These philosophical assumptions focus on specific stances in qualitative research—positivist, postpositivist, interpretive (constructivist), and critical perspectives (Denzin & Lincoln, 1998; Merriam, 2009).

Among different paradigmatic approaches to qualitative research, I adopted the interpretive research paradigm in this study. This perspective views “human interpretation as the starting point for developing knowledge about the social world” (Prasad, 2005. p. 13) under the assumption that meaning is socially constructed through the shared interpretation of the world (Holstein & Miller, 1993). Specifically, the interpretive ontological position assumes the social world is always intersubjective; interpretive epistemological position assumes objective and subjective meanings are inseparable; and interpretive methodology seeks to understand the reflexive production of meaning (Hesse-Biber, 2017; Pascale, 2011). In interpretive research, the researcher must understand the meaning that the situation holds for the participants beyond observing their behaviors (Pascale, 2011). At the same time, the interpretivists are tolerant of indeterminacy while conducting research (Charmaz, 2006).

Personally, my interest in exploring older adults’ perceptions of their physical identity as they advance in age emerged during my professional and personal experiences. As an instructor at a senior institute in a U.S. urban area where an extremely diverse older population resides, I was able to interact with many older adults who display different personalities, cultural and

ethnic backgrounds, health status, socio-economic status, and levels of life satisfaction. I wondered how these individuals with diverse physical abilities, lifestyles, and life values deal with their aging process. In conversation with many older adults in the United States and my own country Korea, their main concerns seemed to be related to becoming invisible in society. They sometimes became depressed or anxious about whether they would be able to pursue personally meaningful activities in their later life. Working closely with older adults at a senior center gave me an emic perspective, which helped “capture participants’ indigenous meanings of real-world events” (Yin, 2010, p. 11). Being an insider in a senior community in which I had many opportunities to listen to their life histories, learn their wisdom, empathize with their joy and sorrow, and enjoy their sense of humor can heighten my understanding of their own language and culture.

While I can develop my emic perspective from the experiences of being part of senior communities, I still maintain my etic perspective as I was born in Korea and am younger than them. Being an outsider to the U.S. senior culture enables me to develop broader cross-cultural frameworks and sometimes compare to my age (Morris et al., 1999). I have been observing many older adults, including my parents, who focus on their physical activity in their later life. They have shared their feelings about how engagement in personally satisfying physical activity becomes more meaningful in older adulthood as a means for staying healthy and better connected with others. These experiences left me wondering how I could make a small impact on older adults’ quality of life through investigating how they perceive their identity, particularly in the context of physical activity.

Methodology

A methodology is a plan and strategy for “how I can go about acquiring knowledge” (Hesse-Biber, 2017, p. 7). As noted above, the interpretive research paradigm, “a basic set of beliefs that guide action” (Guba, 1990, p. 17), had informed and guided my qualitative inquiry and thus I answered the research questions (Guba & Lincoln, 1998). An interpretive qualitative research paradigm is most appropriate to answer the research questions and understand the meaning of older adults’ perceptions of aging, pertinent physical activities and learning about the activities, and physical identity that is the primary objective of this study. The fundamental focus of qualitative research is to understand “how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences” (Merriam & Tisdell, 2016, p. 6). The interpretive framework is most commonly used in qualitative research assuming the researchers do not find knowledge, rather they construct it (Denzin & Lincoln, 2011; Merriam & Tisdell, 2016).

Symbolic Interactionism

Among diverse paradigmatic approaches within the interpretive strand, in this study I adopted symbolic interactionism as the theoretical paradigm. Symbolic interactionism was codified and publicized by Herbert Blumer (1969) examining “how people construct and negotiate meanings and actions in their everyday lives” (Charmaz et al., 2019, p. 20). Blumer (1969) viewed that humans uniquely develop themselves through continuous social interaction. Three core principles underpinning symbolic interactionism are (a) people act toward and on the basis of the meanings that things have for them; (b) the meanings are derived from the process of interaction with others; and (c) meanings are formed and transformed through an interpretive process where shared symbols are used to communicate the meaning (Blumer, 1969). This

approach assumes that personal life history is constructed through “the interaction between individuals, small groups, or individuals and objects” (Hesse-Biber, 2017, p. 23) such as an individual’s life experiences, observation of others, conversation with others, and reflection (Crooks, 2001). Within the interaction process, people interpret through shared symbols (e.g., language and gesture) and attach the meanings to their experiences (Blumer, 1969). The individuals come to make choices and form the meanings by selecting, “grouping, and regrouping of meanings within the present situation, and the newly constructed meaning ultimately directs action” (Crooks, 2001, p. 15).

Among many social science theories, symbolic interactionism enables the researchers to understand “the complex world of lived experience from the point of view of those who live it” (Schwandt, 1994, p. 118). In this regard, Charmaz et al. (2019) discussed the role of symbolic interactionism in conducting a qualitative study:

Symbolic interactionists use the sociological imagination to examine the influence of the social context on people’s feelings, thoughts, and actions. The perspective provides tools to explore the relationship between real, living people who think, feel, and act and the social forces that shape their thoughts, emotions, and behavior. (p. 6)

The researchers adopting symbolic interactionism consider ‘meanings’ as one of the most important elements in uncovering people’s experiences. Thus, the researchers strive to grasp the meanings that the participants attach to a certain experience within a particular situation (Chenitz & Swanson, 1986). In this way, the theoretical perspective of symbolic interactionism equips me to investigate older adults’ own interpretations of their experiences and personal beliefs about physical identity by engaging in physical activity in the face of their aging.

In this study, symbolic interactionism informed the design decisions and interpretation of the results (Handberg et al., 2015). In particular, symbolic interactionism guided the entire process of fieldwork (i.e., interviews and observation) throughout formulating interview and observation protocols and maintaining focus in the conversation with participants. In data analysis, symbolic interactionism also helped me pause to catch participants' expressions that may be easily overlooked, see quotidian scenes with fresh eyes, and diversify a vocabulary for interpreting the participants' experiences.

Methods

Methods are the tools researchers use to collect and analyze data including the procedures used for participant identification, data collection, and data analysis (Crotty, 1998). The specific tools and techniques allow me to gather evidence to learn about social reality (Hesse-Biber, 2017), aligned with the purpose of the study and research questions. In response to the research questions, I adopted a grounded theory approach to develop a framework accounting for the specific factors and their relationships comprising the process of older adults' physical identity formation through participation in their physical activity learning. Among varied grounded theory traditions, I adopted Strauss and Corbin's (1990, 1998) approach to develop a framework accounting for the process involved in older adult exercisers. To be specific, Strauss and Corbin's grounded theory is deemed to align with my ontological and epistemological beliefs; it is also more accessible and handy to conceptualize the depth and extent of the process of older adults' physical identity development through engaging in their physical activity learning.

Rationale for Using Grounded Theory

I chose grounded theory methods for three reasons. First, grounded theory—with its foundations in symbolic interactionism—led me to catch the cues that create symbolic meaning

and interpret meanings that the individuals attach themselves to. Precisely, using grounded theory methods expedited the research and enabled me to develop a convincing analysis (Charmaz, 1996) in the way that grounded theorists seek to develop a middle-range substantive (i.e., most of the grounded theories) or formal theory (i.e., a higher level of abstraction and generalization across a number of substantive areas) to explain social processes (Birks & Mills, 2015).

The second major reason I employed grounded theory was pertinent to its unique attribute in the way that meticulous methods for data collection and analysis guide me throughout the research process as compared to other qualitative study designs. Such specific guidelines are instrumental in investigating processes (Charmaz, 2016) of the study to investigate individuals' developmental transitions or life-changing experiences (Wuest, 2012). For this study, the central concept of identity development in people's later life has a lot to do with their life changes such as experiencing retirement, becoming free from child-rearing, and approaching their end-stage of life (Erikson, 1982), as well as physical changes as people age (Whitbourne & Whitbourne, 2014). Such unique experiences as people get older accompany identity issues (Illeris, 2014, Kim & Merriam, 2010). Therefore, grounded theory is suitable for understanding the processes of how older adults deal with age-related physical changes in later life.

Third, to date, research about older adults' physical self has attempted to understand their exercise identity in relation to the physical functioning or health behaviors (Miller et al., 2002; Perras et al., 2016; Petosa et al., 2003). For instance, a stronger physically active identity is associated with higher self-regulatory efficacy, more frequent physical activity, and greater life satisfaction (Strachan et al., 2010). Older adults with positive norms for physical activity also tend to have higher levels of exercise motivation (Pelssers et al., 2018). However, research on

how physical identity relates to social cognitive aspects and physical activity in older adulthood has been limited (Son et al., 2011). Thus, I acknowledge that there is a lack of knowledge regarding the specific factors of older adults' physical identity and the relationships with the aging process. Thus, I aimed to investigate and theorize patterns or processes of how older adults construct or maintain their physical identity through engaging in learning about physical activity.

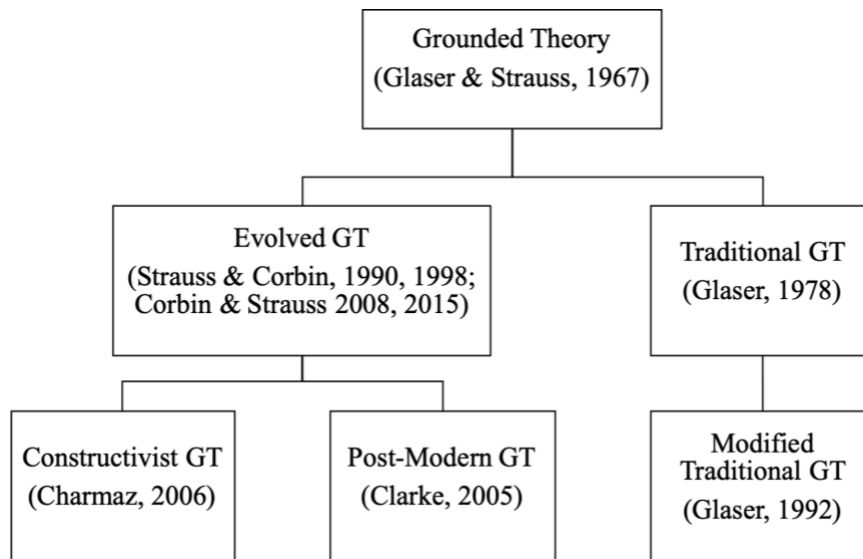
Grounded Theory: Background

Grounded theory was developed in sociology in 1967 by Barney Glaser and Anselm Strauss (Glaser & Strauss, 1967). Unlike the previous theoretical orientations in sociology, grounded theorists seek to develop a theory related to the issues of importance in human lives (Glaser, 1978; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Grounded theory was evolved and elaborated in some detail by Glaser (1978), Strauss (1987), Strauss and Corbin (1990, 1998), Glaser (1992), Corbin and Strauss (2008, 2015), and Charmaz (2006, 2014) depending on each scholar's ontological and epistemological beliefs (see Figure 2).

Regardless of the variation of grounded theory traditions, a grounded theory study features theoretical sensitivity; theoretical sampling; constant comparative analysis; initial coding, categorization of data, and intermediate coding; identifying the core category; advanced coding and theoretical integration; and writing memos (Birks & Mills, 2015). In the following section, I discuss the major characteristics of what grounded theorists should do.

Figure 2

History of Grounded Theory



Note. Adapted from *Week4: A brief history of Grounded Theory...and grounded theory* [PowerPoint slides] by L. Stough, 2019.

Theoretical Sensitivity

Glaser and Strauss (1967) firstly mentioned theoretical sensitivity, which reflects the researchers' "ability to have theoretical insight into" themselves as well as the "area of research, combined with an ability to make something of their insight" (p. 46). The researchers' theoretical insight can be acquired from the researchers' deliberate efforts in a way that "as the researchers become immersed in the data, their level of theoretical sensitivity to analytical possibilities will increase" (Birks & Mills, 2015, p. 12). Specifically, in developing categories, the higher the theoretical sensitivity, the more the researchers find relevant data and reflect upon empirical data (Kelle, 2007). To enhance the researchers' sensitivity particularly during data analysis, Strauss and Corbin (1990, 1998) suggested, for instance, questioning, the flip-flop technique, or far-out comparisons. Furthermore, Strauss (1987) discussed the concept of coding paradigm for structuring data and linking categories in the step of axial coding:

It is central to the coding procedures. Although especially helpful to beginning analysts, in a short time this paradigm quite literally becomes part and parcel of the analyst's thought processes. Whether explicit or implicit, it functions as a reminder to code data for relevance to whatever phenomena are referenced by a given category. (p. 27)

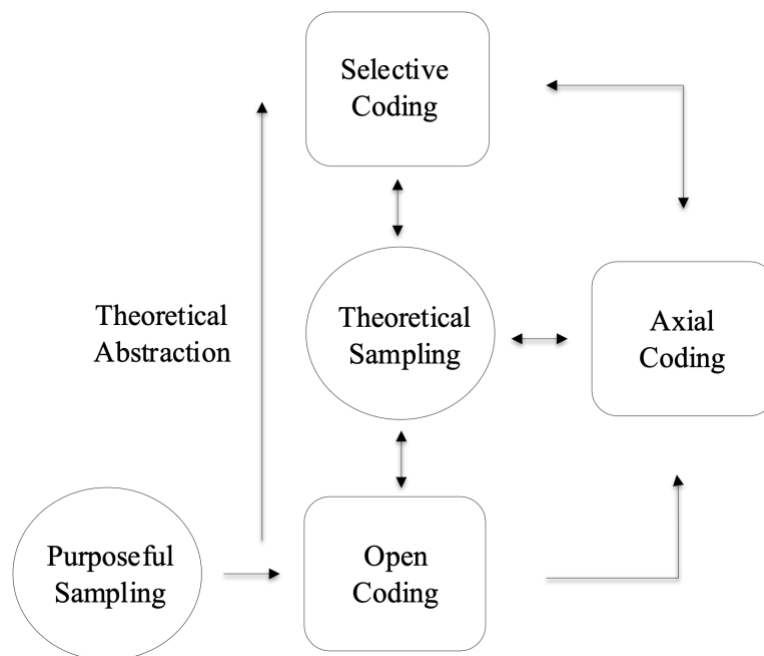
While Glaser argued that using the paradigm model could be an act of forcing the data (Glaser, 1978, 1992), Strauss and Corbin (1994) demonstrated that such analytical techniques could be useful tools to interpret and systematically integrate a variety of concepts in theory development.

Theoretical Sampling

Theoretical sampling is an iterative process based on categories that emerged from ongoing data analysis (Glaser & Strauss, 1967). To sample theoretically, the researchers decide what data will illuminate the emergent theory, what data need to be collected next, and where these data may be found based on their analytical needs, and thus reflect the information into the next rounds of sampling. In other words, as data collection and analysis progress, "it will become apparent that more information is needed to saturate categories" in the act of theory development (Birks & Mills, 2015, p. 11). In this way, the sample size is informed by the theoretical saturation of categories (Glaser & Strauss, 1967) "rather than by the need for demographic representativeness, or simply lack of additional information from new cases" (Hood, 2007, p. 154). For these reasons, theoretical sampling is different from other nonprobability sampling strategies (e.g., purposeful and selective sampling) that are typically employed in many qualitative studies and thus, yield richer categories and full theoretical saturation (Hood, 2007). Figure 3 presents the level of theoretical abstraction in theoretical sampling process in grounded theory.

Figure 3

Coding and Theoretical Sampling



Note. Adapted from *Grounded theory: A practical guide* (2nd ed.) by M. Birks & J. Mills, 2015, p. 106. Copyright 2015 by Sage.

Constant Comparative Analysis

The above-mentioned theoretical sampling is considered as a critical aspect of the constant comparative method of data collection and analysis in grounded theory. In grounded theory, “the main intellectual tool is comparison” (Tesch, 1990, p. 96), which enables the researchers to “proceed analytically in working with data” (Strübing, 2007, p. 588). The constant comparative method is used during all intellectual tasks related to the understanding of data by “discerning conceptual similarities, refining the discriminative power of categories, and discovering patterns” (Tesch, 1990, p. 96). Glaser and Strauss (1967) introduced the constant comparative analysis in need of a theoretical sampling procedure:

The purpose of the constant comparative method of joint coding and analysis is to generate theory more systematically than ... *using explicit coding and analytic*

procedures ... This method of comparative analysis is to be used jointly with theoretical sampling. (p. 102)

Strauss and Corbin (1998) also emphasized comparative analysis as a principal feature of grounded theory study. Not only do the grounded theorists compare incident to incident (as in Glaser & Strauss, 1967), but they also use theoretical comparisons to stimulate identifying properties and dimensions and to direct theoretical sampling (Strauss & Corbin, 1998). To put it briefly, theoretical comparisons in analysis enable the researchers “to think about an event or object in different ways” when they are stuck about the meaning of the data (Strauss & Corbin, 1998, p. 80).

In order to carry out theoretical comparisons, analytical tools help analysts stimulate their inductive process when they are blocked and cannot identify the possible categories. For example, Strauss and Corbin (1998) listed analytical tools: the flip-flop technique helps the analysts “obtain a different perspective on the event, object, or action/interaction” by looking at “opposite or extremes to bring out significant properties” (p. 94); the far-out comparison involves unusual and “shocking comparisons” that enable the analysts to sensitize the number and types of properties (p. 82); waving the red flag, such as the terms “always,” “never,” “everyone,” and “no other way” tells the researchers to stand back and examine the data somewhat objectively (p. 97). All of these activities enhance theoretical sensitivity and contribute to insight and illumination of areas that can be constructed into a theory” (Birks & Mills, 2015, p. 60). In addition, memoing, close reading, rereading, coding, displays, or diagrams can support the comparison process (Boeije, 2002). These repeated processes allow for enhancing both the credibility (i.e., internal validity) and transferability (i.e., external validity; Boeije, 2002).

Coding

A *code* in qualitative research is “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldaña, 2013, p. 3). In data analysis, the researchers repeatedly use codes to “identify conceptual reoccurrences and similarities in the patterns in the data” (Birks & Mills, 2015, p. 89). Although conceptual terms for coding and stages of coding vary by different seminal grounded theorists (see Table 4), they all agree that “the use of essential grounded theory methods results in the development of concepts that are initially low level and subsequently developed to a higher level” as data analysis progresses (Birks & Mills, 2015, p. 86). Coding is an active process by “which data are broken down, conceptualized, and put back together in new ways” (Strauss & Corbin, 1990, p. 57). Glaser (1978) described “substantive codes” which are drawn from the participants’ language (i.e., gerunds or in vivo codes; p. 55). Strauss and Corbin (1990, 1998) mentioned three types of coding—open, axial, and selective coding. Charmaz (2014) used initial, focused, and theoretical coding and emphasized that coding with gerunds (the noun form of a verb using the term *-ing*) can capture process in the data and emphasize the participants’ experiences as a source of conceptual analysis.

Table 4*Conceptual Terminology in Grounded Theory*

	Concepts				
	Codes	Categories	Properties and dimensions	Core category	Methods of theoretical abstraction
Glaser & Strauss (1967)	Coding incidents	Categories	Properties	Systematic substantive theory	Common sociological perspective
Glaser (1978)	Open coding that moves to selective coding of incidents once the core variable is identified	Categories which are interchangeably referred to as concepts	Properties and typologies	Core variable that explains a basic social process	Theoretical codes
Strauss (1978)	Coding paradigm; conditions, interactions, strategies, tactics, and consequences. Open, axial and selective coding	Categories	Properties and dimensions	Core category	
Strauss & Corbin (1990)	Coding paradigm: cause, context, action/interactions, and consequences. Open, axial, and selective coding	Categories and sub-categories	Properties and dimensions	Core category is a central phenomenon	Storyline and the conditional matrix
Strauss & Corbin (1998)	Coding paradigm; conditions, actions/interactions and consequences. Open, axial and selective coding	Categories and sub-categories	Properties, dimensions, and coding for process	Central category	Storyline and the conditional/consequential matrix
Clarke (2005)	Codes	Categories	Seeking variation in the situation of enquiry through situational maps, social worlds/arena maps and positional maps	Multiple possible social processes and sub-processes	Situational maps, social worlds/arena maps and positional discourse maps and associated analysis
Charmaz (2014)	Initial and focused coding	Categories	Properties	Theoretical concepts	Theoretical codes

Adapted from *Grounded theory: A practical guide* (2nd ed.) by M. Birks & J. Mills, 2015, p. 87. Copyright 2015 by Sage.

Regardless of the varied traditions of grounded theory, the analytical processes generally follow the stages from initial, intermediate, and advanced coding (Birks et al., 2006). Birks and Mills (2015) discussed that each coding phase has to do with the level of theoretical abstraction from the low, medium, to high levels of conceptual development:

Initial coding processes power grounded theory analysis by fueling low-level conceptual analysis. Once you begin the work of integrating your grounded theory by explicating the links between and within categories through intermediate coding, your level of conceptual analysis will increase. A fully integrated grounded theory is a high-level conceptual framework that possesses explanatory power supported by advanced analytical processes. (p. 91)

Moreover, to avoid confusion among the coding terminology among grounded theory variations, Birks and Mills (2015) compared the coding phases that different grounded theorists utilized (see Table 5).

Table 5

Three Phases of Coding in Grounded Theory

	Initial coding	Intermediate coding	Advanced coding
Glaser & Strauss (1967)	Coding and comparing incidents	Integrating categories and properties	Delimiting the theory
Glaser (1978)	Open coding	Selective coding	Theoretical coding
Strauss & Corbin (1990, 1998)	Open coding	Axial coding	Selective coding
Charmaz (2014)	Initial coding	Focused coding	Theoretical coding

Note. Adapted from *Grounded theory: A practical guide* (2nd ed.) by M. Birks & J. Mills, 2015, p. 91. Copyright 2015 by Sage.

Writing Memo

Memos refer to the researcher’s written records of any type related to theory development including code, theoretical, and operational notes (Strauss & Corbin, 1990, 1998). Glaser and

Strauss (1967) suggested that memos provide directions for further coding as well as a decision on whether returning to collect more data. Charmaz (2006) also advocated memo-writing as “the pivotal intermediate step between data collection and writing drafts of papers,” because it helps the researchers engage in the data analysis and “increase the level of abstraction of the ideas” from the early stage of the research (p. 72). Specifically, Strauss and Corbin (1990, 1998) described three types of memos: code memos include conceptual labels, paradigm features, and indications of the process; theoretical memos capture the researcher’s inductive or deductive thinking about potentially relevant categories, properties, dimensions, and their relationships; and operational memos contain the directions to the researcher–self such as sampling and data collection.

Selection of Participants

Sampling is the process of selecting a part of the population to represent the whole (Naderifar et al., 2017). The major types of sampling methods included purposeful, criterion, and theoretical sampling. Besides using the three major sampling methods, I used snowball sampling as an alternative to overcome the recruitment challenges, particularly during a surge phase of COVID-19. Purposeful sampling allowed me to select individuals and sites for this study, such as community recreation or wellness centers, community-based fitness centers, parks, golf courses, and sports clubs in the local area. Thus, I was able to purposefully inform an understanding of the research problems (Creswell & Poth, 2018). The criteria for the participants were individuals aged 65 and older who are physically active or are doing a personally meaningful activity as part of their daily routine. Active older adults are considered those who do at least 150-300 minutes of moderate-intensity physical activity a week or an equivalent amount (75-150 minutes) of vigorous-intensity activity; highly active older adults are considered those

who do more than 300 minutes of moderate-intensity physical activity a week or an equivalent amount of vigorous-intensity activity (U.S. Department of Health and Human Services, 2018). Thus, older adults with moderate-intensity physical activity including active living, vigorous-intensity physical activity (e.g., extreme exerciser) on a regular basis (Greenlees et al., 2011) were recruited.

Theoretical sampling, which is an important feature in grounded theory, refers to the process of data collection for generating theory in which the researcher selects participants based on the descriptive needs of emerging concepts and categories (Charmaz, 2006; Glaser, 1978). Theoretical sampling guides the iterative process of data collection, coding, and analysis (Glaser, 2004; Harley et al., 2009; Strauss & Corbin, 1998). To apply theoretical sampling, I conducted data analysis immediately after the first data were collected so that information from the first rounds of data collection informed me what data needed to be collected next and where these data could be found to illuminate my theoretical ideas, ultimately to develop the emergent theory (Charmaz et al., 2018). During the early rounds of data collection and constant comparative analysis, I identified different patterns between two age subgroups: five participants who were in their sixties to seventies and seven of them who were in their eighties. However, more information was needed to find out about conditions that may interact with the categories under two age subgroups. While the younger old group included both participants who had and had not had any underlying conditions, the older old group only included the participants with one to multiple underlying conditions. Considering that age subgroups and underlying conditions may interact with the participants' engagement in physical activity, I and my methodology committee decided to collect more data that particularly fell into the category of the older old group without underlying conditions. Therefore, I conducted the third round of data collection to gather “the

most information-rich source of data” (Birks & Mills, 2015, p. 11) based on my analytical needs (see Table 6). Through theoretical sampling, I collected data from two more participants who were in their eighties without underlying conditions. Additionally, data from one more participant who was in her seventies with an underlying condition was added by referral of one of the participants in the third round of data collection.

Table 6

Theoretical Sampling

	<u>Age of the 60s-70s</u>	<u>Age of the 80s</u>
With Underlying Conditions	72 years, pinched nerve in the back (Artie) 76 years, heart failure, pacemaker (Stanley) 77 years, chronic back pain (Meghan)	81 years, arthritis, osteoporosis, heart issue, replacement knee (Bonnie) 83 years, scoliosis (Karolyn) 83 years, vision impairment, heart failure (Emilia) 84 years, bad knee, feet issues, back pain (Nicole) 85 years, back issue (Sherry) 88 years, severe back problems, nerve pain (Tacey) 89 years, heart issue, hearing issue (Kayla)
Without Underlying Conditions	67 years (Annika) 69 years (Sean)	Analytical need for participants who were in their 80s without underlying conditions

Lastly, the alternative method of snowball sampling was effective for recruiting people during the surge phase of COVID-19. I began by finding an individual (i.e., the source) who had the desired characteristics and then used their personal connections to recruit similar participants (Noy, 2008).

Participant Recruitment

Older adults are generally defined as having a chronological age of 65 years or older along with a range of characteristics—chronological age, changes in social roles, and changes in functional abilities (United Nations, 2017). The older population can be divided into three

subgroups, of which the most frequently used in gerontology are young-old (ages 65 to 74); middle-old (ages 75 to 84); and old-old (ages 85 and older; Whitbourne & Whitbourne, 2014). In accordance with the United Nations' (2017) definition of older adults, which is generally accepted by many countries, I recruited adults aged 65 years and older, who were involved in physical activities on a regular basis.

I employed multiple recruitment strategies. The primary types of participant recruitment in qualitative research included social marketing (e.g., mass mailing/emailing, mass telephone calls, brochures, flyers, specialty publications to a target population, etc.), community outreach (contact with community leaders and organizations, community presentations and meeting, face to face contact in the community, community events participation, etc.), and referrals (e.g., friends, family, other participants in the same study, participants from another study, etc.; UyBico et al., 2007). Among the types of recruitment of the participants, a combination of several strategies leads to effective recruitment for vulnerable populations (UyBico et al., 2007). In this sense, I used community outreach, social marketing, and referrals to recruit older adults for this study. Using these multiple recruitment strategies, despite the pandemic, I was able to achieve reasonably successful participant enrollment. For instance, targeted approaches such as research invitations included with course promotion mailings in senior centers and community outreach at community centers were used.

Building community relationships is one of the critical strategies of recruitment in older adult populations (Minkler & Wallerstein, 2011; Mold & Peterson, 2005). Utilizing the strategy of a practice-based research network (Mold & Peterson, 2005), which also directly involves community senior center personnel and community members, I could build trust and develop long-term relationships with them as well as a connection for future research (Miyamoto et al.,

2013). I continued to build networking by regularly visiting the local senior fitness facilities, golf courses, or marathon clubs and communicated with the center personnel and senior members as a member myself. As community-based centers or facilities supported this study, current members in the centers were more willing to participate in the data collection (Dibartolo & McCrone, 2003). Specifically, I consistently established a network of practitioners in local senior centers, fitness facilities, or sports clubs and emphasized the importance of older adults' exercise to the members in the centers (UyBico et al., 2007).

Ethical Considerations

Before reaching out to the research sites and the potential participants, I obtained approval for this study by the Texas A&M University Institutional Review Board (IRB; see Appendix A). In order to do that, a recruitment letter (see Appendix B), a recruitment flyer (see Appendix C), a letter of support from the relevant facilities (see Appendix D), and a participant consent form (see Appendix E) were collected and submitted to the IRB.

Data Collection

Data collection in grounded theory takes place in a natural setting where participants experience the issues or problem under study (Hesse-Biber, 2017). When generating data, grounded theorists commonly talk with people about their experiences and perceptions (Patton, 2005). Since grounded theory methods do not make clear boundaries between data collection and analysis by simultaneously being involved in both activities (Charmaz, 1996; Glaser & Strauss 1967; Strauss & Corbin 1990), I gathered data until reaching the level of saturation in a flexible manner.

The means to collect the data in the present study was individual interviews. An interview is a particular kind of conversation in which knowledge is constructed in the

interaction between the interviewer and the interviewee that requires active asking and listening (Hesse-Biber, 2017; Kvale & Brinkmann, 2015). Through this particular kind of verbal communication, the individuals' experiences and unique knowledge about the social world become discernible (Hesse-Biber, 2017; Kvale & Brinkmann, 2015). Among different types of research interviews (e.g., structured, semi-structured, or unstructured), I used less structured interviews that allowed interviewees to explain their experiences (Forrester & Sullivan, 2018). I designed my interview protocol based on the study's conceptual framework. The interview protocol is included in Appendix F.

Additionally, when the participants permitted me to observe their activity, observations were supplemental methods. Observing is the act of noting a phenomenon in the field setting through one of four observation types: a complete participant is fully engaged with the people being observed, requiring the researcher to establish rapport with participants; a participant as observer participates in the activity rather than being a researcher, which allows the researcher to gain insider views; a nonparticipant, or observer as a participant, is an outsider who watches and takes field notes without direct involvement with activity; and a complete observer is not allowed to be seen at the site or to be noticed by the people (Hesse-Biber, 2017).

From February to July 2020, three rounds of individual interviews were conducted via face-to-face or phone in Bryan and College Station in Texas. Due to the global pandemic, multiple options of interview modality were given to the participants in which they could choose from face-to-face, synchronous online, or phone interview depending on their discretion. In the first round of data collection, seven face-to-face individual interviews and five phone interviews were carried out. In the second round of data collection, nine out of 12 participants from the first

round were interviewed again. Then, three more face-to-face interviews with face masks were added to the data analysis based on theoretical sampling.

Initially, I gathered data from the individual interviews, field notes, and an observation of the participants' activity. The interviews were based on a semi-structured, open-ended interview guide. Each interview lasted approximately 60 minutes. In the early round of data collection, I was able to decide what data would illuminate the emergent theory, what data need to be collected next, and then where these data may be found (Denzin & Lincoln, 2018; Glaser & Strauss, 1967). Then, I conducted a few subsequent rounds of interviews until the data were fully saturated. During the individual interviews, I asked the key questions that I had planned, but the format also allowed for flexibility to ask additional questions to discover new ideas and categories. The interviews were audio-recorded, transcribed, and analyzed. All recorded data were coded using pseudonyms and de-identified.

I was only able to complete one participant observation session of a senior fitness class right before the unexpected pandemic outbreak. In compliance with the COVID-19 guidelines by the Centers for Disease Control and Prevention (2020), the observations of group physical activity (e.g., fitness class and senior sports club) were not carried out once the virus broke out. During the observation, I switched my role from being as an outsider (e.g., sitting in the back of the class) to being a complete insider (e.g., participating in the class with the participant and having a conversation after the class; Jorgensen, 1989). I used field notes to organize my observational data. The observational protocol is presented in Appendix G. This form indicates time, site, descriptive notes (i.e., the participants' actions and interactions in the class as well as descriptions of the class environment), and reflective notes (i.e., my comments and sensory impression; Emerson et al., 2001; Hesse-Biber, 2017).

Data Analysis

As previously discussed in the rationale for using grounded theory and data collection sections, among varied grounded theory traditions, I adopted Strauss and Corbin's (1990, 1998) version of grounded theory. According to Strauss and Corbin (1990), "open coding fractures the data and allows one to identify some categories, their properties, and dimensional locations" (p. 97). Particularly for the intermediate coding stage, Strauss and Corbin (1990) emphasized axial coding that links and develops categories by means of the paradigm model. Following the theoretical sampling method, I began data analysis immediately after the first data were collected. The initial transcripts were created by the software (Otter ai®); then, I listened again to each interview, while also proofreading, to identify important concepts. Throughout the process of data collection and analysis I used constant comparative analysis to identify categories and properties aiming at the theory generation of older adults' physical identity development process (Glaser & Strauss, 1967; Strauss & Corbin, 1998). This method for data analysis helped me constantly compare "incident to incident, incident to codes, codes to codes, codes to categories, categories to categories," and categories again to raw data for generating highly abstract conceptual categories (Birks & Mills, 2015, p. 11). In addition, I maintained my habit of writing memos throughout the data analysis including operational, theoretical (see Appendix H), and code memos (see Appendix I).

Open Coding

First, in the open coding, I coded meaningful concepts by inductively labeling them. In this stage of coding, I carefully read the transcript and coded words and short phrases that struck me using the direct language of the participants (in vivo coding) or a gerund form. I named the codes as a gerund form (i.e., *-ing* form of a verb) when the participants' actions or interactions

need to be captured in a way that I could see “implicit processes, make connections between codes, and keep my analysis active and emergent” (Denzin & Lincoln, 2018, p. 425). To be specific, I extracted a key phrase from the participants’ statements of how they dealt with situations associated with their aging process. Then, I put them into a gerund form of code, such as “reminiscing about activities and situations,” “learning physiological and psychological mechanism in exercise,” and “analyzing self in terms of exercise or body.” Moreover, throughout the coding process, I was constantly moving back and forth from both inductive and deductive ways of thinking. While reading the transcripts, I inductively came up with new codes. When similar codes appeared, I also deductively identified the codes and marked them using the pre-created codes. The software (Atlas.ti Cloud®) displays the accumulated code list when I drag the units for adding a new code. I was able to deduce possible codes, categories, and properties, and thus deductive coding enabled me to verify what I had coded to that point (Strauss & Corbin, 1990). Appendix J, sample of opening and categorizing, presents how the participants’ initial statements were condensed to open codes, and then how the open codes fell into particular categories.

Axial Coding

Moving to the second stage of coding, I focused more on how the categories were linked to each other in a way that “data are put back together in new ways after open coding” (Strauss & Corbin, 1990, p. 96). In axial coding, I tried to find answers to questions of why, where, when, how, and what results (Strauss & Corbin, 1998). Keeping these questions in my mind helped me “contextualize a phenomenon, that is, to locate it within a conditional structure and identify the ‘how’ or the means through which a category is manifested” (Strauss & Corbin, 1998, p. 127). Specifically, I utilized an analytic tool of the paradigm model comprising *phenomenon, causal*

conditions, context, intervening conditions, action/interactional strategies, and consequences (Strauss & Corbin, 1990). This paradigm model led me to “think systematically about data and to relate them in very complex ways” (Strauss & Corbin, 1990, p. 99).

In order to utilize the paradigm model, firstly, I started putting the categories from open coding under each element of the paradigm model. I placed the categories that prompted the participants’ initial desire for the *phenomenon* under the *causal condition*. For example, physical signs of aging, pain or distress from chronic disease, a higher probability of injury, and life-changing events were identified as determining the phenomenon of physical identity shift, along with the contextual conditions of personal trajectory in the physical domain, personal inclination for exercise or body image, affordability, and life responsibility. The categories that are a “particular set of conditions within which the action/interaction strategies are taken to manage, handle, carry out, and respond to a specific phenomenon” (Strauss & Corbin, 1990, p. 101) were considered as a *context*. Next, I placed the categories that acted to either facilitate or constrain the strategies under the *intervening condition*. Categories, such as emotional distress, age-related stereotype, dutifulness, competence, empathy, support, driving mobility can either promote or inhibit adults’ strategies for managing physical identity shift. *Action/interactional strategies* included some categories for how the participants specifically respond to the phenomenon. I identified the categories, for instance, of determination, self-discipline, self-cognizance, reconciliation, moderation, and adaptation as signifying the process of a physical identity shift. The *consequences* of the actions and interactions included both the outcomes of the accomplishment of actions and/or the failure to take the action (Strauss & Corbin, 1990). Satisfaction or ambivalence regarding their physical identity, and transcendental views were considered to be consequences of the actions and interactional strategies to manage the

phenomenon. Table 7 presents the first step of axial coding and categories under each element of the paradigm model.

When the categories or subcategories required more conceptual explanations, I developed the properties of the categories. A *property* is one of the major concepts utilized in the various grounded theory traditions from Glaser and Strauss (1967), Glaser (1978), Strauss (1987), Strauss and Corbin (1990, 1998), to Charmaz (2014). According to Strauss and Corbin’s (1998) definition, a property is a “characteristic of a category” (p. 101). I further delineated the categories that needed more conceptual depth and breadth by defining the category and giving them meanings. Developing the properties of categories and subcategories is a helpful technique for enhancing theoretical sensitivity in a grounded theory study (Birks & Mills, 2015). When utilizing the Atlas. ti Cloud® software, I marked open codes with different colors and organized them by each element of the paradigm model (see Appendix K).

Table 7

First Step of Axial Coding

Elements of the paradigm model	Categories
Phenomenon	Physical identity shift in later life
Causal conditions	Physical signs of aging, pain or distress from chronic disease, a higher probability of injury, life-changing events
Context	Personal trajectory in the physical domain, personal inclination for exercise or body image, affordability, life responsibility
Intervening conditions (inhibitor)	Emotional distress, age-related stereotype, private self-consciousness, activity restriction
Intervening conditions (facilitator)	Physical aspiration, social exerciser, positive physical outcome, dutifulness, competence, empathy, supports, driving mobility, younger subjective age, public self-consciousness, resilience, longingness
Action/Interaction Strategies	Determination, self-discipline, deliberation, achievement striving, active experimentation, immersion, routinization, self-cognizance, reconciliation, moderation, adaptation, transcendence, social interaction, retrospection
Consequences	Evaluation of their own physical identity (satisfaction or ambivalence regarding their physical identity), transcendental views

Selective Coding

Finally, selective coding refers to “the process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development” (Strauss & Corbin, 1990, p. 116). In this advanced stage of coding, identification of the core category is a fundamental aspect that condenses the process apparent in the categories and subcategories (Glaser, 1978; Strauss, 1987; Strauss & Corbin, 1990). In this regard, Strauss and Corbin (1990) noted that a core category is “the central phenomenon around which all the other categories are integrated” (p. 116). Once a core category was identified, it propelled me to naturally progress to the advanced analysis by refining and integrating each theoretical component (Birks & Mills, 2015). As a tool for theoretical conceptualization, a theoretical diagram aided me in visualizing various categories, systematically organizing all of the linking categories around the core category, finding the gaps in the advanced analysis, and thus ultimately illustrating a theoretical construction of the participants’ responses within the core category (Brady & Loonam, 2010; Clarke, 2005; Strauss & Corbin, 1990). The theoretical diagram illustrates a theoretical construction of older adults dealing with physical identity shift in later life.

Trustworthiness

The quality of qualitative research necessarily differs from the quantitative research, which generally uses the terms internal validity, external validity, reliability, and objectivity (Merriam & Tisdell, 2016). The terms credibility, transferability, dependability, and confirmability correspond to the quantitative quality indicators mentioned earlier, and they are widely used in qualitative research (Lincoln & Guba, 1985). In the following section, I discuss the qualities of trustworthiness for this study.

Credibility

Credibility deals with the accuracy of the study. Researchers ensure the credibility of their study “by demonstrating how it has been carried out, and to what standard” (Forrester & Sullivan, 2019, p. 61). To be specific, the researchers need to consider the following questions. “How congruent are the findings with reality? Do the findings capture what is really there? Are investigators observing or measuring what they think they are measuring?” (Merriam & Tisdell, 2016, p. 242). Since the qualitative researchers do not seek to capture objective reality, I used strategies to enhance the credibility by increasing “the correspondence between research and the real world” (Wolcott, 2005, p. 160). To do this, the criteria for research credibility included “the transparency and coherence of the research process, and the researcher’s relationship with the research process” (Forrester & Sullivan, 2019, p. 61). In this study, I used the strategies of triangulation to shore up credibility.

Triangulation is a validity procedure where researchers strive to take different perspectives on the issues being studied by seeking a combination of multiple data sources to identify converging themes or categories in a study (Creswell & Miller, 2000; Denzin & Lincoln, 2018). Denzin (1978) recommended four types of triangulation: the use of multiple methods, multiple sources, multiple investigators, or multiple theories to confirm emerging findings. Among these strategies, multiple methods and sources of data were deemed most suitable for this study. Multiple methods of data collection included interviews, observation, and documents. For example, I compared what participants talked to me about in the interviews with what I observed in a fitness class that they participated in. Furthermore, I could compare and crosscheck the collected data from multiple sources such as multiple rounds of interviews with the same participants (Merriam & Tisdell, 2016).

Transferability

Transferability is concerned with how the findings of one study are generalizable. Since the naturalistic qualitative study does not necessarily seek generalizability, instead, the role of original investigators can only be to provide the readers who search for applications for their situations with “sufficient descriptive data” to make transferability possible (Lincoln & Guba, 1985, p. 298). Although the readers or users decide whether the findings of the study are applicable for their situations, it is important to remind myself that I have an obligation to provide a sufficiently ample description of the context of my study to allow them to confirm the “fit” with their own situations (Merriam & Tisdell, 2016). In this way, I reported the findings with a thick description of specific factors and their relationships comprising the process of older adults’ physical identity development.

Dependability and Confirmability

Reliability is the extent to which the findings can be replicated under the assumption that there is a single reality (Merriam & Tisdell, 2016). However, replication of qualitative research will not yield the same results as there are myriad interpretations possible, even using the same data. Rather in qualitative research, dependability deals with the consistency and veracity of the study. In this nature of qualitative research, since the qualitative inquirers “cannot expect others to replicate our account, the best we can do is explain how we arrived at our result” (Dey, 1993, p. 259). Thus, rather than seeking the same results across other research, I strived to pursue the findings that are consistent with the collected data (Lincoln & Guba, 1985). In the same vein, confirmability refers to “the concept that the data can be confirmed by someone other than the researcher” (Toma, 2011, p. 274), substituting for objectivity in quantitative research. The means

to establish confirmability in a study was through an audit trail, and similarly for dependability. I used an audit trail and articulated my researcher reflexivity to ensure dependability.

The audit trail in this study was carried out by internal and external auditors. I, as an internal auditor, provided clear documentation of how data were collected, how categories were identified, and regarding all research decisions and activities (Creswell & Miller, 2000). For example, I maintained my habit of journaling, or memoing, throughout the research process. The external auditor (e.g., committee member) assessed the rigor of my audit process by asking: “Are the findings grounded in the data? Are inferences logical? Is the category structure appropriate? Can inquiry decisions and methodological shifts be justified? What is the degree of researcher bias? What strategies were used for increasing credibility?” (Schwandt & Halpern, 1988; as cited in Creswell & Miller, 2000, p. 128). Another strategy of articulating the researcher’s position, or reflexivity, enables the researchers to critically reflect their own assumptions, worldview, theoretical orientation, and relationship to the study (Merriam & Tisdell, 2016). To do that, I kept a daily journal where I had recorded how my assumptions arising from my beliefs, values, and experiences informed my pre-existing knowledge of the topic and affected the research process, including feelings toward the participants and myself as a researcher (Sullivan & Forrester, 2019).

Summary

In this chapter, I described my positionality addressing both philosophical and personal perspectives, methodology including symbolic interactionism, and the rationale for using grounded theory methods. I explained my data collection using the means of interviews and observations. For the data analysis, I discussed the constant comparative method of analysis and specified three stages of the coding process. In the last section, I described ways I can establish

the trustworthiness of my research. In chapter IV, the research findings will be illustrated. This chapter will include the presentation of the data and the result of the data analysis.

CHAPTER IV

RESEARCH FINDINGS

The purpose of this study was to examine older adults' perceptions of their physical identity through their engagement in learning about physical activity. Specifically, I examined the role that learning about and learning how to do particular activities played in identity development for older adults, as well as the meanings older adults attached to their engagement in the physical activity. In response to this, the following research question guided the study:

1. How does older adults' participation in physical activities affect their perceptions of aging?
2. What is the nature of learning for older adults who participate in physical activity?
3. How does older adults' engagement in learning about physical activity shape their identity in later life?

Chapter IV begins with an overview of the participants' characteristics. I then continue with background information on the levels of older adults' physical activity and exercise status among the participants. The remainder of this chapter presents descriptions of findings related to the categories and subcategories that emerged from the data analysis: (a) core category, (b) older adults' action/interactional strategies, (c) strategies by age subgroup and underlying conditions, (d) nature of learning, and (e) additional findings regarding strategies and intervening conditions in the global pandemic (COVID-19). I then provide a conceptualization of physical identity development in later life using diagramming as a tool for integrating the categories and presenting the final theory. This chapter concludes with a summary of the major findings.

Participants Overview

This section describes the demographic characteristics, types and levels of physical activities, exercise status or preference, and age subgroups and underlying conditions of the participants. Table 8 provides the profile of each participant. For confidentiality, all participants were referred to by an assigned pseudonym.

General

Fifteen individuals aged 65 and older who are physically active participated in the study. Active older adults were considered those who do at least 150-300 minutes of moderate-intensity physical activity a week or an equivalent amount (75-150 minutes) of vigorous-intensity activity; highly active older adults were considered those who do more than 300 minutes of moderate-intensity physical activity a week or an equivalent amount of vigorous-intensity activity (U.S. Department of Health and Human Services, 2018). All participants' levels of physical activity were active (60%) or highly active (40%). The sample included 73.3% females and 26.7% males. Participants' age ranged from 67 to 89 years (60% were in their eighties, 26.7% were in their seventies, and 13.3% were in their sixties).

Main Activities

The participants engaged in the physical activities of walking ($n=13$), senior exercise programs ($n=9$), gym ($n=4$), self-workout at home ($n=5$), golf ($n=5$), water aerobics ($n=4$), swimming ($n=1$), and cycling ($n=1$). In terms of the participants' exercise status, 73.3% of them maintained an active lifestyle. Their exercise preferences were social exerciser (66.7%) or solitary exerciser (33.3%).

Table 8*Participants' Demographics*

Pseudonym	Gender	Age	Main activity	Levels of physical activity	Exercise status/Preference
Sherry	Female	85	Senior exercise program, gym, walking, water aerobics	Active	Active living, social exerciser
Karolyn	Female	83	Self-workout at home, Senior exercise program, walking	Active	Active living, social exerciser
Meghan	Female	77	Senior exercise program, self-workout at home, walking	Active	Active living, social exerciser
Bonnie	Female	81	Senior exercise program, walking, water aerobics	Highly active	Active living, social exerciser
Sean	Male	69	Golf, gym	Highly active	Solitary exerciser (but engaged in social exercise groups)
Nicole	Female	84	Senior exercise program, water aerobics, walking	Active	Active living, social exerciser
Artie	Female	72	Senior exercise program, walking, swimming	Active	Active living, solitary exercise
Tacey	Female	88	Senior exercise program, walking, water aerobics	Active	Active living, social exerciser
Kayla	Female	89	Senior exercise program, walking	Active	Active living, social exerciser
Emilia	Female	83	Senior exercise program, gym	Active	Social exerciser
Stanley	Male	76	Golf, walking, self-workout at home	Highly active	Active living, solitary exerciser
Annika	Female	67	Walking, self-workout at home	Highly active	Active living, solitary exerciser
Clifford	Male	84	Golf, gym, walking	Highly active	Social exerciser
Diane	Female	74	Walking, golf, cycling	Active	Solitary exerciser
Elvin	Male	81	Self-workout at home, golf, walking	Highly active	Active living, social exerciser

* Levels of physical activity (U.S. Department of Health and Human Services, 2018): Highly active (more than 300 minutes of moderate-intensity physical activity a week), active (150-300 minutes of moderate-intensity physical activity a week), and insufficiently active (some moderate-or vigorous-intensity physical activity but less than 150).

* Exercise status (Greenlees et al., 2011): Nonexerciser, sociable nonexerciser, active living, solitary exerciser, social exerciser, and extreme exerciser.

Age Subgroups and Underlying Conditions

Based on the theoretical sampling, the participants' subgroups (age and underlying conditions) were included in the analysis. One age-based subgroup included participants who were in their sixties and seventies ($n=6$; 40%), and another group included participants who were in their eighties ($n=9$; 60%). In terms of underlying conditions, 11 participants had one or more underlying conditions (73.3%) and four participants had no underlying conditions (26.7%). Table 9 provides information about the participants' two age subgroups and underlying conditions. In the following section, the categories are written in italics.

Table 9

Participants by Age Subgroups and Underlying Conditions

	Age of the 60s to 70s ($n=6$)	Age of the 80s ($n=9$)
With underlying conditions ($n=11$)	72 years, pinched nerve in the back (Artie)	81 years, arthritis, osteoporosis, heart issue, replacement knee (Bonnie)
	74 years, arthritis (Diane)	83 years, scoliosis (Karolyn)
	76 years, heart failure, pacemaker (Stanley)	83 years, vision impairment, heart failure (Emilia)
	77 years, chronic back pain (Meghan)	84 years, bad knee, feet issues, back pain (Nicole)
		85 years, back issue (Sherry)
		88 years, severe back problems, nerve pain (Tacey)
		89 years, heart issue, hearing issue (Kayla)
Without underlying conditions ($n=4$)	67 years (Annika)	84 years (Clifford)
	69 years (Sean)	81 years, occasional hip discomfort (Elvin)

Core Category: Physical Identity Shift in Later Life

This section describes the core category, which refers to “the central phenomenon around which all the other categories are integrated” (Strauss & Corbin, 1990, p. 116). Based on the data, it was evident that the participants went through divergent (i.e., the tendency to seek problem-solving by multiple ideas; Guilford, 1967; Hommel et al., 2011; Michael & Wright, 1989) and convergent (i.e., the tendency to use existing multiple knowledge of life to analyze the given information or solve problems; Guilford, 1967; Runco, 2004; Zhu et al., 2019) processes to fit their aging body or current physical and mental condition.

The substantive theory I derived from the data showed that physical identity shift was caused by *the physical signs of aging* (e.g., less flexibility, slower movement, bruise easily, lower skin elasticity, age spots, feel tired easily, etc.), *pain or distress by chronic disease* (e.g., arthritis, osteoporosis, back pain, scoliosis, knee issue, nerve pain, heart issue, hearing issue, vision impairment), *a higher probability of injury* (e.g., fatigue fraction, strain, injury by physical overexertion), and *life changing event* (e.g., death of a near family member, deteriorating eyesight, hearing loss, and unexpected public health risk). The participants began to notice the discrepancy between what they can and cannot do by the appearance of symptoms that they never worried about when they were younger. To deal with feelings of discrepancy derived from such new experiences, the participants pursued personal strategies (i.e., *determination, self-discipline, deliberation, achievement striving, active experimentation, immersion, routinization, self-cognizance, reconciliation, moderation, adaptation, transcendence, social interaction, and retrospection*) in relationship with the influence of intervening conditions (i.e., facilitators—*physical aspiration, social exerciser, positive physical outcome, dutifulness, competence, empathy, supports, driving mobility, younger subjective age, public self-consciousness,*

resilience, and longingness or inhibitors—emotional distress, age-related stereotype, private self-consciousness, and activity restriction). Physical identity shift resulted from these adjustments, where the participants reached the status of *satisfaction with their own physical identity, ambivalence regarding their physical identity, or transcendental views*.

Older Adults' Action/Interactional Strategies

Following Strauss and Corbin's (1990) paradigm model, particularly the categories of action/interactional strategy stood out as a primary process that supports how older adults develop or maintain their physical identity by engaging in physical activities that are personally satisfying as they age. Strauss and Corbin (1990) emphasized action/interactional strategy among the elements of the paradigm model by stating that "grounded theory is an action/interactional oriented method of theory building" (p. 104). In essence, the process of older adults' physical identity development is supported by involvement in physical activity, which is comprised of two cognitive processes (i.e., divergent and convergent). In other words, participants exhibited a divergent mode of coping strategies by actively seeking new challenges and anticipating that multiple solutions would effectively work for dealing with the issues. Participants also exhibited convergent strategies by knowing how to effectively resolve the issues in which their cumulative personal life experiences and what others have thought informed their decision. However, these two modes of the process were not seen as mutually exclusive but as sometimes operating simultaneously.

Additionally, socio-emotional aspects (i.e., social interaction and retrospection) manifested in both divergent and convergent processes. The divergent process comprised seven categories, and the convergent process consisted of five categories. In the following section, the categories are written in italics and the codes are written in underlined italics. Table 10 provides

three processes of the participants' action/interactional strategies to respond to the core category of physical identity shift in later life.

Table 10

Three Processes of Older Adults' Action/Interactional Strategies

Trait of process	Categories	Definition
Divergent	Determination	Strong decision to continue trying to do something despite the difficulty
	Self-discipline	Ability to begin the exercise-related tasks and carry them through to the goal achievement
	Deliberation	Careful consideration before taking action or situations that occur
	Achievement striving	Attitude of seeking improvement to reach a goal with a lot of effort
	Active experimentation	Process of trying out a new idea or method to find out more effective ways
	Immersion	Engrossment or active involvement in that activity
	Routinization	Practice of regularly doing activities that are done as a normal part of daily life
Convergent	Self-cognizance	Realization of one's own physical and mental conditions and abilities
	Reconciliation	Process of finding a way between seemingly opposite things in which both can be successful
	Moderation	Acting in a way that is not extreme
	Adaptation	Act of changing personal behaviors or beliefs to adapt to a new situation or purpose
	Transcendence	Insight or way of behaving that lie beyond the practical experience of ordinary people, and cannot be understood by ordinary reasoning
Socioemotional (Throughout the process)	Social interaction	Belief based on the notion that meanings are shared and constructed between people
	Retrospection	Act of recalling things in the past, especially in one's personal experience about physical activities

Divergent Process

Older adults' shift in self-perception and physical identity was supported by two cognitive processes. One major cognitive process for how the participants responded to the phenomenon/core category of *physical identity shift in later life* could be characterized by a divergent process, which is shown in the inner circle of Figure 4. The divergent process was where the participants tended to be oriented toward individuality and seek problem-solving by exploring multiple ideas. The divergent process encompasses the following categories of (1) *determination*, (2) *self-discipline*, (3) *deliberation*, (4) *achievement striving*, (5) *active experimentation*, (6) *immersion*, and (7) *routinization* (see the inner circle of Figure 4).

Determination

The first divergent phase begins with the participants' dedicated decision to continue what they have been doing despite the age-related physical or mental changes, which is identified as the category of *determination*. Eleven participants expressed a dedication to *not letting their body decline or feeling down*. The following quotations emphasize the older adults' strong intention to *not to let their body decline* by continuing exercise:

- “I just don't dwell on being older, I do the best I can with the exercises. So far so good” (Bonnie);
- “I'm accepting, and I will keep fighting to keep my mobility in my strength. I'm not about to give that up when that happens you know” (Diane).

When asked to describe the participants' feelings about their body functioning, most of the participants acknowledged the physical changes but expressed their decisive attitude of *not letting their feeling down*. One participant said, “Sometimes I can't do those leg lifts ... But I'm not gonna let it frustrate me. I just have to say, I do the best I can” (Kayla).

Eight participants agreed that *personal determination or motivation outweighs the encouragement of others*. One participant noted the importance of self-motivation and thus she does not preach to others who remain less physically active to do exercise.

You can suggest it. “Let’s do them together,” but if they’re not motivated, there’s nothing you could do about it. You know, give it a try. And when it’s me I just really get annoyed with myself and there’s no point getting annoyed with a friend if they’re not motivated, you’re not gonna motivate them. (Bonnie)

One participant described that self-determination better motivates her to keep exercising rather than external motivation.

Some people find that they have to do it in groups to stay motivated or feel like somebody is overseeing what it is that they’re doing ... It would be the same thing that people saying they want to go to the gym. People think “well I paid for it. I’m gonna go I’m gonna do it [exercise].” But I’m not necessarily. (Annika)

Self-discipline

The second phase of the divergent process in which the participants have the ability to begin the exercise-related tasks and carry them through to their goal achievement could be identified as a category of *self-discipline*. Thirteen participants showed self-disciplined attitudes in their exercise practice by *applying a rigorous standard to self*. One of the participants mentioned how he pushed himself to maintain a certain level of flexibility.

I have to really force myself to remain flexible and be active ... I’m critical of my body and I’m not overly, but I’m critical in my body because I say I lose the flexibility that upsets me, I need to be flexible. (Stanley)

Another participant, who regularly played golf, emphasized how he tried to play sports with effective and accurate movements.

I want to be as well as I can. I don't want to go out and make mistakes. It's not the winning of beating, beating somebody else. It's me going out and operating as efficiently as I'm capable of doing. (Elvin)

When asked to describe their own body image, the participants mentioned their strict standard for their body image and how to practice them.

I tell you what, I try to keep my body in good shape. They [meal service] feed us too much here, and I tell them to put small portions because I don't want to get fat because I know getting fat is not good for you. I weigh 125 pounds and I'm five foot five and a half. And I'm a better shape than 90 percent of the people here, I would say, I'm not fat and I'm not skinny. (Kayla)

Twelve participants described how they *begin tasks and carry them through to completion*. The following two quotations depict the participants' rigorous self-standard and practice:

- “You should continue to do what you can do and don't say ‘well I'm going to stay in bed.’ Don't say that. Get up and do something. And I have that outlook” (Sherry);
- “I improved by going, getting up going ever more than ever, three days a week to the program and I get there on time. And I'm anxious to get there” (Kayla).

The participants emphasized their experience of the virtuous cycle between physical or psychological exercise effects and enhanced exercise motivation.

I do find that if you exercise, you feel better, you're more active, you want to be active during the day and you want to get up the next morning. Otherwise, I think, non-exercise,

sometimes makes you feel depressed. And if you feel a little down, get out, do a walk.

(Annika)

Some can't do the physical things. But I guess ... sit, soak and sour seems to fit if you just sit and dwell on the negative things, you get very negative. But if you get out, like on days like this ... you know, you feel better. (Meghan)

Ten participants mentioned that they *tried to keep in better shape* by focusing on a toned body, straight posture, and weight loss. The following quotations depict these three foci. Annika said, "I guess that's probably a lot of it is you, you want to be toned, and you want to feel like that, that you're ... not jiggle." Another participant noted her consciousness of posture modification.

Absolutely. I made a point of carrying myself ... standing upward, instead of slop it over. When I'm walking, shoulders up. And I like to present myself as neatly as I can. And the activities I've done that ... because of the activity, has allowed me to do that [straight posture] I think. (Bonnie)

Kayla mentioned her strict weight management.

Well, the other big criticism I have right now, my body is, my tummy. I don't have a large tummy, but my tummy is getting a little bit larger than I like. And I know that there's fat there and try to watch the amount of food that I put in my mouth.

Deliberation

The third divergent phase, the category of *deliberation*, could be characterized as the participants' careful consideration before taking action or situations that occur. Eight participants showed their attitude of *being cautious about getting out of bounds*. The following two quotes describe their attentiveness to falls when exercising:

- “I’ve slowed down some. I can’t run. And I have to be careful walking because my balance is not as good as I would like. And I’m trying not to fall” (Tacey);
- “I do try to wear that little thing around my neck if I happen to slip or fall” (Kayla).

The participants mentioned that they were aware of their physical limitations or weak points when exercising and showed attentiveness. Sherry said, “I watch what I’m doing. And if I feel as though I’m going to get out of bounds, I don’t do that” (Sherry). One of the participants paid heed to her skin conditions.

My skin is very thin now, as happens with the elderly. And I bleed very easily I’m on a blood thinner so then I scrape my skin depletes. I have very bad varicose veins in my legs. And if I’m not careful, and bump something against something, I bruise a vessel, and I bleed, and I mean not bleed that pour blood. So I have to be very careful. (Emilia)

Annika mentioned that she paid attention not to exceed her limitation of flexibility because the long recovery period from an injury would be detrimental to her overall physical condition.

You can’t twist your body the wrong way, you’ve got to come to watch what you do and if you’re not used to it. So, I just don’t want to get to the point that I’m twisting something and you don’t want to be laid up for a year trying to recover. (Annika)

Four participants who maintain a high level of physical activeness acknowledged their tendency to overexercise and tried *refraining from overexercising*. One of the participants described his injury from a long-distance bike ride that gave him a lesson to pace himself.

Especially if you don’t keep them up and not overdoing it ... sometimes I find myself overdoing it ... And we rode a bike, we went from one community to another, which was 13 miles away, a round trip that was 26 miles ... And so the next day, I didn’t go riding a bike again. It was because and so I got to pace myself a lot, but learn to pace myself

better and again, not doing the type of exercises ... It takes a lot more time to recuperate or recover from those types of events ... do more sensible things that a person of my age should be doing. (Sean)

Another participant also recognized his exercise patterns and tried not to exceed his maximum point of a pulse rate.

I go to the cardiologist about twice a year. Just on evaluation, stress test about every two years. And they have given me, they tell me that they feel as though, because of the stress test, they feel as though that I am all right to exercise, up to a maximum pulse rate of about 130. 130 is about 92 or 94% of my maximum. I don't push that hard because if something happened while I was out on the street, running, I probably wouldn't be able to survive. (Elvin)

As the examples above indicate, the participants were aware of their tendency to overexercising and tried to keep themselves from excessive exercise.

Achievement Striving

The fourth divergent phase in which the participants have an attitude of seeking improvement to reach a goal with a lot of effort can be identified as *achievement striving*. Nine participants mentioned setting their exercise-related goals. The following quotes depict their established goals in their exercise routine. Emilia stated:

On Saturday I do 30 minutes on ... um what you call it, seated elliptical. So it's legs and arms. I do 30 minutes on that. And then I do about 10 minutes on each of three or four of the resistance machines. So, a total of about an hour.

The participants quantified whether they completed the tasks and tried to carry the daily goal through. Kayla noted:

Six times today. I walked down for breakfast for lunch. And then I go watch maybe to pick up the mail and sure enough, that's the end and I have to go back a second time so that you know that the day went down two or three times because I came back after my breakfast before you had brought my paper in. So, I went back before about 9:15 to get the paper I came back to my room filled it out and took it back, so that you would have it, six times.

Elvin also described the sequence of self-workout that he was doing every day at home.

I incorporate push-ups, about I do push-ups and sets of 30 at a time. And I do two or three sets on Monday, Wednesday, and Friday mornings, in most cases I do three sets.

And then I do some core exercises to try to keep my core integrity fairly strong. So those are really the things I do.

The other participants mentioned their gradual shift of exercise purpose with age to better fit their current physical condition. Annika said, "There are certain goals as to the endurance and the tone. And then I got our goal of being able to lose some weight with that too so within that round."

Thirteen participants described that they have been *plodding away at their physical activity*. The participants mentioned their steady attitude toward what they were currently doing:

- "It's better to just keep it going than take that time off and then starting all over again. So it's just, it's just being consistent with it" (Sean);
- "I will keep walking till you know if I'm able" (Artie).

The participants emphasized a steady commitment to what they were currently doing since the improvement of physical conditions or the ability to perform certain skills would take some time.

Megan described that she was aware of correcting her posture as she considered trivial habits

would accumulate. She said, “Sit up straight. Shoulders back, which you just noticed I don’t do it all the time you know, just little things like that. Because little things add up. So you know straight back, be aware of my posture” (Meghan). Karolyn also described how she gradually improved her exercise skills in a senior fitness class. She stated:

Some of the exercises are hard to do the first time she [instructor] has some as a supplement. So we sort of slow down for a while and then if you keep doing them then you can improve and be able to do. (Karolyn)

Annika also emphasized the importance of the process of doing exercise rather than expecting dramatic results instantly. She noted:

It takes a while that everybody wants everything to happen immediately. It’s like we resolve everything in a 30-minute or 60-minute show on TV. So we think, okay, if I do this for two days I’m going to drop two dress sizes. No, you’re not. (Annika)

One of the participants described his consistent morning practice with a slow, steady improvement.

When I get up the floor in the middle of the morning or the morning early to do my push-ups. I never sure whether I’m going to do 30. And then another set of 30 and another set of push-ups being more challenging than most of the exercise. So when I do those, I am never sure that I’m going to be able to complete all of them. But I want to do as many as I can, up to 30. (Elvin)

As the examples above indicate, the participants devoted their time and efforts to gradual fitness or health improvement.

Seven participants mentioned that they *created challenges for self-improvement* when doing their physical activity. One participant started to use aqua aerobic gloves to increase

resistance in the aquatic environment. Bonnie said, “I’ve just bought a pair of whipped gloves to wear of water aerobics for the resistance. [I will] see how that does well.” Another participant who plays golf mentioned his progressive weight increase in a muscle-strengthening workout to improve clubhead speed. Sean said, “Exercise, lifting weights or strengthening with the golf swing taking a 10-pound weight swing with it like a golf club just to hopefully improve my clubhead speed.” One participant who regularly goes to a senior fitness class mentioned her small challenge in every class to enhance her balance ability. Emilia stated:

I want to do as much of my balance for instance when she says take both hands off the chair. I can't do that without staggering. When she says Hold on, if you have balance issues, but I try, I want to get to a place where I can improve my balance. So I try. I'm always, even the things I can't do. I try to do it.

Eight participants mentioned their achievement-striving attitude by *reaching a higher or ambitious goal* in terms of their physical activity. The participants set the exercise-related goals and tried to achieve them:

- “I’m always trying to reach a higher goal. I’m sort of ... I’m an achiever” (Emilia);
- “It’s just that I’m always looking for things that can make it work a little bit better” (Stanley).

The following two quotations depict their ambition to get a good score in competitive sports:

- “I tried to get my scores and things up to where I can qualify to go to them and then compete actually compete in the national” (Sean);
- “I wouldn’t say I just maintain my level that I’ve had, I’ve been a top amateur golfer for many, many years in competing in the best in the country. So I’ve kept up that way” (Clifford).

Six participants showed their *intention of resuming what they used to do*. One participant who used to ride a bike as a physical activity intended to engage in bike training again.

It's called the saddle the Portland bike ride when I lived in Seattle, and that never came to fruition, but I mean, I was seriously considering training to do that. Again, that's a three-day 150-mile bike ride, but you're on a bike. (Diane)

The following quotations depict their intention to regain some activities that they used to engage in when they were younger. Annika said, "I know it's been a long time since I've exercised, and I want to get back to it because I used, I was an avid exerciser, years ago, I used to go to the gym." Stanley stated:

I have thought from time to time just because I know the part of the body that is used that maybe be interesting, haven't done it for years to go down here to Grand Junction and bowl. That's exercise, and it stretches you and I just haven't done it and so long and haven't had really the time to do it.

Five participants described that they were *pushing beyond the threshold to feel exhilaration* when exercising. The following quotations depict their exhilarating feeling from physical exertion:

- "You get to the point that you hit a wall and you know that and then the sweat breaks" (Annika);
- "If I didn't get my pulse up to 85%, I really want more work out. And most of the time now, somewhere around 75% to 80% about the theoretical portion" (Elvin).

One of the participants emphasized her experience of spirituality when she reached the maximum limit. Emilia stated:

It feels good. You know it's some spiritual levels that you elevated. There's something, you get to that point where I can't do one more minute and then you do that one more minute, and suddenly, it's like something breaks loose and you feel so good when you're finished. And that's what would keep me going.

Overall, as the examples of achievement striving above indicate, the participants sought to reach their exercise or health goals and made practical efforts to achieve the goals.

Active Experimentation

The fifth divergent phase, *active experimentation*, can be characterized as the process of trying out a new idea or method to find out more effective ways. Eight participants described their efforts of learning or understanding the physiological and psychological mechanisms. One of the participants explained how he tried to apply his understanding of motor mechanics into golf practice.

It works for almost like a spring or a tension, and it's more like when you take your golf swing, you go back here, you come through. This is you take it back here, and you caulk here. And then when you swing through you, and it gives it a lot more speed, a lot more power. (Sean)

Another participant emphasized that her understanding of the physiological effect of each part of the body could maximize the overall effectiveness of her exercise.

I can get this benefit if I'm swinging my arms a certain way while I'm walking that I'm getting arm exercises the same time I'm getting my ... you know that type of thing. So you're kind of, it's a synergism of being able to do multiple things at the same time, and condense it down so you're not doing like three hours of exercise when you could do a bunch of stuff and do it all in one hour instead of the same benefit. (Annika)

The following quote depicts the participant's consciousness seeking fundamental knowledge about their physical activities. Stanley said, "I'm known as the why guy all over the country because I never teach tricks and rules and shortcuts everything, 'why does it work, where does it come from.'"

Fourteen participants mentioned that they have been *establishing an exercise-prone environment*. One of the participants scheduled his workout at a gym in the early morning not to be disturbed by other exercisers. Sean stated:

Just trying to schedule it out and plan it out ahead of time. It's one and that's why I kind of get up at five in the morning at 5:30 and have that kind of time to go to the gym when it's quiet, not crowded. So we can kind of move at your own pace.

Some of the participants were equipped with exercise machines at home. Annika said, "If the weather's too hot or too cold or rainy or whatever I do have a backup." The participants emphasized creating the environment to better motivate themselves when exercising. Nicole said, "I'm going to take music with me if I go down today and that always helps." The other participant established her own exercise time not to be distributed by other people. Emilia said, "I talk to them about my exercise class, people who call me I say don't call between nine and 10."

Eleven participants mentioned their experiences of *initiating exercise*. The following quotations describe their morning exercise routine at home. Elvin stated:

I come in and I will get a cup of coffee and read the paper. Then I go into the bedroom. I do my exercises on the floor of the bedroom. I started with a set of push-ups. Then I do a couple of exercises to loosen my lower body, my hips. Then I do about nine minutes of plank. And I do another stretching exercise. I do another 30 push-ups. And then I do

another stretch. And then I do another stretch and then I do the third set of push-ups. It takes about 35 minutes to do that, on a continual basis.

The other participants mentioned their initiation of group activity with their peers. Sean said, “I actually organized and ran an old man Basketball League, that type of thing.” Nicole said, “Like Saturday, sometimes I have a whole group of people that call to see if they want to go to the pool.” The participant added her personal warm-up exercise before taking the group fitness class.

Sherry stated:

When I got on the bicycle over at the exercise room. I thought I’m gonna do it, and 15 minutes I think, well that’s loosening up my legs. And it gets me ready for a class where we can go in, we stretch our legs.

Eight participants mentioned their experiences when *comparing exercise ability or body image to others or younger self*. The following quotations depict the participants’ comparison with other older people or peers:

- “A little bit I can tell whether I can do better than they do or I could do worse. yeah, I compare” (Karolyn);
- “Sometimes I noticed. I noticed I’m able to do it better than some people. The age of the people that live here some of them don’t do them as well” (Tacey);
- “Most of my friends that are my age back home, they don’t do any exercise, because they’re just not able to they are not in my shape” (Kayla);
- “I don’t have the constraints and the restrictions my next-door neighbor has, where he has a hard time even getting up out of a chair” (Stanley).

Not only did they compare with other older people, but the participants also expressed their feelings comparing younger people or their younger self. Kayla said, “I’m finding now

sometimes I can't do those leg lifts like some of the others that are probably 10 years younger than I am." Emilia said, "I look back and I think. Gosh if I was that size now, I'd be so happy."

As the example above indicate, the participants appreciated their decent physical ability as compared with other older people who lost exercise ability or are not in good shape.

Nine participants mentioned that they adopted suitable exercise or knowledge from varied experts. One of the participants mentioned that she combined varied experts' suggestions on her physical activity. She said, "I do each one came from a different therapist or exercise class or something like that, so I put together exercises that I've learned from a lot of different people" (Karolyn). Another participant believed that physical activity could be more facilitated by an exercise trainer. She said, "Because that trainer can sometimes find just the right machines for you. Just the right activity. And sometimes if you're bored, maybe you're doing the wrong thing. A trainer can help with that" (Emilia). One participant mentioned that he sought expert advice from his son.

I rely on my son a lot because he has a chart in a book that he is journaling, his progress and going from one part of the body to the next and so I'm trying to stick with him and his ideas of what different weightlifting exercises we should be doing when and how.
(Sean)

Another participant emphasized the importance of accepting suggestions from a health professional. He said, "They see problems with cancer and the problems with heart circulation and respiratory problems on a very analytical basis. And they advised me to keep doing what I was doing, and I repeated their advice" (Elvin). Overall, as the examples of active experimentation above indicate, the participants went through their own process of trying out new ideas and means for more effectively performing skills or keeping in better shape.

Immersion

The sixth divergent phase, *immersion*, could be defined as a state of engrossment or active involvement in that activity. Twelve participants emphasized that they enjoyed the exercise itself. The following quotations depict their sense of enjoyment when doing the physical activity:

- “I am sure it was enjoyable. Then it goes fast” (Karolyn);
- “I use it [playing golf] as a stress breaker and it’s a form of relaxation and enjoying just being outdoors” (Sean);
- It made it kind of, I don’t know how to describe it. It made endorphins, you know, made me feel real and good in my mind” (Tacey).

Another participant mentioned her enjoyment of the activity and the environment at the time of playing. Kayla stated:

I enjoyed my tennis. It was just, I was just like watching the sun go up, come up, and it was a beautiful morning and everything was going my way. The wind was still and the sun was up and I was breathing well enjoy it.

When asked to describe how the participants see themselves participating in their physical activity, ten participants mentioned their personalities as focusing on what they are doing in exercise. One participant highlighted a great deal of concentration when exercising.

I’m definitely into it. I would not be the kind of person, for example, that would stand on a treadmill, knowing that I’m going to run three or four miles and have air pods in my ears. I’m not interested in listening to music when I’m exercising. I have a focus here; I’m trying to do something. (Stanley)

The following quotation depicts the participants' focus on her body to maximize physical benefits from a certain activity that they involved in at the moment. Artie said, "I think about my body. I think in my body. Ah, I think, well, with this exercise I will be better. It would be better. I just keep that on my mind. So, I have to do it." In the following two quotes, the participants mentioned that they intentionally put aside the phone when exercising:

- "So I never. I don't know whether my phone with me or not. But I didn't and I certainly wouldn't talk on the phone to anybody while I was exercising, walking" (Emilia);
- "I really think about a lot of things, not a telephone ringing or television on, so I can concentrate on those things" (Elvin).

Three male participants who maintain a highly active level of physical activity described their *feeling of excitement or intellectual satisfaction* when participating in competitive sports. Stanley described his intellectual satisfaction when he practiced some techniques in a competitive sports game.

I'm always looking for techniques and strategies where the ball would come across, hit the side of, my side of the table and drop and I would stroke it from under the table so he couldn't see what spin I was putting it on. You know, that kind of thing just excites me. But I didn't do it for the exercise. I did for the enjoyment and for the intellectual satisfaction that I was figuring out how to play the game. (Stanley)

The following two quotations illustrated the participants' satisfaction from participating in a competitive sports game that motivated them to continue practicing for a long time. Sean said, "Some people get stressed out playing golf, it's reverse for me, where I enjoy just chipping and putting, I can do it for hours at a time." Clifford also mentioned:

Well, I just loved the game. And that's why. And it worked out well as an activity during my working career as a CPA and always belong to a country club. I belong to country clubs and play in the evenings, a couple of evenings, and on the weekends, fits in well.

Nine participants mentioned their experience when *fully immersed in the process of the activity*. The following quotations illustrated the participants' experience of a flow state in which they are fully involved and enjoyed in the process of physical activity losing track of time:

- "It's like we're in a class with Katie [instructor], we're working out so not having to look up the clock. And I can't believe it's over. What a fast!" (Bonnie);
- "Sometimes I don't even know what I can do like when I went for that walk, it was three miles. I, I would never think I could make it that far" (Nicole).

One of the participants expressed her feeling of concentration about the movement that she performed at the moment. Emilia stated:

I don't know that I've ever been bored. um, you know some people always have to be watching television or listening to music. I just sit there and I do a lot of thinking even some praying while I'm exercising. And so, I don't ever become bored.

Diane described her experience of bicycle riding that gave her a transformation in her sense of place.

I had a bicycle when we first moved here, and I took off on it one time. And the next thing I knew I was in a cow pasture practically. So it took me a while to figure out how to get back home. But I got back home. I can just get on the bike and just ride. (Diane)

Overall, as the examples of immersion above indicate, the participants described a certain state or feelings when they were engrossed in or actively involved in their physical activities.

Routinization

The seventh divergent phase, the category of *routinization*, could be characterized as a practice of regularly doing activities that are done as a normal part of daily life. All 15 participants mentioned that they kept exercise in a routine. The following quotations describe the participants' exercise habits that took up a large part of their daily life:

- “It’s a habit. It’s learning a habit and doing it. And if you can do that. You can do almost everything” (Sherry);
- “Sometimes I can go through an exercise and then think ‘did I do that or not’. I’m thinking of something else. Sometimes I do an exercise twice just to be sure” (Karolyn);
- “Three days a week Monday, Wednesday, and Friday. I go to nine o’clock for the class” (Emilia);
- “As I’m an avid golfer and that’s three days a week I’m playing for four or five hours a day at the golf course” (Clifford).

One participant emphasized the importance of maintaining a routine every day. Stanley stated:

If you can ever routine and you depend on that every day, then it is easier to fulfill that because it’s checking it off the list so to speak and after that you can do whatever you want to do.

Another participant mentioned the benefit of establishing an exercise routine. Annika said, “A lot of your physical activity is a routine that you do mindlessly, you don’t even think about what it is that you’re doing; it just comes naturally.”

Ten participants mentioned their habits of doing easy exercises or posture correction throughout the day. One participant mentioned that she intentionally created a challenge in her daily activity to strengthen muscles. Bonnie said, “When I get up from a chair I don’t hold on to

the side. You know I really get up without these [arm rest].” The participant noted that she increased her daily activity level by walking hallways and taking the stairs. One of the participants described how he practices posture correction in daily life. Stanley stated:

Even to the point where every day, maybe twice or three times, I actually require myself to lie on my back flat on my back in a carpeted area with my head all the way to the floor. The reason I’ve done become almost obsessive about that is because I see the way older people sometimes begin to walk with their heads down in there.

Another participant emphasized that she increased the amount of daily activity at home. Diane stated:

I’m not one for sitting still. So as I tell my husband “okay on I’m doing my next activity I’m going from the office to the bedroom.” Walk. Sometimes I’d actually have fun and run around that ... do my loops I’m saying I’m doing my exercise all around the kitchen counter.

Eleven participants mentioned that they *kept an active lifestyle* beyond the levels of exercise. The activities that the participants engaged in beyond their exercise were volunteer work, travel, housework, or going outside:

- “That’s why I volunteer at the inpatient hospice, but not only because I’m glad I can do it, but I can help out and do things” (Bonnie);
- “My husband and I travel a lot, so we just that... we went on a cruise recently” (Karolyn);
- “I still do my own cleaning in my apartment. And I do my own laundry, I do everything” (Tacey).

The following quotations highlighted their increased activities by going outside:

- “I want to do something different than being inside of this room. I want to, I need to go out and it’s a good way to go out” (Artie);
- “I want to be outside and moving around. And if I can’t, then I’d make do in the garage” (Stanley);
- “I go out about six or 6:15, pick up their paper and put it on the front porch and I pick up my paper, and I pick up my other next-door neighbor’s paper” (Elvin).

As the examples of routinization above indicate, all the participants made their practice of exercise everyday routine in which they acknowledged the importance of following the routine. Overall, as the examples regarding the divergent process describe, the participants tended to explore and apply multiple new ideas and methods into their practice for improving fitness and health.

Convergent Process

The other major cognitive process participants employed to deal with the core category of *physical identity shift in later life* is seen to be a convergent process, which is shown in the outer circle of Figure 4. In the convergent process, the participants found commonalities based on multiple pragmatic knowledge of life to resolve issues they were confronted with. The convergent process includes the categories of (1) *self-cognizance*, (2) *reconciliation*, (3) *moderation*, (4) *adaptation*, and (5) *transcendence* (see the outer circle of Figure 4).

Self-cognizance

The first convergent phase begins with the realization of one’s own physical and mental conditions and abilities, which is identified as the category of *self-cognizance*. Ten participants emphasized self-cognizance by *analyzing self in terms of their exercise/body* as they get older. Meghan recognized the physical signs and analyzed the ways to respond to the physical changes.

But sometimes I have to realize that I have my own limitations physically. And I have to honor those, or suffer the consequences. And depending on how much I've had to suffer the consequences and how much it hurt, I either listen or don't. (Meghan)

The following quotation depicts the participant's attentiveness to her own physical signs and tried to figure out their physical conditions. Annika stated:

I'm trying to realize that what my age is now how many years I've been sedentary and down to get back to it I listened to. I don't have a heart attack on the treadmill because I was listening to the fact that my heart rate was sky-high.

Fourteen participants expressed their efforts on *being aware of the cause of pain or body mechanism* while doing or after their physical activity. Meghan delineated that she was cognizant of the cause and the exact spot of her back pain.

I have chronic back pain. And in fact, I just got injections yesterday. Because under my shoulder blades, so like injections around it that appeared. I've seen the images and MRIs and x-rays, and I see where my back is aging. And when I ask what you know what caused it, just natural aging is the answer again. (Meghan)

Karolyn mentioned how she differentiated muscular soreness and sharp pain.

If it's serious ... you can tell whether it's an ache or whether you really hurt badly and need some help. There's a difference ... if you have a really sharp, sharp pain someplace, and it stays there then for sure you need to get help if it's a sharp pain briefly and doesn't happen again. Then you're okay (Karolyn).

Ten participants emphasized the importance of understanding their physical limitations by *being cognizant of their body's threshold*. Nicole mentioned how her low pain threshold influenced her leg exercise.

I do what I can. I have a bad knee, and. But I do as much as I can. And I just work through it. I've got some other issues with my feet, but I kind of, I have a low pain threshold, so I just work through.

The following two quotations describe the extent to which they could exert the exercise:

- “not doing belly flops or up and down or what to call burpees and that type on hard surfaces. And that but do more sensible things that a person of my age should be doing” (Sean);
- “I do what I think I'm capable of doing at my age and what I know what I shouldn't be doing and try to stay within my limits” (Kayla).

Participants enumerated things that they *were not able to do as they used to*. One participant, who has played golf from his youth, said, “I felt that I was not, hitting the golf ball, as far as I, I have in the past are. When I'm playing softball throwing the ball as far as I could throw it” (Sean). The following quotation depicts the moment of realization of the participant's physical changes as they get older. Annika said, “You try to get as close as you can with what that isn't. But you realize that that was something you could do in your 20s and 30s and you can't do that in your 50s and 60s.”

Reconciliation

The second phase of the convergent process in which the participants find ways between seemingly opposite things in which they could be successful were identified as a *reconciliation*. When asked to describe their current physical activity and future intention, 11 participants described their intention to *maintain current exercise without challenges or a new exercise*. The following quotations depict their intention not to expand to a new type of exercise:

- “No, like I said, I’ve been doing it. I’ve been exercising for years. So it’s not just in some ... that I do this. So it’s pretty much the same exercise” (Tacey);
- “I tend to be more repetitive. I stick with what I know” (Emilia);
- “I really haven't thought about any new things. I’ve been doing the same exercise” (Elvin).

Eight participants mentioned how they *compromise between the ideal or younger and their present self*. Elvin highlighted his strategy to alter the type of physical activities that require less physical energy and strength than his younger adulthood.

After for the last 20 some odd years, it has not been, I have not played a high energy sport like handball or racquetball, I play golf, and the golf does not stretch here like physically like the handball or racquetball. I had running training for a marathon about 25 years ago. But, golf does not put you to that kind of physical strength. (Elvin)

Stanley described how his exercise focus has been shifted from strength and speed to endurance and flexibility as he ages.

Now, it’s a matter of, as I said, it’s a matter of endurance. It’s not a matter of heavy repetition for strengthening purposes, it’s more just keeping fit, keeping the circulation going and continue to be flexible. So, I don’t work out with the intensity that I used to work at. I work with more longevity in mind. How long can I keep this up? So instead of doing it, intensely for 30 seconds. I might do it routinely for two minutes just to maintain. Just to make it for me, it’s perfect. (Stanley)

Eleven participants agreed that they valued more how their body works properly than how their body looks. The following quotations depict this code of *prioritizing body functioning over appearance*. One participant noted, “I mean it has to do with your health. If your body is in

better shape, if you don't feel good, if you're ill, that's a big thing. You try to stay well so that's why I do it. Stay well" (Tacey). Another participant highlighted the impermanent nature of the human body. Nicole said, "How it looks I mean, things change and I can do is do the best, the fact that I can walk three miles that I can do the exercise classes and all that."

Ten participants mentioned that they do *exercise as a treatment of health issues*. One participant described that she has been doing exercise to treat her pinched nerve and its influence on her leg.

I have a pinched nerve five years ago in my back. [It] was so painful. And my leg, my left leg is kind of, for some reason, it is kind of from my knee down. I don't have a little sensitivity. And that bothers me. But, you know, that is the only thing I feel right now for my age. But that's why I'm doing exercise. (Artie)

Kayla emphasized that she maintained an active living style to benefit her heart.

When my husband was living, we both had heart problems and then we tried to walk at least three miles a day, we were about a quarter of a mile from the highway from our home, and we walked out about six times. And then when he passed away, a lot of that went out, but I did have to walk every morning down and get my paper ... I've cleaned up my house and I had a quite large house. And a lot of yard work to do. (Kayla)

Five participants acknowledged the modest effect of exercise in older adulthood as *exercising for physical maintenance or maintaining independence*. One participant considered the purpose of the exercise in later life as an enhancement of independence with low intensity. Stanley said, "It's not necessarily strength building on my part. It's flexibility, it's being ambulatory, being able to move without a problem to be able to get up from a chair without heavy assistance." The oldest participant mentioned her desire for independent living. Artie said,

“I’m doing exercise, so at least there is no worst. It is, it is not painful, but it’s not completely fine, but I’m doing okay is the only thing I could say that bothers me.”

Moderation

In the third phase of the convergent process, the participants tended to make sure their activities were not too extreme, demonstrating *moderation*. Eight participants described their measured attitude when seeing age-related body changes by *giving themselves permission to not be perfect*. The following two quotations describe that the participants acknowledged human imperfection:

- “But we’ve got to realize that person is not perfect either. None of us are perfect” (Meghan);
- “I don’t necessarily look better than they do... I don’t think everybody needs to try to be perfect, you know, I just don’t think that’s that important” (Tacey).

Diane did not consider discomfort from the chronic disease is a big deal. She said, “It works okay for a 74-year-old lady. It works just fine with arthritis in almost every joint she has” (Diane). Other participants mentioned that they preferred to stick to the current physical activity rather than advancement. One of the participants reminded himself to accept the changes in physical ability as he advanced in age. Sean said, “Just reminding myself, ‘Hey, you’re almost 70 you don’t need to be climbing or trying to climb up a tree or reach over’, you know, dive and catch the ball.”

Ten participants showed an unpretentious attitude toward other older people by *trying not to boast of their exercise ability or preach*. The following quotations depict their modesty:

- “I feel like sometimes if I talk about my activity and my experiences and they’re not able to do that then that is depressing to them, that’s bringing them down” (Stanley);

- “My friends from high school that I’m still close to, they don’t have the advantages that I do. And so I don’t like to say to them, it’s almost like bragging” (Nicole).

Another participant tried not to brag about her exercise ability. She commented:

No, I mean my friends know I exercise, water aerobics but they don’t want to hear about [laughing] because they don’t ... I just say I go to exercise class. I don’t give them any details; they don’t want to hear about it. (Bonnie)

Another male participant who is highly active also stated:

Well, you know, I don’t talk about it a whole lot of things to a peer group. I am not trying to say that I’m better than they are. I just don’t want to talk about I do an X number of push-ups or walking in three and a half miles. So we don’t talk about it a whole lot. (Elvin)

Nine participants agreed on the variety in physical conditions and abilities among people by *acknowledging different fitness levels or body shapes*. The following quote describes how the participant viewed different levels of exercise. Karolyn said, “People can do lots ... Several people can do lots more than I can. But, I’m not envious. I just wanna work at my best.” One participant mentioned that the instructors of their classes also took the differences into consideration of teaching. Meghan said, “They [fitness instructors] are very mindful that everyone can’t do everything.” Annika emphasized that ways of exercise varied by each person’s physical condition.

I don’t think we can help but do a comparison, as to what we’re trying to go, we’re trying to reach and then making sure that it’s realistic, and then not everybody’s gonna have the same path to get there.

Adaptation

The fourth phase of the convergent process, which is a participant's act of changing their personal behaviors or beliefs to make it suitable for a new situation or purpose, could be identified as an *adaptation*. This category can be divided into three subcategories of *assimilation*, *accommodation*, and *integration*.

Assimilation. *Assimilation* can be defined as a process where individuals adjust external factors to circumvent negative feelings when facing an unpleasant situation. When asked to describe how they think about what they look like with age, 11 participants used assimilation by *caring to be looking neat* as they get older. The following quotations depict that the maintenance of physical appearance is important when people age. Meghan stated:

It [what I look like] matters. I would like to say that it doesn't but it does...I stand in the mirror and put on makeup, I try to put on lipstick when I'm going out. But then I forget about it. You know, once I've done it, it's like, this is it for the day. This is what you get [laughing].

Stanley also emphasized that he tried to be dressed up. He stated:

I'm not going to go to a conference just because I'm 76 years old and say well I'm just gonna wear jeans and a polo shirt. No, I'm gonna wear a tie. I'm gonna wear a dress shirt I'm gonna be somebody that they can look at and say that's a professional person and he takes care of himself. Yeah, that that kind of image is important. (Stanley)

The following two quotations describe that the participants took care of their looking because a better appearance enhanced their mood. Tacey stated:

When I go out, I like to fix myself. I put a little makeup on and dress always, dress decent and wear jewelry and all that makes me feel better when I look a little better. I look better

if I fix myself up before going out. I like to go out looking as good as I can. Even though it's not as good as it is, I wish it would be but my appearance makes me feel different if I were I'm looking better than other times.

Annika also noted:

I think it matters because I think if you feel like you look nice, then you feel like you feel good. Because if you've let yourself go and you don't look as nice in your clothes and your clothes don't feel comfortable on you, then it circles back into your overall perception of yourself, and you just don't feel good.

As the examples above indicate, the participants were self-conscious about their physical appearance.

Six participants *positively attributed the changes or things accompanied by those changes*. The participants experienced their age-related physical changes or illness in a way that they tried to remain positive. Meghan stated:

But now you know, everything is sagging. You know, but fortunately, here [senior community] especially, I'm surrounded by people that are in the same situation. Yeah. And if you know we encourage each other and laugh about it. You hear a lot of laughs. Don't you?

Stanley described his experience of how he got used to the pacemaker insertion and became comfortable with it. He stated:

Just like I said with the fainting thing or the passing out thing that I did well, they put a pacemaker in there. Okay, that's fine. I think I really needed it. But, I don't want to ignore the need, because that's gonna happen over time. So, I'm comfortable with that.
(Stanley)

Six participants expressed that they managed their changes in physical ability with age by *accentuating things they still can do*. The following quotations depict their strategy of adjusting how they maintain what they can do at the same time discard what they cannot do anymore:

- “I am trying to ignore that because if you start thinking about a problem, it’s likely to get worse” (Karolyn);
- “Overall, I’m pretty satisfied with my age, to keep going like I am” (Tacey);
- “Just the ability to still do it. And then maintain that strength and that agility and that ability to still walk, bike ride, golf” (Diane);
- “There are a lot of new things I could do at this point” (Bonnie).

Overall, in the assimilation process, the participants attempted to address external factors to protect their present identity in which they more physically adjusted to age-related changes.

Accommodation. Accommodation is defined as a process where individuals adjust their identity to better fit the new situation when facing an unpleasant situation. Twelve participants mentioned their accommodation in which they *acknowledged fluctuation in physical or mental condition*. One participant described the fluctuating conditions at their age to be “sometimers” by stating that, “One thing I’ve learned about aging is that we have what I learned to call ‘sometimers.’ Sometimes we remember things sometimes we don’t” (Meghan).

The following quotation depicts the participant’s acknowledgment of her fluctuating conditions.

Emilia said, “Sometimes I get disgusted with myself. And then other times, I feel blessed ... Sometimes, I feel very old and other times no.”

Other participants emphasized that acknowledging the variations between days when feeling good and bad is important at their age. Sherry stated:

We all have bad days and we had good days. And it's important that we do the good days. And, you know, I understand some people have headaches and you can't do this or that. And, but you just have to keep going. There's a lot of times when my back hurts, but I get up and I go because I feel better after a workout.

Annika also stated:

Sometimes I am grumbling sometimes because I'm not really wanting to do this, but I need to do this and, and how much more time do I have to do this. And then there are other days that it just from beginning to end it just feels good. And so I think it's a matter of understanding that not every day is going to be.

Eleven participants described their accommodation in the face of age-related physical changes by *resigning what can't do anymore*. The following quotations depict their experience of relinquishing high-intensity physical activities:

- “These are things I can't do like bowling. I enjoy bowling, but the thumbs won't work anymore [laughing]” (Bonnie);
- “I did tennis and racquetball back into that, I did that in college and after college. But then kind of gotten away from it” (Sean);

Another participant mentioned that they realized irreversible changes in their overall physical ability and body shape. Another participant also said, “But then you may know that you'll never be the same standard that you had before” (Annika).

Ten participants acknowledged *human mortality and the finitude of life* that comes with age. One participant compared aging to worn equipment. Clifford said, “Getting older and not as strong. Aging is like, wearing out furniture or any equipment. You're wearing out the body, but

that's what comes to mind." One participant described her modified exercise motive as she experienced her physical decline.

I don't expect to live much longer you know how much, 93. But I want it to be as healthy as possible. If I'm going to live for a long time, I want to be healthy. Yeah, I don't want to be living like vegetating ... But I'm also aware that as I get older and if I get to the helpless stage when I need somebody to lift me, I want to be in a physical state where I can be better able to be lifted. (Emilia)

Other participants emphasized that their experiences of watching close people passed away or their own near-death experience gave them a chance of gratitude for being alive. Bonnie said, "I think part of it is that I was so close to dying last May. And this year has been such a blessing to me" (Bonnie). Elvin stated:

I realize when I play golf with my peer group, a couple of years younger than I am that we play together here, and we played golf yesterday together, we talked about how many of our teammates for the football or golf, they're passed away, that they were much better athletes than I was.

Five participants *criticized themselves for what they can't do anymore*. The following quotations depict their awareness of age-related physical changes and self-criticism on the fact that they experienced the changes:

- "Um, the fact that I can't ... I have difficulty getting up from being on the floor, that is a challenge, and yes I'm critical about that because it just, I mean yes it's something that happens to us" (Nicole);
- "It makes me feel disappointed that maybe, to a certain extent I've not given it the attention I have" (Stanley).

One participant regretted that she had not well taken care of her body in her younger years. Emilia said, “I am critical of it, my body. And I’m sorry that I didn’t do anything about it sooner ... I’m critical of myself because I didn’t take care of myself better.” The participants mentioned the changes in physical appearance and body shape as compared to when they were younger. Tacey stated:

I’m critical because I don’t look as I used to. I’ve lost my hair. My hair is not as big. And of course, I have a lot of age spots on my skin, and stuff like that but it’s just I don’t know it’s not that important in the skin of things ... But that still kind of hurt your feelings sometimes that you wish you could look better.

Overall, during the accommodation process, the participants experienced “transient depersonalization” and then reinterpreted and attempted to psychologically adjust to age-related changes. The participants sometimes felt different or detached from the reality of aging bodies or did not feel their age (e.g., “Sometimes I get disgusted with myself”). And then they compromised changes in which they resigned and got accepted ongoing aging effects.

Integration. Integration can be defined as an act or process of uniting segments to a mature and holistic state by becoming closely linked to a new and existing self. Thirteen participants responded to age-related physical changes by *living with them*. The participants took age-related physical changes in stride. Artie said, “I told you my leg. But it’s not too bad. It’s not bad but that is not completely fine.” Emilia also accepted the fact that she was going to blind and was keeping her own way of exercise. She said, “I don’t really have any concerns. My main concern is, I can’t read the dial to see the strength level, you know, resistance level” (Emilia). Diane also stated:

Yeah, I mean it's just I just accept it. There's no point in fighting it, you can't do anything about it. You've got arthritis in your knees, you've got it in your knees and you've got it in your lower back. You got it there. If you had a torn rotator cuff, it's still and you didn't have you know, but just live with it and adapt. (Diane)

The oldest participants expressed how she was living with the fact of getting old. Kayla said, "I don't think of myself is old. I don't think of myself as young, but since I'll be ninety in a little over a month. I think about that occasionally, but I'm ready for it."

Nine participants acknowledged that *aging is a part of life*. The following quotation depicts the participant's accepting feelings of being old and experiencing physical decline. Annika said, "I'm trying to listen to my body as I go." One participant did not make a big deal out of her chronic disease and acknowledged the discomfort from the disease was a part of aging. She stated:

I just ignore them [age-related health concerns]. I hurt [laughing] but I just ignore it. You know, the doctor says, Well, you can take Tylenol for arthritis and it's like, you know, to me it's just part of aging. And I'm okay with it. The weight I'm not okay with [laughing]; the arthritis is okay [laughing]. (Diane)

The following quotations depict that aging is a part of life that humans cannot control. Bonnie said, "I just accepted it's just part of the old growing older sort of sense. I like to say not dwelling on it. Nothing you can do all in the plan." Meghan also described how she had learned the acceptance of aging. She stated:

I'm not critical of it. I realized because I've cared for failure to reverse, I aged. That is just a part of living. And so I'm not critical of it. I don't always, I'm not always happy about it. But I've learned that I need to accept it and adjust.

Nine participants mentioned that they felt *fortunate or grateful for what they have now*.

The following quotations describe the participants' thankful feelings of what they had a better physical ability and body shape than other people at their age:

- “But I have so many players that just really have a lot of problems with back or hips, legs or arms. Fortunately for whatever reason, I haven't had that” (Elvin);
- “I just fortunate I pretty much stay on one weight and are similar. And I can wear the same clothes I have been wearing for a long time. And it's good” (Nicole);
- “Some of them don't move very much. They're sitting in wheelchairs or what have you, so I'm thankful that I'm still doing what I'm doing” (Tacey).

Other participants felt blessed even though they had age-related health issues. Emilia said, “All the things that have happened to me. I still feel blessed.” Kayla said, “I like it. I don't have any. Hearing is that only problem, honey. And I just thank the Lord every day that I'm doing as well as I'm doing at my age.”

Six participants responded to the age-related physical changes by *taking responsibility for their own actions*. The following quotations describe that they actively take care of their body by feeling responsibility:

- “I'm aware that, you know, sometimes it's easy to have excuses. And we're better not to have these excuses because the physical activity is good for me, I know that.” (Emilia);
- “I think I've got a lot more to offer in this world if God lets me live and so I need to take care of my body to make sure that I can do that” (Stanley).

As the examples in the integration process above indicate, the participants were open to trying alternatives and addressed their age-related physical changes by seeking a more mature way.

Overall, the fourth phase of the convergent process highlighted three subcategories of adaptation,

which were *assimilation*, *accommodation*, and *integration* when the participant dealt with aging effects. Throughout the adaptation process, older adults set their physical identity goals, pursued the goals, assimilated behaviors, and accommodated their thoughts to create a balance between their past and present self.

Transcendence

The final phase of the convergent process, which is the participants' insight or way of behaving that lie beyond the practical experience of ordinary people that cannot be understood by ordinary reasoning, could be identified as *transcendence*. Eleven participants emphasized a *sense of humor* or they joked and laughed when they talked about something unpleasant but irresistible. One participant said, "I can get accepted. I recognize it. That doesn't mean I don't fight it but doing but still, you know, being active. And I try to keep a sense of humor" (Meghan). When asked to describe the participants' perception of their body image with age, one participant gave a witty answer.

I wear looser tops [laughing] ... I've had to get rid of some clothes. Yeah, they just don't fit right anymore. They show too many lumps and bumps. And you know, I just adjust. Just realize it's, it is what it is. And I can either accept it, or I can find it and be miserable. And I don't want to do this. Life's too short. (Meghan)

Another participant said, "It's bad [laughing]" (Bonnie), but she had a good laugh. When asked to describe the motivation for participating in the physical activities, one participant expressed aging to be "funny". Stanley commented:

It's really funny at my age. I'm aware that I need to do these things, but I often do them just for an escape to get away from the routine of what I'm doing. I don't play golf

because I'm going to be a professional, I am getting away from the routine. I'm doing something different and relaxing letting my mind free up.

Annika told a joke about aging, "You hear the joke all the time that when you're younger and you drop something, and you pick it up. Now you drop it, you think, do I really want that. Is that worth picking up?" The participant laughed out loud at the question of self-body image and gave a hilarious remark. As the examples above indicate, the participants diluted their pain or unpleasant feelings by cracking a joke.

Six participants mentioned that there was something they did not know at a younger age but realized in later life, which can be called wisdom-related knowledge from their years of life experiences. Elvin advised the younger generation, including me, to make a habit of exercise in adulthood.

I don't know what your age is. But when you by the time you get to be in your 60s, 70s. If you've started to exercise now, you will see a gap between yourself and your peer group that do not have that program. By the time you get to be my age, you will see a major gap in mental attitude, as well as physical capability.

Similarly, another participant described how regular exercise from the younger years influenced the consequences of physical condition in older adulthood. Annika commented:

It's hard to tell people that 20 years ago, when I started doing this, I gave up doing this exercise and I kept thinking, oh it'll be alright. I'll get back to it or, you know, I mean you don't for a number of years and then you all of a sudden you wake up one day say whoa what happened to me.

The above examples emphasize the participants' life-changing experiences or spiritual experiences. Overall, as the examples of the convergent process indicate, the participants tended

to integrate knowledge or insights from their accumulated life experiences for resolving any physical and psychological negativity from aging effects.

Socioemotional Process

The categories of *social interaction* and *retrospection* occurred throughout both divergent and convergent processes of older adults' physical identity development as the participants' socio-emotional aspects.

Social Interaction

The participants' beliefs based on the notion that meanings are shared and constructed between people was characterized as the category of *social interaction*. Thirteen participants had people who they regularly talked with and they valued social interaction. The participants enjoyed social gatherings. Stanley said, "I'm very good friends with the neighbors that surround me." Another participant mentioned he maintained friendships with younger people.

I have a friend that just turned 50 and I said I didn't realize that I am playing golf with and playing basketball with people that are 20 years younger than I am and still hanging, or they're still inviting me to play participate with them. (Sean)

The following quotations depict the participant's belief in the importance of social interaction. Another participant also agreed on the positive effects of building a social relationship with the peer group. Nicole said, "Oh, positive. Yeah, we share little things back and forth." Tacey emphasized the need for social interaction as people get older. She said, "I just enjoy being with the people that I'm exercising with because we still need to socialize as we get older" (Tacey).

Five participants mentioned building camaraderie with other peers in a similar age group. One participant emphasized that she preferred group exercise because she said, "The

camaraderie. Just having other people with me. It's good" (Nicole). Another participant emphasized how to encourage each other in the exercise class. Artie stated:

Well, they are happy. We are happy together. Because, you know, it's kind of the same group we go to the exercise. So when somebody is not there. The next time we say, oh we missed you. But normally, I do not miss my class. But yes, we enjoy being together and I always say, "Great, we are here. Great, we need to move."

Retrospection

The participants' act of recalling things past, especially in their personal experience about physical activities and people with whom they engaged the activities, was characterized to be the category of *retrospection*. The category of retrospections was placed under the socioemotional process because the participants' reminiscence of enjoyable moments about particular activities simultaneously brought about the memories of their family members and friends with whom they enjoyed the activities.

Thirteen participants expressed their feelings of nostalgia by *reminiscing about activities or situations*. The following quotations depict their excited feelings when recalling the enjoyable moment in physical activities. Kayla stated:

I enjoyed my tennis. It was just I was just like watching the sun go up, come up and. And it was a beautiful morning and everything was going my way. The wind was still and the sun was up and I was breathing well enjoy it.

Diane also noted:

I also had a bicycle there [work abroad in Japan]. My Japanese coworkers called it my pink Cadillac [laughing]. And I would either walk to work because it was close enough

that I couldn't take the subway or I would ride my bicycle to work. And there came and called that pink Cadillac.

The other participants explained how they actively engaged in a variety of physical activity when they were younger. Emilia stated:

I would say active when I was young. I played tennis. I ran. I swam. I played field hockey I played lacrosse. Yeah, I had lots of activities ... I always did a lot of walking and hiking I used to do. I used to cycle. When I was, that was my vacation time in Scotland. I would cycle all over Scotland, none of my friends wanted to go with me. So I would go by myself, you could do that, 50, 60 years ago.

Another participant shared his experience of engaging in a variety of sports. Sean stated:

I grew up playing softball from a child all the way up, all the way through. And I played sports in you know, all the way up through high school, and I played four years in college sports. And so that PE physical education was my minor in college.

The following quotation described the participants' lifestyle that made her physically active in their youth.

I was raised on a farm, and I was the second oldest in the family and we didn't have any boys. The boys were younger, so I had to pretty much work off a boy growing up, always been physical, and to help on the farm. And then I always loved gardening. So I always did that as an adult. And that's a good exercise as well. (Tacey)

Nine participants expressed their *wistful feelings because of knowing that they can never regain them*. Knowing that their physical conditions were different from when they were younger gave them a melancholy feeling. The following quotations depict their wistful emotions:

- “I’ve just had to learn, unfortunately sometimes the hard way, what I can and cannot do anymore and that’s it. It ... it stinks” (Meghan);
- “I can’t do all the things I used to do [laughing] ... I missed that. And I’m not going to ever play tennis again. I’m not ever gonna do running or any of that” (Emilia).

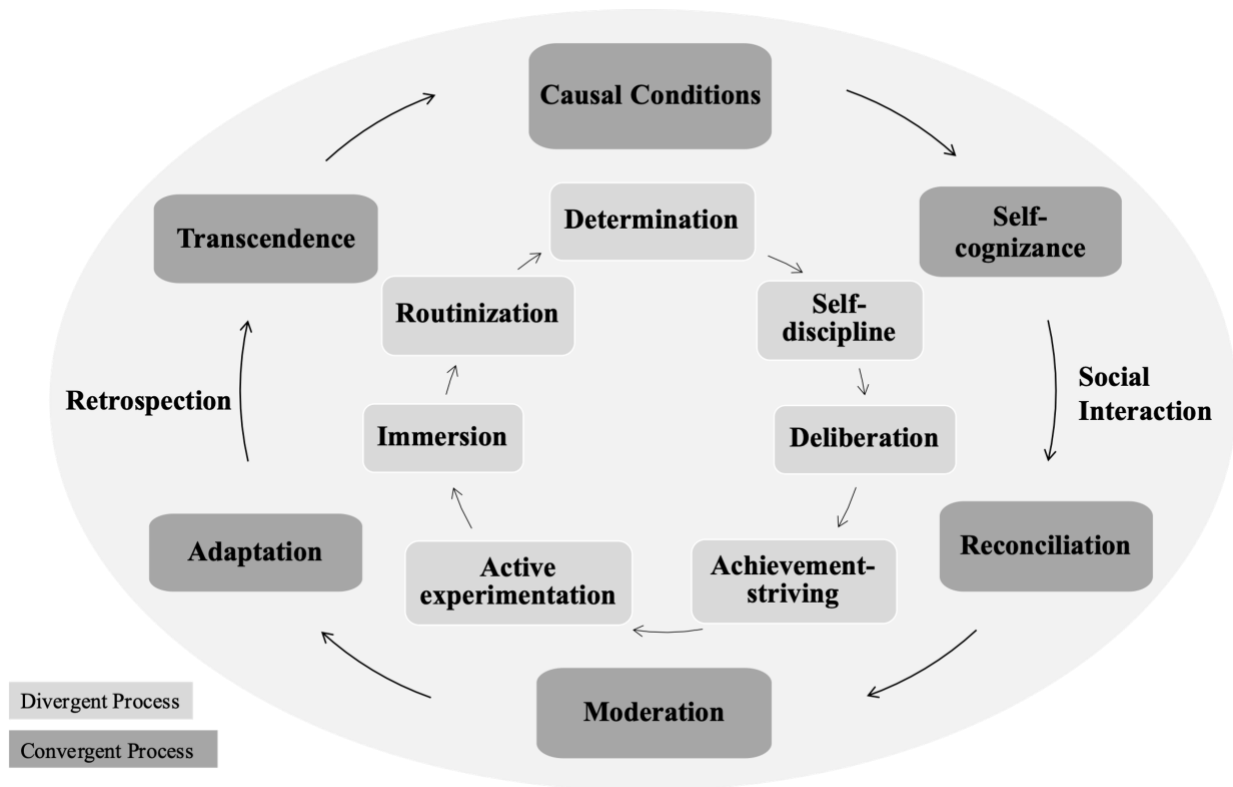
One participant mentioned that even if her physical condition was decent, seeing her friend whose physical functioning had deteriorated recently caused sorrow. Nicole noted:

Well, I have a friend who can’t, but I am not real good about talking to her. She [long sighing] ... She’s actually in a wheelchair, or maybe, maybe she’s out now but yeah she used to be in our class, and she’s quite a bit older but.

As the examples above indicate, the participants rather spoke with a calm voice about the irreversible changes in physical activity. Overall, as the examples of the participants’ socio-emotional aspects of coping strategies related to their physical activity and health described, older adults’ social interaction and retrospection were a part of physical identity development.

Figure 4

Three Processes of Older Adults' Action/Interactional Strategies



Strategies by Age Subgroups and Underlying Conditions

The participants' strategies to respond to the core category could be characterized by their age subgroup and underlying conditions. Six participants who were in their sixties or seventies were classified as a younger group. Nine participants who were in their eighties were classified as an older group. Four participants reported themselves to have no underlying conditions. Eleven participants reported their underlying conditions ranging from single to multiple conditions. In the following section, the categories are written in *italics* and the properties of the categories are written in *underlined italics*. Tables 11 and 12 provide the categories and properties of the age-based subgroups.

Younger Group (Age of the 60s-70s)

The prominent categories among the younger group were *active experimentation* (with the subcategories of *arrangement* and *fundamental-oriented*), *achievement striving*, *self-discipline*, *self-cognizance*, *immersion* (with the subcategory of *individual-oriented*), and *deliberation*. Each of these categories had the properties of (1) *extroversion*, (2) *individual orientation*, (3) *divergent thinking*, (4) *enthusiasm*, and (5) *vitality*.

Extroversion

The categories of *active experimentation* (with the subcategory of *arrangement*) and *achievement striving* both had the property of *extroversion*—a tendency to be outgoing, talkative, and energetic behavior—in their engagement in physical activity. Codes related to the property of *extroversion* were identified 83 times within the younger group, whereas the frequency of the property of *extroversion* in the older group was only 40 times.

One of the participants highlighted that he set his time for physical activity out of a busy schedule. Stanley stated:

Every day, every, every day, and most of the time I feel like I should be doing more. But the business has eaten up my time. We can be in the office all day. So, we're making a concerted effort both my wife and myself making a concerted effort to try to carve out time each day for us to do that. (76 years old)

Meghan mentioned her schedule management of the senior exercise class that she currently is taking.

Oh, I don't really sit down and go well, every now and then I think, "Okay, I need to get up and go" or something like that ... We have a calendar, and I circle the things that I'm interested in. And I check them off. (77 years old)

One participant planned to get back to her long-distance bike riding when the pandemic ends. Diane said, “I just want to get back to having the strength to do the long bike rides, the longer walks. That’s really it. Just to be, to have the strength, regain some strength to be able to do what I do” (74 years old). Another participant mentioned that she tried to act energetically to exhibit a positive image to her grandchildren. Aritie said, “I don’t want to be a grandmother in a wheelchair. That’s just my motivation to be active and to be with my family, active. That’s why I do the exercise” (72 years old).

Individual Orientation

The categories of *self-discipline*, *self-cognizance*, and *immersion* all had the property of *individual orientation* with respect to their physical activity—a tendency to emphasize personal goal and achievement. Codes relating to the property of *individual orientation* appeared 81 times within the younger group whereas codes relating to the property of *individual orientation* in the older group occurred only 44 times.

The following three quotations depict participants’ individual-oriented, self-initiated physical activity:

- “I do golf a lot by myself I exercise because I exercise you know, I’d get up at 5:30 am at the gym before six and there’s not a lot of people there a lot (69 years old, Sean);
- “I call, I work alone. I would like to go with somebody, but the other people, the other ladies, they have another schedule, but I like to do it alone” (72 years old, Artie);
- “I find myself being very comfortable being alone, dealing with the issues myself, the treadmill or the workout I don't need somebody there to encourage me” (76 years old, Stanley).

Some participants in the younger group emphasized that they did not mind engaging in the social type of exercise but preferred solitary exercise.

Divergent Thinking

The category of *active experimentation* (with the subcategory of *fundamental-oriented*) had the property of *divergent thinking*—a thought process distinguished by exploring multiple ideas to generate new possible solutions to problems. The property of *divergent thinking* appeared as a code 39 times within the younger group, whereas the frequency of *divergent thinking* in the older group was only 14 times.

Sean highlighted how he adapted new knowledge and tips for muscle strengthening exercises from his son.

He [my son] has now gotten me, we are working on different sections to give those muscles a chance to recuperate, where I would work on chest and arms over and over again, and what he is teaching me is that when I do that, I tear the muscle down, but I don't give the muscles the chance to recover. (69 years old)

Annika mentioned that she adopted a new game device to build her balance ability and how she has gotten used to the machine.

We actually have a Wii that has exercise stuff. And so you can do some of that on your own on the thing, and so I guess learning that a little bit more and feeling comfortable with the aim to twist your feet a little bit to feel like you have a good balance. (67 years old)

Enthusiasm

The categories of *active experimentation* and *achievement striving* both included the property of *enthusiasm*—great eagerness to be involved in a particular activity that one enjoys or

thinks is important. Codes related to the property of *enthusiasm* appeared 36 times within the younger group, whereas the frequency of *enthusiasm* in the older group was only 11 times.

One participant who plays golf described how he was ardently involved in his golf practice by using the metaphor of a slingshot. Sean stated:

I'm trying to learn different ways to use my existing body instrument to hit it for further and there's a technique ... It's like in the old medieval days you saw this thing that they crank back and put rocks in, it slings it like that. And it works for almost like a spring or a tension and it's more like when you take your golf swing, you go back here, you come through. (69 years old)

The other participant highlighted that she eagerly goes for a walk to relieve her stress. Artie said, "When I'm, when I get angry or upset or something, I go on a walk and I walk, and I walk. And after that, I feel better. They help me all the ways in, mentally, physically, emotionally" (72 years old). The following quote depicts how the participant ardently engaged in her physical activity aided by an electronic fitness device. Annika stated:

And I wear a Fitbit. And when I walk the course within a matter of a few days my heart rate average is lower. Almost, you know, you can tell you can see progress right away, which makes me want to do it more because I'm seeing results of what I'm looking for. (67 years old)

Vitality

The categories of *active experimentation* (with the subcategory of *arrangement*) and *deliberation* both had the property of *vitality*—a state of being strong, active, and enthusiastic. Codes related to the property of *vitality* were identified seven times within the younger group, while the property of *vitality* appeared only two times appeared in the older group.

One participant expressed how he felt energetic when exercising in a gym. Sean said, “I do that for anywhere from 20 to 30 minutes to get my heart going in, break a sweat and then from there, I’d go and do the weights” (69 years old). As the following quotes indicate, the participants in the younger group tended to do exercise that exceeds their physical limitations and recognized overexercise. Stanley noted:

My biggest concern is that I am energetic enough and enthusiastic enough that I find it very, very easy to overdo it. I can go too far. And I feel like I’m not doing enough again, need to do more ... And my wife is constantly reminding me that I’m doing too much I’m trying to do too much. That’s the biggest issue. (76 years old)

The other participant noted that she knows the point when she needs to slow down. Annika said, “I know how much to push right now, and realize that I’m going to see results, I need to just go slow and I’m going to get to the end without just trying to dash out at the very beginning” (67 years old).

Table 11

Categories and Properties of Older Adults (60s-70s)

Property	Definition of property	Associated categories and subcategories
Extroversion	A tendency to be outgoing, talkative, and exhibit energetic behavior	Active experimentation (arrangement), Achievement striving
Individual orientation	A tendency to emphasize one’s personal goals and achievement	Self-discipline, Self-cognizance, Immersion (individual oriented)
Divergent thinking	A thought process distinguished by exploring multiple ideas to generate new possible solutions to problems	Active experimentation (fundamental oriented)
Enthusiasm	Great eagerness to be involved in a particular activity that one enjoys or thinks is important	Active experimentation, Achievement striving
Vitality	A state of being strong, active, and active	Active experimentation (arrangement), Deliberation

As the examples from the 60s to 70s group above indicate, the participants in this age subgroup tended to try new types of exercise and allow for physical self-challenges.

Older Group (Age of the 80s)

The prominent categories among the oldest group were *deliberation*, *immersion* (with the subcategory of *expert-reliant*), *adaption* (with the subcategory of *accommodation*), and *reconciliation*. These categories all had the properties of (1) *precaution*, (2) *reliance on experts*, (3) *convergent thinking*, and (4) *resignation*.

Precaution

The category of *deliberation* had the property of *precaution*—an action that is intended to prevent dangerous or unpleasant situations from happening. Codes related to the property of *precaution* appeared 32 times within the older group, whereas the property of *precaution* appeared in the younger group only seven times.

One participant mentioned her intention to get an antibody test for the coronavirus.

Bonnie stated:

I understand one of the urgent cares is doing antibody tests. I'll tell you if I have antibodies. And I'm going to go there someday and have to do it because it'd be nice to know if you had it or not. I just called them and they'll be doing them Sunday, Monday, Tuesday. In certain hours. (81 years old)

Another participant, who had heart failure, emphasized the need for preventative behaviors in the pandemic. Emilia noted:

I am more careful because I'm in that very dangerous age group. And I do have heart failure, so I'm aware that atrial fibrillation... I'm aware that I'm vulnerable. So I'm very

cautious. When they tell me to stay at home, I stay at home. They want us to wear the mask, I wear a mask. (83 years old)

One participant used the cautious strategy of carrying her cell phones to ask for help when she was out for exercise. Nicole said, “I always bring my cell phone to be safe in case of stumble and fall or something” (84 years old). The participants in the older group highlighted the importance of fall risk prevention. Kayla noted, “Particularly, I go a little slower because I have to be careful that I don’t slip and I don’t fall. Because if I fall, there’s no one to take care of me” (89 years old). Emilia also said, “My skin is very thin now ... And if I’m not careful, and bump something against something, I bruise a vessel, and I bleed, and I mean not bleed that pour blood. So I have to be very careful” (83 years).

Reliance on Experts

The category of *immersion* (with the subcategory of *expert-reliant*) had the property of *reliance on experts*—a tendency to do things and make decisions with advice from experts in terms of physical activity and health. Codes related to the property of *reliance on experts* occurred 27 times within the older group, and but only six times in the younger group.

When asked to describe the participants’ experience of when they were able to improve exercise skills and participate in the activity over a long period of time, most of the participants in the older group referred to taking an exercise class. The following quotations depict the participants’ tendency to rely on the instructor:

- “We follow up with Katie [instructor], the instructor tells us to do” (85 years old, Sherry);
- “I can just count on the classes” (83 years old, Karolyn);
- “Just with the instructor. She demonstrates it and tells us what she wants us to do” (81 years old, Bonnie);

- “I do whatever they [instructors] asked me to do. And whenever it gets better weather and they allow us, we will go to the pool, not that I swim. But I will do the exercise” (89 years old, Kayla).

Tacey described how the instructor guided the participants in the water exercise class.

I think all of it helps me. There’s not one particular thing that helps me more than another. In water exercise ... she [instructor] makes us do different things in the water with all the muscles in our body, on the legs, and we stretch our backs and stuff like that. And then sometimes she tells us to jog in the water. (88 years old)

Emilia mentioned her exercise motivation when she enrolled in the exercise class.

Because I’m one of those people if I paid for something I’m going to get my money worth. And I think sometimes when you have someone there, waiting for you that helps. You know in the morning I might get up and say, “Ah, I don’t really feel like today,” but you go because there’s somebody waiting for you ... a good incentive. (83 years old)

Convergent Thinking

The category of *adaptation* (with the subcategory of *accommodation*) had the property of *convergent thinking*—a thought process of integration based on existing knowledge and experiences to come up with a single, well-established answer. Codes related to the property of *convergent thinking* appeared 25 times within the older group, whereas *convergent thinking* occurred only three times in the younger group.

The following quotations describe that the participants in the older group came to acknowledge their own mortality, which was based on their accumulative experiences and knowledge:

- “I realize when I play golf with my peer group ... we talked about how many of our teammates for the football or golf, they’re passed away, and that they were much better athletes than I was” (81 years old, Elvin);
- “I think, keeps me wanting to be more active. I don’t expect to live much longer. How much, 93? ... If I’m going to live for a long time, I want to be healthy ... don’t want to be living like vegetating” (83 years old, Emilia);
- “I was motivated because I saw what my mother did, and I knew if my mother did it, I could do it. She lived to be 102” (89 years old, Kayla).

The participants described how they eased unpleasant feelings about their own age-related physical decline. The participants in the older group sometimes were self-critical about things they could no longer do. One participant mentioned her hearing. Tacey said, “one thing that upsets me is that my hearing has gotten worse. Like I’ve told you how to wear hearing aids” (88 years old). The following two quotations depict how the participants became used to the physical changes by self-evaluation:

- “I’m critical about that because it just, I mean yes it’s something that happens to us” (84 years old, Nicole);
- “I’m not as healthy as I would like to be” (83 years old, Emilia).

Resignation

The category of *reconciliation* had the property of resignation—acceptance with reluctant feelings while knowing that something cannot be changed. Codes related to the property of resignation were identified 23 times within the older group, while codes related to resignation occurred only four times in the younger group.

When asked to describe their experience of new physical activities in the last few years and their intention to pursue new physical activities, all participants of the older group agreed that they would maintain their same current physical activity without adding challenges or new exercises. The following quotes describe their intention not to explore new exercises:

- “No, I don’t do that very much. I kind of stick to the same things” (85 years old, Sherry);
- “I don’t think it’s necessary [to do new exercise]” (83 years old, Karolyn);
- “There hasn’t been anything I’ve longed to do” (81 years old, Bonnie);
- “I haven’t really added. I wouldn’t” (84 years old, Nicole);
- “I tend to be more repetitive. I stick with what I know” (83 years old, Emilia);
- “Same as I’m doing now, I don’t want to do anything new” (84 years old, Clifford).

Table 12

Categories and Properties of Older Adults (80s)

Property	Definition of property	Associated categories and subcategories
Precaution	An action that is intended to prevent dangerous or unpleasant situations from happening	Deliberation
Reliance on experts	A tendency to do things and make decisions advised by an expert	Immersion (expert reliant)
Convergent thinking	A thought process of integration based on existing knowledge and experiences to come up with a single, well-established answer	Adaptation (accommodation)
Resignation	Acceptance with reluctant feelings, but knowing that something cannot be changed	Reconciliation

As the examples above indicate, the participants in the older group tended to have measured and cautious attitudes about starting new types of exercise. In sum, younger-old and older-old adults

differed in strategies they used to deal with aging effects, revising their priorities in accordance with their changing physical identities.

Participants Without Underlying Conditions

The prominent categories among the participants without underlying conditions were *active experimentation* (with the subcategory of *fundamental oriented*) and *achievement striving*. These categories had the properties of (1) *enthusiasm*, (2) *divergent thinking*, and (3) *extroversion*. Tables 13 and 14 provide the categories and properties based on a subset of participants with underlying conditions.

Enthusiasm

The category of *active experimentation* (with the subcategory of *fundamental oriented*) and *achievement striving* both had the property of *enthusiasm*—great eagerness to be involved in a particular activity that one enjoys or thinks is important. Codes related to the property of *enthusiasm* appeared 68 times among the participants without underlying conditions, whereas the property of *enthusiasm* occurred participants with underlying conditions was represented by 43 codes.

One of the participants, who had no underlying conditions, expressed how much time he spent playing, and regularly attended competitions or social events related to his favorite physical activities. Clifford stated:

Just to be active and play regularly. Three times a week is plenty. So that's a pretty good goal that I want to do, and I can keep doing it. And I go to tournaments every once in a while. I play two, three, couple, three tournaments a year that come up, where you're playing against people from other states or other towns. Some of those are goals to keep yourself ready, capable to participate in those events. (84 years old)

Another participant who had no major underlying conditions, but only had occasional hip discomfort, mentioned how he set the specific exercise goal and tried to reach that goal. Elvin noted:

Now it's got to be sort of a challenge to be able to hit that 33 separate times in the morning. Someday will be a day in the future, whether that's going to be tomorrow, or when it's going to be a year or two years from now three years from now, I will be able to hit that. (81 years old)

The following two quotes highlighted that some participants found physical exertion until breaking a sweat exhilarating. Annika stated:

You can't just say oh well I did 10,000 steps for the day. But I didn't even break a sweat. Then, you didn't get your heart rate up and it wasn't as beneficial as it should have been ... You get to the point that you hit a wall and then the sweat breaks. (67 years old)

Sean also noted:

I do that for anywhere from 20 to 30 minutes to get my heart going in, break a sweat and then from there, I'd go and do the weights. And I'd do different types of work on different parts of the body ... with the legs or the arms, chest, and then trying to get rid of tummy ... though thing. (69 years old)

Divergent Thinking

The category of *active experimentation* (with the subcategory of *fundamental oriented*) had the property of *divergent thinking*—a thought process distinguished by exploring multiple ideas to generate new possible solutions to problems. Codes related to the property of *divergent thinking* appeared 33 times amongst participants without underlying conditions, and 20 times for the participants who had underlying conditions.

One of the participants who had no underlying conditions mentioned that any intentional movement is beneficial for physical and mental health. She said, “Just try to do as much as you can and still feel good about what you’re doing. Because you’re still getting those endorphins, you’re still feeling good about what it is that you’re doing because you’re working out” (67 years old, Annika). Elvin expressed his belief in the positive relationship between physical activeness and self-confidence. He noted, “I read an article a few years ago. That was talking about the better physical you are, the greater your self-confidence. Whether it’s physical self-confidence or mental self-confidence and I agree with that” (81 years old, Elvin). Sean highlighted how he has engaged in his exercise by actively exploring the physiological mechanism.

Also doing things and then not keeping them up is also painful. You go through the process of exercising and go through that soreness period, and then you stop. And then you have to start all over again and go through that whole process again. (69 years old)

Extroversion

The categories of *active experimentation* and *achievement striving* both had the property of *extroversion*—a tendency to be outgoing, talkative, and exhibit energetic behavior. Codes related to the property of *extroversion* appeared 27 times among the participants without underlying conditions, but appeared only three times for participants with underlying conditions.

One participant mentioned how he intentionally set aside time for his practice out of his working schedule.

I go four to five times a week before I go before work, and then I’d go on Saturdays and Sundays. And then during the week, [I practice] an hour, a half-hour, or 40 minutes because I have to get to work. (Sean)

The following quotation depicts that the participants actively adopted new technology for exercise, thereby enhancing their exercise effect. Clifford said, “It’s a golf GPS ... If you are going to shoot par ... you want to know how far it is. So which club you can use. So it’s essential to playing the game very competitively” (84 years old).

Table 13

Categories and Properties of Older Adults Without Underlying Conditions

Property	Definition of property	Associated categories and subcategories
Enthusiasm	Great eagerness to be involved in a particular activity that one enjoys or thinks is important	Active experimentation, Achievement striving
Divergent thinking	A thought process distinguished by exploring multiple ideas to generate new possible solutions to problems	Active experimentation (fundamental oriented)
Extroversion	A tendency to be outgoing, talkative, and do energetic behavior	Active experimentation, Achievement striving

As the examples above indicate, the participants without underlying health conditions tended to be extroverted and energetic in terms of physical activity engagement.

Participants With Underlying Conditions

The prominent categories among the participants with underlying conditions were *adaptation* (with the subcategories of *assimilation* and *accommodation*), *active experimentation* (with the subcategory of *deliberate practice*), *moderation*, *social interaction*, and *immersion* (with the subcategory of *expert reliant*). These categories all had the properties of (1) *convergent thinking*, (2) *communion*, (3) *reliance on experts*, (4) *resignation*, and (5) *wistfulness*. Table 14 provides the categories and properties of the subgroups depending on the participants’ underlying conditions.

Convergent Thinking

The category of *adaptation* (with the subcategories of *assimilation* and *accommodation*), *active experimentation* (with the subcategory of *deliberate practice*), and *moderation* all had the property of *convergent thinking*—a thought process by integrating based on existing knowledge and experiences to come up with a single, well-established answer. Codes related to the property of *convergent thinking* appeared 89 times for participants who have underlying conditions, but the property of *convergent thinking* appeared only five times for participants without underlying conditions.

The following quotes illustrated how the participants gave themselves permission to not be perfect. The participants who have one or multiple underlying health conditions tried not to be critical of their age-related physical changes. Karolyn said, “I try not to be critical. Just try to take care of it” (83 years old). The participants mentioned that they tried to take responsibility for their own actions related to their health and physical activity. One participant described that she did not attribute the consequences of her body to other external factors, but she accepted whatever she experienced about her body. Meghan stated:

Either like it and keep going, or get discouraged and have a pity party that no one comes with you, but me. I don't like those ... And then I play the consequences all over again.

Kick myself. I try not to repeat the same mistake over and over and over. (77 years old)

The following quotations depict the participants' acceptance of their current physical conditions by continuing what they can do:

- “I do the best I can with the exercises. So far so good” (81 years old, Bonnie);
- “I do what I can. I have a bad knee, and ... But I do as much as I can, and I just work through it” (84 years old, Nicole).

Another participant tried to think positively when it comes to her health and physical activity. Bonnie said, “I just really try to dwell on the positive, I really do. Negative doesn’t get you anywhere” (81 years old). When Emilia delineated her story of how she was cured from cancer, she positively attributed her illness and treatment.

I have had breast cancer. So I have no left breast. And they tried to give me an implant. But it didn’t work, it leaked and came out ... Now, the blessing of that was four years later, I felt a lump. And I felt like it can’t be cancer because I don’t have any breast tissue. But I went to the doctor and it was cancer. If I had had an implant, I would not have been able to feel that. And it might not have been noticed until it spread somewhere else ... I feel blessed I feel it was a miracle. (83 years old)

As the examples above indicate, the participants described that they positively viewed their physical changes caused by the natural aging process or medical treatment.

Communion

The category of *social interaction* had the property of communion—the degree to which one shares or exchanges intimate thoughts and feelings with others. Codes that were related to the property of communion were identified 49 times among the participants with underlying conditions, but only five times for participants without underlying conditions.

Nine participants with underlying conditions valued group activity where they were better motivated to engage in physical activity than engaging in a solitary type of activity. The following quotations illustrated their feelings in a group activity and motivation to exercise:

- “I guess I could be very lazy unless I were motivated by a group. So having other people to do it with was motivational to me” (77 years old, Meghan);

- “Other participants also expressed I prefer doing it with a company. I guess I just realized that I have done it a couple of times in the apartment, but I prefer doing it in the class” (81 years old, Bonnie);
- “I like to do it with other people. I am not good at doing exercise alone in large part, I just motivate myself to go out and do it with other people” (88 years old, Tacey);
- “I don’t think I’d want to do exercises by myself, or I get something with a video” (89 years old, Kayla).

The participants also emphasized that they were motivated by a good exemplar demonstrating outstanding physical conditions despite old age. Karolyn said, “We have a 90-year-old in our class ... she’s more active and in better shape than I am” (83 years old). Meghan also stated:

There’s one lady here, who’s in her 90s. And we’re talking this week, and she said, “every day, I have to make myself get up and walk.” And she walks probably a couple of miles a day. And people like that have impact. I told her, “You inspire me.”

Five participants emphasized their empathic feelings with the other peers in the exercise class or sports club. The following quote depicts how the participant value the social effect of exercise. Tacey said, “I just enjoy being with the people that I’m exercising with because we still need to socialize as we get older” (88 years old). The participants with underlying conditions also emphasized the importance of building camaraderie with peers who have physical and psychological commonalities. The following quotation highlighted this mutual relationship. Nicole said, “We’re all encouraging and we enjoy each other’s company” (84 years old, Nicole). Overall, the participants stated that their mood was positively influenced when they were able to empathize with their peers. The participants also emphasized the value of reciprocity with other peers in the exercise class.

Reliance on Experts

The category of *immersion* had the property of *reliance on experts*—a tendency to do things and make decisions as advised by experts. The codes related to the property of *reliance on experts* appeared 33 times among the participants with underlying conditions, whereas no codes were identified for the participants without underlying conditions.

When asked to describe their experience of learning new skills or knowledge about the physical activity that they engaged in, 10 participants with underlying conditions tended to rely on an instructor-led class. One of the participants considered the fitness instructor was the primary source of getting knowledge in terms of exercise. Artie said, “I follow the instructor. If he has or she has something different, yes, I enjoy it. But no, by myself, I don’t go on a search for a different type of exercise.” Another participant mentioned her sole reliance on the fitness class without any self-initiation regarding physical activity. Kayla said, “To tell you the truth I can’t think of one where I initiated it. I just did what was natural, I suppose. I don’t do anything in my room, because I do it down there [in the class].” One of the participants with an underlying condition expressed her satisfaction when the instructor taught new movements with a higher level for the senior participants. Bonnie stated:

Well, Kaite [instructor] has been introducing some new moves and they were quite good. But if I raise the bar ... and I think we need to raise the bar, the bar is too low and becomes complacency. But she’s added a few new moves in the last few weeks, and I think they’re good.

Resignation

The category of *reconciliation* had the property of *resignation*—acceptance with reluctant feelings, but knowing that something cannot be changed. Codes that were related to the

property of *resignation* appeared 29 times among the participants with underlying conditions, whereas the frequency for the participants without underlying conditions was only five times.

When asked to describe their goals of physical activity, five participants with underlying conditions mentioned maintaining physical functioning or independence, rather than the advancement of physical ability. The following quotes describe their resigned attitude in exercise:

- “To just do it, so that I’m staying. I don’t know that I have any particular goal, I’m not trying to get better at it. I’m just trying to keep myself in good shape” (83 years old, Karolyn);
- “I’m doing exercise, so it could be much worse. It is, it is not painful, but it’s not completely fine, but I’m doing okay. That is the only thing I could say that bothers me” (72 years old, Artie).

Eight participants noted that they would stick to the same physical activity they currently do rather than learning about new exercise. One of the participants thought that her exercise routine was already well established and fitting for her physical ability and her age.

As far as improving, I can’t say that ... I think as I have gotten older, I think I have known what to expect. So you know pretty much know about how to act, how to direct activity, and how you need to be cautious about your body so you pretty much stay even (Sherry).

Another participant also expressed her intention to maintain the current exercise routine. But she acknowledged her lack of knowledge about how to learn about new types of exercise.

If I continue what I know, I think that I see what I’m doing is helping me. I don’t think, I don’t know if I will get to something different. Of course, if I come across something different, I will learn it and then I will do it. But I don’t know what that might be. (Artie)

Wistfulness

The category of *retrospection* had the property of *wistfulness*—a state of a sense of missing something that one can never regain. Codes related to the property of *wistfulness* appeared 22 times among the participants with underlying conditions, and four times for participants without underlying conditions.

The participants expressed their feelings of longing for varied physical activities they had actively engaged in in the past. Artie who has a back issue said, “I must say, at my age ... Yes, sometimes it is hard. It’s hard for me when I cannot do things like before” (72 years old). While the participants expressed their feelings of missing the past when they more freely performed various movements, they also acknowledged their physical changes. The following quotation depicts the participant’s mixed feelings about what they cannot do anymore. Meghan stated:

It was a situation where I was involved with scouting, and we did some mountain climbing and things like that, you know. I can’t do that kind of thing anymore. But it was fun! Yeah, we did it ... [I have] been there done that. I don’t need to do it again. I’m not gonna go climbing a mountain anymore. (77 years old)

Table 14

Categories and Properties of Older Adults With Underlying Conditions

Property	Definitions of property	Associated categories and subcategories
Convergent thinking	A thought process of integration of existing knowledge and experiences to come up with a single, well-established answer	Adaptation (assimilation), Adaptation (accommodation), Active experimentation (deliberate practice), Moderation
Communion	The degree to which one shares or exchanges intimate thoughts and feelings with others	Social interaction

(continued)

Table 14 (continued)

Property	Definitions of property	Associated categories and subcategories
Reliance on experts	A tendency to do things and make decisions as advised by experts.	Immersion (expert reliant)
Resignation	Acceptance with reluctant feelings, but knowing that something cannot be changed	Reconciliation
Wistfulness	A state of a sense of missing something that one can never regain	Retrospection

As the examples above indicate, older adults with underlying health conditions tended to seek experts' opinions in terms of exercise and health and pursue commonality. Overall, the participants rearranged their priorities regarding their physical identity depending on their underlying health conditions. Having underlying conditions was associated with different strategies than were strategies used by participants who did not have underlying conditions.

Nature of Learning

The categories of action/interaction strategies accounted for the participants' learning. The learning among the participants involved different dimensions of learning (i.e., cognitive, emotional, and social learning; Illeris, 2002). The categories that were evident in the process of the acquisition of new knowledge regarding their physical activities were characterized to be *assimilative learning*. The categories that stood out in the process of reconstructing previously established knowledge related to their physical activities could be characterized as *accommodative learning*. The categories, which fell into either of these two learning processes, mainly accounted for the participant's cognitive or emotional dimension of learning. The categories that were evident in the interaction processes of learning were characterized as social aspects of learning. In the following section, the categories are written in italics and the codes are

written in underlined italics. Table 15 provides three different kinds of learning and the relevant learning aspects among the participants.

Assimilative Learning

The participants' assimilative mode of learning regarding their physical activities encompassed (1) *exercise-related knowledge acquisition*, (2) *skill enhancement with age-appropriate modification*, and (3) *establishment of an exercise-prone environment*.

Exercise-related Knowledge Acquisition

Nine participants mentioned that they actively *acquired knowledge in terms of body and exercise* and tried to *learn the physiological or psychological mechanism* of the physical activities. Sean described how he studied and practiced his golf swing with age.

One of the things I'm trying now is where ... as you're old you get in the weaker, so you don't hit the ball as far, and I'm trying to learn different ways to use my existing body instrument to hit it further, and there's a technique that you can use that it's called like the catapult. It's like in the old medieval days, you saw this thing that they crank back and put rocks in, it slings it like that.

Annika described her experiences of learning about how mechanical disorders of the musculoskeletal system could influence overall health.

I did find years ago, when I started going to a chiropractor, how important your alignment is and your physical movement. All of that plays a huge part in your health. Your overall health is based on like if your head's a little crooked, then it leads to something else that you're going to be sick from, and you don't even know you're going to be sick from it, but your head's off your shoulders.

Clifford mentioned his self-directed learning process of golf.

I'm interested in, I follow the Golf Channel on the TV, the national golf things and I read the golf magazine. I subscribed to a golf magazine so that way I learned what's going on and keep abreast of everything in golf.

When asked to describe what has helped the participants the most in learning and developing their skills in physical activity, one of the participants emphasized the importance of learning about the muscular system in the human body. Meghan said, "Learning which muscles support me the most. Like if I hold in my stomach, our core is here that, you know, I've learned how much that helps. And I realized how negligent I've been of that through the years." One participant described his efforts on knowing the physiological mechanisms of the exercise. Stanley said, "The experience we're more in analyzing and figuring out the nature of the game, if you will, rather than the fact that I was getting a lot of exercises." The other participant delineated that he understood the exercise mechanisms and biological benefits while doing exercise. Elvin stated:

The things that I've learned with push-ups as one of the things, I don't think just your chest and your arms improve, it affects your whole body. It is something that there's a whole lot of outflow to other muscle groups in addition to your chest and your arms. The plank keeps your core strong, and I know a strong core gives you the ability to do some things that you couldn't do without a strong core.

The above examples of older adults' learning experiences focused on their personal growth and development related to their exercise practice.

Four participants who were highly active *adopted suitable technology* to enhance the effect of their physical activities. Bonnie used a fitness aid device to monitor and increase physical activity. She said, "And as far as an activity, I try to walk about two miles a day. Two to

two and a half ... I do have a Fitbit on, and I keep track of it” (Bonnie). The other participants used a device to acquire accurate information about the physiological effects while exercising.

Elvin stated:

My children gave me an Apple Watch for when I walk. When I’m working out, I put it on. It gives me my pulse rate. It gives me the time walking to the component on a per-mile basis, right in there [indicating watch]. It gives me the distance that I walked.

Annika emphasized the benefits of a technological device that provided visible progress for her physical activity.

I wear a Fitbit. And when I walk the course, within a matter of a few days I can see my heart rate average is lower. Almost, you know, you can tell you can see progress right away, which makes me want to do it more, because I’m seeing the results of what I’m doing.

The following quotation depicts that the participant adopted devices to enhance her performance skills, or a specific part of physical ability. Annika stated:

We actually have a Wii that has exercise stuff. And so you can do some of that on your own with the thing, and so I guess learning that a little bit more and feeling comfortable with the aim, to twist your feet a little bit, to feel like you have good balance.

As the participants’ statements above indicate, they emphasized the importance of incorporating technology into practice that reinforced her engagement.

Skill Enhancement with Age-appropriate Modification

The prominent categories when the participants learned and improved the skills related to their physical activities were *routinization*, *self-discipline*, and *deliberate practice*.

Routinization. Practicing regular activities that are done as a normal part of daily life can be characterized to be routinization. All 15 participants agreed that they *kept their own exercise routine*. The following seven quotations depict their established exercise routine on a daily or weekly basis:

- “I’ll make sure I go. You know, pretty regular about going” (Meghan);
- “Twice a week, but we, some of us, go down on like Saturday. The water aerobics class is Monday afternoon and Thursday afternoon” (Bonnie);
- “Three days a week Monday, Wednesday, and Friday. I go nine o’clock for the class ... And then on Saturday, I go to the gym and I spend about an hour there on the machines independently” (Emilia);
- “Probably about four or five times, maybe six times a week after work. I go after work ... but on Saturdays and Sundays, I’ve worked out there anywhere from four to five hours and then I play golf” (Sean).

The participants also described their own iterative activity sequence that they practiced regularly.

Karolyn noted:

I lie on my back, and I move my arms and my legs, I kick my legs and I lift my hips, on the bed, with the hips off the bed. And then I turn on my side and raise my leg and then I do what’s called a clamshell? And then, let’s see. And then I sort of push my shoulders back from that posture, and then I turn over on my stomach and kick, kick my legs. And I stand. Well, sit on the bed base, my arms do all kinds of different things. And then I hit my head and back [exercises].

As the examples above indicate, all the participants articulated their own exercise routine and sequences.

Ten participants mentioned that they tried to increase daily physical activity by *doing an easy exercise or posture correction throughout the day*. The following two quotations

highlighted their frequent physical activities that required less time and intensity:

- “While I’m brushing my teeth, I do some leg lifts and stretches that, you know, because I’m just standing there with my electric toothbrush. So I use that time to do leg exercise and stretching” (Meghan);
- “We have a long hallway, a lot of long hallways in the building. So, you know, that’s what I do a walk and a lot of times. I don’t take the elevators, I take the stairs, go up and down the stairs” (Tacey).

The following quotation describes the participant’s consciousness and implementation of her posture correction throughout the day. Karolyn said, “Shoulders back [straightening up her shoulder and back], right, right, head up and down straight.”

Thirteen participants demonstrated their commitment to physical activity by *plodding away at exercise*. The participants expressed the importance of being aware of their daily physical activity levels, even though they did not engage in strenuous exercise with a big goal. Karolyn mentioned how she participated in the fitness class.

Some of the exercises are hard to do the first time she [the instructor] has some as a supplement so we sort of slow down for a while, and then if you keep doing them then you can improve and be able to do it. (Karolyn)

The following three quotations depict their desire to maintain a certain level of physical activeness and a positive attitude when doing the exercises:

- “The same thing, you know I constantly go to the class ... and I will keep walking till you know if I’m able” (Artie);

- “I just keep going I guess. I try not to stop in and not move around. I keep moving” (Tacey);
- Just doing them. The more you do them, the better you feel ... Just do it, do it with a smile on your face. Keep it going” (Sherry).

The other participants described their steady practice to improve performance skills or physical condition. Clifford said, “It’s like in golf, you study it out and keep practicing, keep working to get better, you don’t give up.” Elvin also noted:

I think it’s good. I see a lot of people ... they were much better than athletes, had physical partials, better than mine, years ago, and now they’ve got a big, big waist and it’s not that they didn’t have the capability, but they just didn’t have the commitment. I think that was important. Maybe in my case, I was trying to catch up with them.

As the participants’ statements above indicate, they did not fret about getting a quick result.

Self-discipline. The participants’ ability to begin and carry out the task related to their physical activities can be characterized as *self-discipline*. Thirteen participants *applied a rigorous self-standard* in terms of their physical condition, exercise abilities, or body shape. The participants expressed their strong desire to maintain or improve their physical activeness, even though they were advanced in age:

- “I don’t dwell on that I just, it is what it is. I don’t want to use my age as an excuse.” (Bonnie);
- “I’m pretty critical because it’s like, you’re not working like you’re supposed to and this has got to stop. You know so yeah you do find yourself to be being critical, especially if you were active in your youth” (Annika).

Stanley stated:

Generally, my makeup, my psychological makeup wants results. And if I don't get them very quickly I get frustrated. So there have been times when even when I was younger being of slight build and not really bulked, I didn't get the results I wanted right away. And that's frustrating to me.

Meghan emphasized that being free from her family responsibilities enabled her to focus more on herself than during her younger years.

Now that I am aged and don't have as many responsibilities, like children to take care of, a house to take care of, a husband to take care of ... those kinds of things, so I don't move as much. So I've had to motivate myself to move. I don't have the necessity, it's really only myself that I've got to think about. And sometimes I was raised to think that thinking about myself was selfish. And so I had to rethink. (Meghan)

The following quotation depicts their rigorous self-standard of body image. Sean said, "That's something I have to watch what I eat and how often I eat it and then also get consistent with my exercise and maintain my weight."

Twelve participants demonstrated the ability to *begin exercise-related tasks and carry them through to completion*. The following quotations depict their determination to exercise:

- "I make a point of keep moving" (Tacey);
- "So to finish it up is always a good part of the exercise. And the challenge is when I first start the exercise" (Elvin).

Annika mentioned how she carried her own goal out.

I mean there are lots of times when it's time to go walk on a course or. It's easy for me to say, "Oh, you know, it's kind of rainy and out there today I don't want to get sloppy and

wet and do I want to go do that.” But if I make myself get out the door, when I get back, I’m glad I did. (Annika)

Meghan also noted her completion of task that brought satisfaction.

But I guess ... sit, soak and sour seems to fit if you just sit and dwell on the negative things, you get very negative. But if you get out and in like on days like this, you can get out and be out in the sunshine and you know, you feel better (Meghan).

Deliberate Practice. A form of practice that is incrementally and intentionally modified for continuous improvement can be characterized as *deliberate practice*. Eight participants mentioned that they continued to exercise what they can do. The following quotations depict their constant practice of physical activity, even though the types and ways of activities had changed with age:

- “I finally I’m older, so that I don’t do those [high-intensity exercise] now ... But you should continue to do what you can do” (Sherry);
- “Well, I would be very sorry but I will do the best I can and just keep going and doing what I can do” (Karolyn);
- “I just do the best I can” (Tacey).

Seven participants described their continuing modification in skills, posture, or ways of exercise as they experienced age-related changes in their physical conditions. One of the participants paid more attention to find proper places to run to protect him from injury as he advanced in age. Sean stated:

Trying to do low impact versus things that are going to jar your body like jogging on the road, jogging on concrete, trying to find more suitable places that are easier on your body and not doing things or types of exercise that will hurt you physically.

The other participant mentioned that she knew her weak point in her body and paid attention to make sure her posture is correct. Bonnie stated:

I could feel more stiffness in my shoulders quite a bit. But I try to push through that because then they [shoulders] will just lock up where they are [laughing]. I just don't dwell on being older, I do the best I can with the exercises. So far so good.

The participant who had received a pacemaker a few years ago endeavored to understand the physiological mechanisms in his body and to get used to exercising with the device. Stanley described:

They [doctors] put in a pacemaker. I've struggled with that because how they set it, they set the pacemaker at 60 beats and my normal heart rate's in the low 50s. So it was just wearing me out, my heart was just racing. I said you got to set it lower you got to get it down to 50. So they set it at 50. So, those kinds of things have always been a part of my ... how do I say, a part of my understanding of what I'm doing physically. I am the 'why guy,' things don't happen without a reason, so I need to know the reasons. I'm always anticipating, I'm always articulating, I'm always analyzing. That's a part of my makeup. So when I exercise, that's my focus. Increase the reps, and increase endurance. Make it more beneficial from a holistic perspective, not just strengthening my arms or whatever. That's the way I think, so that's the way I work with any exercise that I do.

As the examples above indicate, older adults made deliberate efforts on practicing in a self-directed manner.

Establishment of Exercise-prone Conditions

The prominent subcategories that physically and mentally jumpstart the participants' actions related to their exercise were labeled *arrangement* and *grit*.

Arrangement. The participants' preparation in order to make sure their exercise-related actions are possible was categorized as an *arrangement*. Fourteen participants mentioned that they *established an exercise-prone environment* (sites, times, and atmospheres) by securing proper space for activities, preparing equipment, and setting aside time for exercise. One of the participants noted that, first, she secured a safe exercise environment. Meghan said, "I tried to avoid university [street] because it's pretty busy. Yeah, you know and so I try to avoid places where it might be hazardous." The following quotation depicts their arrangement of exercise equipment and supportive devices. Annika said, "I've incorporated in that is trying to look at anything that has developed through the years technology that's made things, maybe more fun, or maybe easier to do like reusing the Wii or something like that."

Stanley described:

I do have workout equipment in my garage, my garage is almost a four-car garage so I can get a lot of stuff in there. We have a treadmill in there, which we use during these types of weather. And I have a total fit gym type thing with a slant board where I can exercise and so on.

The following quotation depicts the participant's planning for the exercise ahead of time so that she would not get interrupted to accomplish the plan. Emilia said, "I talk to them about my exercise class, I tell people who call me not to call between nine and 10." Stanley also stated:

The business has eaten up my time you know you can be in the office all day. So, we're making a concerted effort both my wife and myself making a concerted effort to try to carve out time each day for us to do that.

Grit. The participants' determination and courage to continue their actions related to exercise, even though it is very difficult, were categorized as *grit*. Seven participants mentioned

that they intentionally created challenges for self-improvement. One of the participants emphasized that he always created more challenges in his exercise. Annika said, “If I’m doing the treadmill ... I’m going more uphill inclines, or I’m putting the time on, or the speed.” Stanley also noted:

I’m always looking for those things, always looking for interesting takes, not just following a fad, but finding something [that] could be beneficial in what I’m doing ... In general, boredom, if I’ve ever experienced boredom, it’s because I’m just involved in the process and I don’t have any real goal to attain ... Yeah, I need to have some other challenge.

The following quotation depicts that the participant’s grit led to a satisfying outcome. Emilia said, “One day, I nearly didn’t go to the class because my knee was feeling like it was going to give out. And I went, anyway. And it felt better afterward.”

Nine participants mentioned that they established exercise-related goals. One of the participants described how he set and accomplished his everyday exercise goal as he advanced in age. Elvin stated:

When I turned 70 years old, I wanted to come back on this exercise. When I hit 70, I felt, you know, like maybe I need to move that out to when I hit 75. So when I hit 75, you know, there's really not a reason to ... I feel like it carries me in the right direction, from a physical standpoint. So, the target moved out to 80.

The following three quotations depict their specific goals related to their physical activities:

- “I set my goals to go to the nine o’clock class (Artie);
- “That goal is I want to be sure that I go down there three, four times a day. Because I go long down there” (Kayla);

- “My goal might be to increase other days of the week to go to the gym. Maybe one more day, two more days” (Emilia).

Eight participants mentioned that they made effortful actions to *achieve ambitious goals*.

One of the participants emphasized that he sought a higher goal to maintain a higher level of competence in playing golf. Elvin sought everyday goal for his golf practice. He said, “My attitude is about play golf. Yesterday I played, I’m going to play again tomorrow. And I want to go out there and play better than I do on Tuesday” (Elvin). The following quotations depict the participants’ determination to achieve ambitious goals:

- “I don’t, I don’t need to be entertained to exercise. Exercise has its benefit for me and that’s the reward” (Stanley);
- “That’s what I’m working on now. I’m working on trying to figure out how to get rid of that slice. And for about two weeks now, I’ve been going out beating myself to death in trying to figure it out” (Sean).

As the examples above indicate, the participants directed their learning process by setting up exercise-prone climate and formulating exercise, health-related goals. Overall, the examples of older adults’ assimilative learning experiences focusing on personal growth often occurred at a community level by using wellness services or communicating with the local people or by themselves in everyday life.

Accommodative Learning

The participants’ strategies of reconstructing previously established knowledge related to their physical activities were characterized as an accommodative mode of learning, including: (1) *reflective practice*, (2) *embodied awareness*, (3) *nostalgic learning*, and (4) *transcendent learning*.

Reflective Practice

One of the prominent aspects of accommodative learning in which the participants think about and monitor their experiences of exercise practice and physical condition was *reflective practice*. The participants demonstrated that they took their adaptive actions or attitudes to tackle the changes in the body caused by aging. Thirteen participants described their adaptive strategies as just *living with the age-associated changes* as a part of life. Annika stated:

Just to totally accept it as, Oh that's age ... Maybe that's what I need to say they feel like they have to accept that they're getting older. And so, just expect that things aren't going to work the same way. It's not that I'm in total denial.

The following quotations depict the participant's feeling of acceptance of illness or decline in physical conditions caused by aging. Meghan said, "I guess it's not anymore. I've had to adjust sewing things so many years that I kind of accepted 'Okay, this is the way it is either like it or...'" The other participant did not express negative emotions about the age-related illness or body changes and accepted reality. Bonnie said, "I've been clear about my doctors to do it so I just do it. Mainly because I've had some heart issues, but I have no concerns."

Ten participants mentioned that they *analyzed themselves about their physical condition and emotions in exercise*. The following quotations depict their self-analysis that was occurring at the time of their exercise. Kayla said, "I listen to my body [while exercising]." Meghan was conscious of the different sensations of pains while exercising and responded differently. She stated:

But there's a difference of recognition that there's a difference between hurting and ... sharp pain and just using a muscle. If I can use the muscle, and feel the effort it takes. But if it takes more if it's causing something like pain, then I don't do it.

Sean delineated his emotional changes while his personal workout and how he responded to the feelings. He stated:

I don't want to give up but it seems like it gets for I get frustrated, where I feel like I want to give up, but then I have to just back off and try something different. This is, you know, doing the same thing over and over and over again and expecting a different result when you're doing the same thing over again. (Sean)

Nicole mentioned that she checked occasional discomforts of a certain part of the body and applied different exercises to relieve the pain. She noted:

When I get up sometimes my back is pretty stiff or, I have discomfort, and so I do figure eight or circles, you know, just standing. And yesterday I realized I should be doing this, the twisting and just flapping my arms. (Nicole)

The following two quotations describe their constant effort on analyzing the effect of exercise on his body while exercising. Stanley stated:

Absolutely, I want, as I said, I think that fits into the analytical mode. I want to know what I can do. I don't want to, I don't want to be told, just do this many curls this many setups. Why, why am I doing this, what am I benefiting.

Elvin also noted:

But, I want to try to make sure that I'm getting a good workout, number one, but I've tried to make sure that my pulse rate is, even it's not showing regularity, nor do I have to feel like how I've got chest pressure ... I try to monitor, tolerance for pulse rate and blood pressure, and how I feel, while I'm doing the exercise outside.

The participants not only engaged in self-reflection while exercising but also continue thinking after the activities. Meghan and Nicole used journaling. Meghan said, "I journal a lot and that

works out a lot of the negative feelings and, and fears that I have and makes me realize what I'm doing." Nicole noted:

Put your feelings down on paper because a lot of times I do that, and it helps so much because it kind of gets it out of you. And even if you just write a letter or you're not mailing anything, are you can burn it, or rip it up or whatever you want.

Clifford mulled his golf swing over when he did not play golf. He said, "I think about that a lot every day. I think about new things to do, about how to change the swing, or do this or that" (Clifford). Sean emphasized the importance of learning a lesson from failure. He said, "Also learning your limits and not trying to go over those limits, especially with your flexibility" (Sean). The above examples highlight the participants' views on how they incorporated the effect of aging on their physical conditions by conscious self-monitoring.

Twelve participants acknowledged fluctuation in their physical or mental condition as they advanced in age. The following quotations depict the participants' experience of fluctuating physical conditions as they get older:

- "You have a little downtime to practice and think about why you did wrong, corrected. So you have ups and downs all the time" (Clifford);
- "Sometimes, I feel very old and other times no" (Emilia).

One of the participants described that they accepted the fluctuating physical conditions and adjusted their exercise routines. Bonnie said, "You've got to get going, and then get motivated to get going. But sometimes it'll take me maybe a week or two. And I'll slow down."

The following two quotations depict the participants' fluctuations in feelings of physical condition or body shape. Tacey stated:

Sometimes I do. And sometimes I don't. It's varied ... Some hours, some days when I don't feel as well as other days. I'm glad when the class is over, you know I get tired at the end. Okay, but it doesn't happen every time.

Diane described her perception of body image.

In my mind, I'm 42. You know, in the mirror, maybe 52. When I get out, or when I stand up sometimes my knee pops out of place, so probably I'm 72 [laughing]. When the back, arthritis starts hurting, I'm probably 74. But yeah, I don't see myself as old. (Diane)

Eight participants mentioned that their adaptive strategies to respond to age-related physical decline were *giving themselves permission to not be perfect*. The following quotations depict the participants' acceptance of their current physical conditions and body shape even though they were not satisfied with it:

- “I would prefer not to have them. Yeah, it's just part of life.” The participants did not cling to physical youthfulness or perfection” (Karolyn);
- “I am not obsessing over it [physical appearance]. I mean, there are more and more wrinkles” (Nicole).

Nine participants *acknowledged human mortality or finitude* through self-reflective practice. The participants emphasized that their acknowledgment of human mortality drove them to engage in diligent exercise. Kayla said, “All that goal is to keep walking until they bury me and be in good shape ... As long as I live, I want to feel good, and I want to be able to take care of myself.” Stanley stated:

I might die tomorrow. We don't know. It doesn't have to be related to a problem, but I just don't feel like it. I just know that as long as I keep doing this, I'm giving myself the

benefit of the doubt on everything. I'm doing and giving myself the best chance to continue to contribute.

Emilia also noted:

I will die sometime in the future, but I don't want to die on a respirator or ventilator ... desperate for breath. So, I decided that I need to remain healthy until I can see my family again. So that's important to me.

Nine participants had learned and acknowledged the individual variations of physical activity and that *everyone had different fitness levels and body shapes*. When asked to describe their ideal body image, the participants stressed the individual differences rather than uniform ideals. Stanley emphasized the individual variation of a golf swing.

I learned a long time ago that there's no such thing as a bad golf swing. It depends on the movement that suits your physical body. I mean you watch those things watch sports on TV, everybody does it differently. Well, that's not right, you should be doing golf, it depends on their body. (Stanley)

Tacey also commented:

Different people have different genes. So everybody's not the same ... I don't think there's any such thing. Everybody is different. I don't think everybody needs to try to be perfect, you know, I just don't think that's that important.

Nicole defined her way of best practice. She said, "No, because everybody does what they can do and. And that's the best we can do" (Nicole). Annika also stated:

I would probably tell them that you have to start out slow, don't worry about trying to just get up to speed, immediately because everybody's body's different based on ...

making sure that it's realistic, and then not everybody's gonna have the same path to get there.

As the participants' examples above indicate, they engaged in reflecting on their exercise practice after it has happened.

Embodied Awareness

The second aspect of accommodative learning, in which the participants were attentive to the sensations of their body while exercising and became more aware of their body experiences and their surroundings, was understood as an *embodied awareness*. Ten participants described that they *focused on what they were doing during exercise* when asked to describe their personality while exercising. The following quotations depict the participants' keen awareness of the physical and mental effects on their body while they engaged in physical activities. Sean said, "I'm hoping it's that focus on doing it and making some accomplishments physically as well as mentally." Artie also stated:

I think about my body. I think in my body. Ah, I think, well, with this exercise I will be better. It would be better. I just keep that on my mind ... I don't pay attention to them, to the other ones. I used to concentrate on what I'm doing and pay attention to what I need to do.

Annika was mindful of what she was doing. She noted:

It's good that you weren't just sitting, you did do the 10,000 steps, but you've got to have a reason to do those and you've got to do them in a long period, the same period of time, not just 100 steps 10 times a day or so. You've got to make sure that you're actually doing. (Annika)

One of the participants mentioned that she not only focused on her own movement but also tried to be aware of other people in the senior fitness class. Bonnie stated:

I really pay attention when I walk. Stand up straight look straight ahead ... I like to present myself as neatly as I can ... I'm focused on what I'm doing but I'm also aware of the people around me there are having difficulty ... because some of them are pretty heavy.

Clifford mentioned that he focused on the golf game to gain the best score. He said, "Competitive to play the best I can. Not just be out there just walking around. I exercise to shoot the best score that I can" (Clifford). The other participants also described that they were attentive to the instructor's guide in the fitness class. Tacey said, "While we're exercising. We don't talk very much, really listen to the instructor and keep up with what she's doing." Kayla also said, "I was in the back but I'd always get to the side of this lady so I could see the instructor because I cannot hear what the instructor. I have to read their lips or watch what they do." As the examples above indicate, the participants described that he strived to concentrate on the movements throughout the duration of the workout.

Nine participants described how they were occupied with the moment by *fully immersing themselves in the process of the activity*. The following quotations depict the participants' experiences of full involvement in the physical activities and thus they did not realize the time:

- "It's like we're in a class with Katie, we're working out so not having to look up the clock. And I can't believe it's over. What a fast and water aerobics also" (Karolyn);
- "Oh, it happens all the time. Because I mean I get lost in the, you know, I've just done the physical stuff and I don't very often look at the time" (Nicole).

Sean also noted:

When I'm at the gym in the mornings, I'd again try to go four to five days a week. The time in the gym, just kind of flies by ... We're just flies. When we have things going on, it is amazing how quickly it goes by. I have to really watch the clock, not be late for work or to stop it at a certain time.

The participants delineated that they performed physical activity with a sense of energized focus:

- “I find myself developing a cadence or a rhythm. And all of a sudden, boom, I've done all of this and it just flew by because I wouldn't think about how drudgery this is” (Stanley);
- “It was an enjoyable time to spend, it is a constant activity. And it's competition again, to compete for something to do to play a game when hooked on the activity” (Clifford).

As in the examples above, the participants described their experience of exercise they were engrossed in and expressed satisfaction with the feelings.

Eight participants mentioned that they *appreciated the beauty of nature when exercising*.

The participants extolled their surroundings when they were out to exercise. Artie said, “Oh, it was nice. It was beautiful. The trees are blooming, birds are singing, and the wind was soft and was beautiful, beautiful.” Annika also delineated her experience of appreciating nature and serenity when walking outside her neighborhood. She stated:

Sometimes it's just nice to go and walk the golf course and just be in nature and not nobody's around ... I may mention walking on the course just because I may talk about that it's the weather's nice. It's just nice to feel like you're out in nature, you're not just walking on the sidewalk and not walking on a treadmill in a gym. You're actually outdoors, doing that. (Annika)

The following quotations describe their elevated feelings being outside to exercise. Diane said, “It makes me feel good and I like to be outside. They’re all outdoor, outdoor activities. I don’t like to be cooped up [laughing]. It just it’s that sense of freedom of being outside and enjoying.” Emilia expressed her feeling of admiration for the beauty of nature when out to walk and felt sorry about other people who missed this scene. She stated:

What made it enjoyable was, I would listen to the birds. I would see things, look at the trees blooming and the changes in the seasons and the flowers and the plants, and I would enjoy what’s going on round about me. I used to watch people walking, and they’d be listening to their phones all the time. And I think that’s sad. Look around you and see what’s around you. (Emilia)

Five participants mentioned they *pushed themselves in exercise beyond the threshold to feel the exhilaration*. The following quotations describe the participants’ exertion up to the intensity peak. Annika said, “I’m listening to my heart rate I’m listening to, you get to the point that you hit a wall and you know that and then the sweat breaks ... so you’ve got to also do steps to the point.” The other participant mentioned that he tried to reach a certain level of heart rate and maintain that for the duration of the workout. Elvin noted:

The older I get, the more I can see the difference in general health between what I do. And from those of my same peer group that has not participated in some exercise on a continual basis. If I didn’t get my pulse up to 85%, I really want more work out. And most of the time now, somewhere around 75% to 80% about the theoretical portion.

The other participant delineated his elevated emotions when he pushed themselves to the intensity peak point of the activity. Stanley stated:

When I ran that race, the first time obviously competing for more against myself than

anybody else. It was just, it was exhilarating to me to be able to do that and have 13 or 1400 people around me running the running as well. And it was just exciting just fun to do. And that's the way I look at most exercise.

As the examples above indicate, the participants maintained self-monitoring about their physical conditions and emotion while exercising.

Nostalgic Learning

One of the aspects of accommodative learning among the participants was *nostalgic learning* that was lessons learned from reminiscence accompanying longing feeling. Nine participants mentioned their experiences of learning through reminiscence. The participants described what they had felt and learned from their experience with past activities that they now miss. One participant delineated how he exercised in youth and now his view of exercise has changed. Stanley noted:

When I was young I did, because I was skinny, I was a skinny kid and I was, I felt uncomfortable, and I didn't wear shorts. I got skinny legs. And I feel, nobody notices that probably, but me. So I worked hard on building muscle in visible areas, but it still was not a matter of, it wasn't an obsession with me. I didn't drink a lot of ... what exercisers, drinks, stuff like that. But I don't really have those, my goals are now general fitness.

That's basically it.

The other participant described her participation in the sports event in her younger years and recalled her feeling of the moment. Diane stated:

And years ago, my daughter wanted to do the March of Dimes Walk in Southern California, and I said, "Okay," and it was like nine miles. So we're out and we're doing it and plugging along. I felt 50 years old at that point, I was probably in my 30s, and I was

ready to quit. And this young man, boy, maybe 11 or 12, who had cerebral palsy, walked past us with his walker, and he just kept going. And it was like, “Wow, I can’t quit! Yeah, look at him.” So you know, seeing other people who you perceive as not as physically capable of what you’re doing, it gives you that boost. (Diane)

Elvin also stated:

When I was young, I did athletics just to be with my friends, and I really didn’t have a goal to be better every day. So I’ve missed opportunities, till the time I was about 20. And I was approaching things more casually than I do today.

Kayla recalled a memory of when she was younger and an image of her mother who was healthy and enthusiastic now gave her the motivation to keep moving. She stated:

Let’s go back to when I was a child, I lived in the country. And my mother raised almost everything she ate. We had flour, we had our own corn out in the field, made our cornmeal and cornbread with our flour, salt, sugar ... And I was motivated because I saw what my mother did, and I knew if my mother did it, I could do it too. She lived to be 102, and that was a motivation for me to keep moving. I didn’t want to be known as a lazy old lady. (Kayla)

Thirteen participants mentioned their *reminiscing about activities or situations*. The participants described their memories related to the physical activities that they had engaged in, or the times when they were more physically active than now. Emilia described her memory of when she was more active and participated in intense outdoor activities in her younger years. She stated:

I was always very active when I was younger, I was very athletic when I was young ... I always did a lot of walking and hiking. I used to cycle. When I was on my vacation time

in Scotland, I would cycle all over Scotland, and none of my friends wanted to go with me. So I would go by myself, you could do that, 50, 60 years ago. (Emilia)

The following quotations depict the participants' experiences of learning and practicing a variety of types of physical activities in high school or college. One participant talked about when he won a table tennis championship. Stanley stated:

I won my high school, table tennis championship. Because I was all over the opponent, I mean I just didn't just stand there and just pop the ball back and forth. So, I'm always looking for techniques and strategies where the ball would come across, hit the side of my side of the table and drop, and I would stroke it from under the table so he couldn't see what spin I was putting it on. You know, that kind of thing just excites me.

The other participant described her experience of involving the bands that made her physically active. Meghan noted:

When I was younger, I, especially school years, I didn't even think about exercise. I was involved in the bands, so we marched a lot. The college I was involved in PE, so we, you know, had that. And I was always moving.

Sean delineated what various types of exercise he involved in his school years and how the golf course where he started playing golf had been changed today. He stated:

When I was in college we did, and in high school, we did different types of exercise to build up strength and also to build up speed and quickness and those exercises ... I started playing golf when I got into graduate school at ... Oh, yeah, because the golf course was right there on campus ... It's really different, it's been redesigned from when I played it in college. They redid the holes and the layout and made some improvements to it. (Sean)

Kayla mentioned her learning experience of playing tennis in her high school. She stated:

Yes, I learned [how to play tennis] when I was in high school. Back then we had what they call study halls. There might be eight, or seven periods in the day, and we had study hall. Well, one period was just to learn to play tennis, and I was taught by a teacher in high school. (Kayla)

The following quotations describe the participants' experiences of when they were more physically active by engaging in outdoor activities. One participant talked about her experience of an intense long-distance walking event. Diane stated:

Well, I think that would be when I did the 60-mile walk. And that was three days of constant walking. You got up and walked, then you slept intensely. You got up in the morning, and you walked in ... You are meeting people saying hello walking two blocks with these women and nobody for the next three blocks and then you'd run into somebody else.

Artie described her experiences of when she was in her home country. She stated:

Since I was a little girl, I grew up in a small town in Mexico, and we didn't have transportation, so I had to walk to go to school. I had to walk to school, and everywhere, like always walking. (Artie)

As the examples above indicate, the participants' retrospective storytelling during the interview conversation itself functioned as a therapeutic method of learning.

Nine participants expressed *wistful feelings because of knowing that they can never regain certain capacities*. The participants recalled enjoyable moments followed by a certain sentiment that they realized that they cannot go back or do those activities again. One of the participants mentioned her longing feelings for when she was healthier in her younger years.

Emilia said, “I want to regain some of the activity. I was always very active when I was younger ... And I miss that. I’m not going to ever play tennis again, and I’m not ever gonna do running or any of that.” The following quotations depict their melancholy even though they knew the irreversibility of the youthfulness and energy when they were younger. Meghan said, “It stinks [laughing]. I cannot do the things that I used to be able to do...I’ve just had to learn, unfortunately, sometimes the hard way what I can and cannot do anymore and that's it. It...it stinks.” The other participant emphasized that while she strived to maintain her physical ability, she got to realize the youthfulness that never regains. Annika noted:

I know I can’t push as hard as I did ... I’m not gonna probably ever get to the point of some of the things that I did previously. But you try to get as close as you can. But you realize that ... you can’t do that in your 50s and 60s ... But then you may know that you’ll never be the same standard that you had before.

Transcendent Learning

The final aspect of accommodative learning among the participants connoted their insight or way of behaving that lay beyond the practical experience of ordinary people, which I have labeled *transcendent learning*. Eleven participants expressed a sense of humor when they talked about something that was unpleasant, such as age-related physical decline, but they still joked and laughed. The participants used self-enhancing, affiliative, or self-deprecating humor styles.

Self-enhancing Humor. The participants expressed a sort of self-enhancing humor and a cheerful outlook in life. Emilia mentioned that she accepted her current body image by paradoxically stating the youthful body image. She noted:

Um, my ultimate goal is I would like to have a figure that I had when I was 20. But I know I won't [laughing]. It's not working. I want to try to get rid of my belly. A little bit [laughing]. (Emilia)

The other participant showed a cheerful perspective to his bad golf swing. Sean said, "Hoping to figure it out. I have to figure it out. It's some little bitty quirk. Yeah, I have to work on and get straight. I can't blame it on the clubs [laughing]."

Affiliative Humor. The following two quotations describe their humorous words that facilitated their relationships with others. Tacey spoke a funny word that smoothed the conversation over with the interviewer. She said, "Oh, well [laughing]. You want the truth [laughing]? It doesn't look as good as I wish it would, but it doesn't look as bad as a lot of other people" (Tacey). Elvin told a joke about the competitive relationship with other peer golfers. He stated:

If I don't hit a very good shot, my friends get a better shot [laughing]. I should have been able to, I should have paid more attention to how I was hitting the ball. I don't get mad at my friends, but I get a little bit upset with myself [laughing]. (Elvin)

Self-deprecating Humor. The following quotations depict the interviewees' sense of humor involving a slight self-disparagement as they said funny things about their aging bodies. When asked to describe how they feel about their body image, one participant said, "Short and fat right now [laughing]. Coronavirus pounds ... [laughing]" (Diane). Meghan stated:

My body tells me that I'm old but up here, I keep thinking I'm younger than I am. That's why I do silly, stupid things. Or crawling around on the floor, trying to help someone, something that they lost, you know, in reaching under seats and things like that [laughing]. I can't do it anymore.

As the examples above indicate, the participants cracked a joke about their self-bodies.

When asked to describe other people's general reaction to them when they were talking about their exercise, 10 participants mentioned that they did not talk much about their participation in exercise and *tried not to boast of their exercise ability or preach*. Karolyn said, "Well, I don't really talk about this [my exercise] much." The following quotations depict their consideration of other peers who were not able to participate in physical activities or were not physically active as they were:

- "A lot of my friends don't exercise. So I don't bring it up to them very much it's a matter of choice to do it" (Tacey);
- "No, I do not, because most of them do not do any exercise, and I don't want to hurt their feelings, make them think that I'm more capable than they are" (Kayla).

Sherry also noted:

She'll ask me "are you going to do this?" and I'd say, "yes," she'd say "well I can't do it." And I just have to be careful what I say because there's a lot of people here [senior center] that are not able to exercise.

The other participant emphasized that he did not want to flaunt to others as everybody had their own ability and purpose of the exercise. Stanley noted:

I feel like sometimes if I talk about my activity and my experiences, and they're not able to do that, then that is depressing to them, that's bringing them down. And that's not what I'm all about, people need to do whatever they can do ... I know that's noticeable to them, I don't want to flaunt it, I'm not trying to make them feel bad.

Overall, in the above examples, the participants tried to show a humble attitude when interacting with other peers.

Nine participants mentioned that they *felt fortunate or grateful for what they have now*.

One of the participants expressed her feeling fortunate to have physical independence compared to other seniors who had mobility limitations. Tacey stated:

We're all elderly. And I think I'm very fortunate to be doing as well as I'm doing compared to most of the people around me. Some of them don't move very much.

They're sitting in wheelchairs or what have you, so I'm thankful that I'm still doing what I'm doing.

One participant also mentioned her feelings of gratefulness for the fact that she has maintained physical ability as compared to other seniors who were less physically active. Bonnie noted:

Sometimes people see me walking down the hall, "Here she goes again ... go and go." I'm blessed I can go ... You know I am just so pleased to be here, to be able to do the things I want to do, have the friends I want, I just really try to dwell on the positive, I really do.

Negative doesn't get you anywhere.

The other participant mentioned that she felt blessed although she had health issues that developed with age. Emilia stated:

I prefer to be positive and not negative. I don't like negativity. So, I've tried to focus on those things that are good in spite of the fact that I have a stab and heart failure, and I'm going blind. And, you know, all the things that have happened to me, I still feel blessed.

The following quotations depict the participants' satisfaction with their current physical condition not to have serious health issues. Stanley noted:

I admit I'm blessed, I am fortunate not to have all these other constraints ... I feel like I'm not going to hurt myself, I'm not. I don't have the constraints and the restrictions my next-door neighbor has, where he has a hard time even getting up out of a chair. Well,

then that's going to affect his exercise, it has to. And it affects the mentality of his exercise. So that's why I am so fortunate.

Elvin expressed his gratitude for his physical ability and knew that he excelled more than many other seniors.

I just feel very fortunate. I know the target age for the highest risk is somewhere around 70 years and older. And I know that it's a... from what I've seen and heard, those people that have either had heart problems or diabetic situations, or some type of ongoing medical problems have a much higher risk. (Elvin)

As the examples above indicate, the participants felt blessed about the fact that they can be independent, or they had no serious health issues that other seniors had.

Nine participants mentioned that they *viewed aging as a part of life*. The following quotations depict their acceptance of age-associated changes in physical ability and appearance as one part of the life course:

- “You can't, you can't be 25, your whole life. You gotta take it one year at a time” (Sherry);
- “When you go through pregnancies and you know and again, various stages of your life, yes, that absolutely, it's just part of life” (Meghan).

The following quotation describe the participant's sense of surrender toward the provision of nature. This participant tried to ignore her pain and accepted it as part of aging. Diane said, “I hurt [laughing], but I just ignore it ... to me it's just part of aging, and I'm okay with it.” As the examples above indicate, the participants were attentive to the signal of the body in which they willingly accepted the physical changes.

Six participants demonstrated *age-related wisdom*, or how people may not know something at a younger age but can come to realize it later in life. The following quotations depict their advice to younger people that they had learned from their experiences of exercise. Stanley described that he had learned through the observation of other seniors' posture and tried to correct himself in which he also practiced his religious belief. He stated:

I see the way older people sometimes begin to walk with their heads hanging down, and that's constricting on their lungs, and so I make it a point to stretch. I make sure that even though it's not physical activity, to me [stretching] it's an important part of it ... I think I've got a lot more to offer in this world if God lets me live, and so I need to take care of my body to make sure that I can do that. (Stanley)

The other participant emphasized the transience of life. Meghan stated:

You've experienced it, it's just ... well, life is too short to be miserable. And you can be miserable physically, but still be positive mentally. So regardless of your physical state, and also regardless of my physical state, I still try to keep a positive attitude.

The following quotation highlighted the participant's insights and resilience learned from accumulative life experiences. Kayla noted:

My husband stayed. I didn't have any children. I do have two stepdaughters. Yeah, so they call me almost every day from all over the world. And they were going to have a big birthday party for me, but that had to be canceled [because of the pandemic]. I'm not going to worry, let's have it whenever we can. So I have that to look forward to.

As the participants' statements above indicate, the participants demonstrated holistic and existential views and obtained wisdom related to their physical changes and health. Overall, in the accommodative learning, the participants engaged in *reflective practices, embodied*

awareness, nostalgic learning, and transcendent learning in a way that reconstructed previously established exercise or health knowledge.

Social Aspects of Learning

Social aspects of learning, in which the participants interacted with other peers or younger people that related to their physical activities, include the categories of *empathic relationships* and *intergenerational interaction*. Six participants mentioned *building camaraderie with people in a similar age group*. The participants described their gratitude for being surrounded by people of same age group. When asked to describe why the participant liked group physical activity, Sherry said, “I enjoy the group, I enjoy the people and the instructor. And it’s a good thing that we can get together and talk, and describe to one another how we feel.” The other participant also described her participation in a senior fitness class and how felt about each other. Artie stated:

Well, they are happy. We are happy together. Because, you know, it’s kind of the same group we go to the exercise. So when somebody is not there, the next time we say, “oh we missed you!” Normally, I do not miss my classes. But yes, we enjoy being together and I always say, “Great, we are here! Great, we need to move.”

Clifford also talked about his golf peers and how much time they spend together. He noted:

A lot of the people I communicate with are golfers. So we talk about golf. That’s where I spend most of my time, at the golf course. And there are also senior groups out there that I play with. Other seniors. (Clifford)

Ten participants also mentioned that they *engaged in and enjoyed participating in physical activities with younger people*. The following quotations describe building intergenerational friendship by engaging in physical activities together:

- “I realized a couple of years ago, when I play golf with my peer group, that many are younger than I am, and we played golf together yesterday” (Elvin);
- “We participate with a lot of younger people in tournaments and stuff, and I’m as competitive as they are, or more competitive. The proof is in the pudding, because I win a lot” (Clifford).

Sean also mentioned his younger exercise partner.

I have a friend who just turned 50, and I said I didn’t realize that I am playing golf with and playing basketball with people that are 20 years younger than I am, and am still hanging, or at least they’re still inviting me to play and participate with them. And so that that’s pretty good.

The following two quotations depict how the participants were motivated to keep engaging in exercise along with their children and grandchildren. Artie noted:

I want to be healthy, because I want to walk always. And I don’t want to be a grandmother in a wheelchair. That’s just my motivation to be active and to be with my family, active. That’s why I do the exercise.

Tacey also stated:

That’s another thing, another reason I keep moving like I do. I know I don’t want to be a burden to my children, and I want to keep myself up and take care of my own self as long as I can.

As the examples above indicate, the participants often engaged in activities with their children and grandchildren that enhanced their physical activeness.

Table 15*Nature of Learning*

Nature of learning	Learning aspects	Associated categories and subcategories	Representative codes
Assimilative Learning	Exercise-related knowledge acquisition		acquiring knowledge in terms of body and exercise, learning the physiological or psychological mechanism, adopting suitable technology
	Skill enhancement with age-appropriate modification	Routinization	keeping exercise in a routine, doing an easy exercise or posture correction throughout the day, plodding away at exercise
		Self-discipline	applying a rigorous self-standard, beginning exercise-related tasks and carrying them through to completion
	Establishment of exercise-prone environment	Deliberate practice	continuing to exercise what they can do, continuing modification in skills, posture, or ways of exercise
Arrangement		establishing an exercise-prone environment (sites, times, and atmospheres)	
Accommodative Learning	Reflective Practice	Grit	creating challenges for self-improvement, establishing exercise-related goals
			living with the age-associated changes, analyzing themselves regarding their physical conditions and emotions during exercise, acknowledging fluctuation in physical or mental condition
	Embodied awareness		focusing on what they were doing during exercise, fully immersing themselves in the process of the activity, appreciating the beauty of nature when exercising outdoors
	Nostalgic learning		learning through reflection, reminiscing about past activities or situations, feeling wistful because knowing that one can never regain some activities
	Transcendent learning		sense of humor, trying not to boast about exercise ability or preach to others, viewing aging as a part of life, age-related wisdom
Social Learning	Empathic relationship		building camaraderie with the people in a similar age group
	Intergenerational learning		engaging and enjoying physical activity with younger people

Overall, as the examples above indicate, the participants were involved in different dimensions of learning by addition, reconstruction, and interplay with the dynamics of social experiences.

Additional Findings: Strategies and Intervening Conditions in COVID-19

Participants' narratives from the early to burgeoning phase of COVID-19 illustrated how they responded to the unexpected public health risk (strategies) and what motivated them to manage their physical and emotional conditions (intervening condition-facilitator and inhibitor). Strategies, particularly since the virus broke out, encompassed (1) *deliberation*, (2) *adaptation*, and (3) *active experimentation*. The categories of intervening conditions that acted to either promote or constrain the participants' strategies to deal with the unprecedented public health risk were (4) *resilience* and (5) *physical/mental restriction* respectively. In the following section, I elaborate on these categories that are associated with the COVID-19 pandemic. Table 16 provides the participants' strategies and intervening conditions during the pandemic.

Deliberation

The most prominent category that the participants responded to the unexpected global pandemic was *deliberation*. Seven participants highlighted the importance of *protective behaviors* and *compliance with the prevention policies* during the event of the COVID-19 pandemic. The following quotes describe the experience of a participant who practiced protective behaviors in the early phase of the coronavirus pandemic, given that a mandatory face-covering policy in Texas went into effect on July 3, 2020. Nicole stated:

For when I come home, my son gave me this idea. When he goes to Sam's Club, he comes home and takes his clothes off, and he takes a shower. So, I wash my hair, and put my clothes in the laundry, and I put something out that so that's ready. (April 20, 2020)

Nicole also highlighted how she strictly complied with the safety regulations, by stating that “I am so willing to abide by the rules, because I surely don’t want it [COVID-19]” (April 20, 2020).

Kayla suggested to the public that compliance with the prevention policies is important.

I would tell anyone, ‘You’ve got to be safe.’ And if they [health officials] tell you to stay in, we need to stay in. If they tell us to wear a mask, we need to wear a mask. We don’t need to take any chances. Because if you take the chance, then you’ve done damage to yourself and your body. (April 22, 2020)

The following two quotations depict the participants’ worried feelings and advice to some younger people who were less attentive to health policies. One participant expressed her concerns, but she did not want to preach to the younger people. Bonnie stated:

Some people are just shrugging it off and not taking it seriously. And you see some of the young people that are not wearing masks at the store and all, this is not a good thing. But that’s their choice. I wear a mask, and no I don’t think I have anything else to add there. (April 17, 2020)

The other participant who interviewed in the midst pandemic conveyed her worried state of mind about some careless younger people. Diane noted:

I hate to say it, because you’re in that age group, but it was the 30 and under and they’re just wandering around the store, and they’re in short shorts and no mask and nothing. We’ve been very, very conscientious ... and we wear the mask in the restaurant. We wear it while we’re ordering and we take it off for tea and then put it back on. (July 1, 2020)

Adaptation

The second most important strategies among older adults in the COVID-19 pandemic were *adaptation*. Ten participants adjusted their exercise routine in a way that they assimilated

the frequency, types, and modality of activities or accommodated themselves to better fit the new situation. The following two quotes represented the assimilative strategies by continuing minimal or personal exercise:

- “I am doing less exercise. I would say I’m doing 50% less. But my priority is to exercise” (April 17, 2020, Artie);
- “I just exercise at home as much as I can, but that’s not as active as at the gym exercises (July 1, 2020, Clifford).

The participants also tried to maintain the physical activeness by substituting other activities, such as doing more housework:

- “I did laundry and changed the sheets on my bed and put them all back on. That’s exercise too, doing the vacuum cleaner and dusted the furniture stuff like that” (April 20, 2020, Tacey);
- “Well, I’m doing more housework, because I usually have a housekeeper, but they don’t let housekeepers come in and clean our apartment. So, I’m doing more of that. I need to vacuum my floor right now” (April 21, 2020, Emilia).

A small number of those interviewed suggested virtual exercising, learning, or online ordering.

Two participants said,

- “I’m doing it with a computer. The mature wellness sends out videos that you can do for seniors, and videos for seniors stretching. It’s really quite good. It lasts about 40 minutes” (April 17, 2020, Bonnie);
- “I have a friend who teaches chair yoga. She let me know that she has a ... She’s on YouTube, so I did one of each of her exercises” (April 20, 2020, Nicole).

Three participants accommodated their perceptions of physical activity to better fit the unexpected pandemic situation by *admitting unavoidable events as a normal part of life*. The participants said,

- “My goal is to get out of here [pandemic]. But I’ll tell you, I don’t complain because everyone’s in the same situation” (April 17, 2020, Bonnie);
- “I’ve just accepted it. I have learned to accept things that I can’t do anything about, or can’t change, because you’ll just get used to doing all of this stuff. If you can’t change it, then don’t worry about it” (April 22, 2020, Kayla).

Active Experimentation

The third of the most prominent strategies in the pandemic was *active experimentation*. Seven participants noted that they have continued their exercise routine by *deliberately keeping themselves busy* in the midst of the pandemic. Bonnie said, “I still stick to the routine I’ve had. I get up, have my breakfast, and then I exercise. And then I have lunch. Actually, I haven’t been bored at all, I’ve kept myself busy” (April 17, 2020).

The other participant who has regularly played golf described his efforts to make tee time reservations during the limited tee time each day since the virus broke out as the following. Sean stated:

I lucked out yesterday and was able to walk two holes after work before they closed the course. I will try them again today, and I will be there over the weekend to work, so I will get some golf in then as well. (April 17, 2020)

A participant highlighted the importance of maintaining their activity routine even in a restricted situation. Nicole said, “But now [during the pandemic] you have no routine ... You have to set up your own routine” (April 20, 2020).

Another strategy from the participant's account was *dispelling their negative thoughts about the virus*. Emilia noted that she tried not to be caught up in the negative feelings from the pandemic, saying, "I try not to think about it [pandemic], sometimes it makes me feel crazy. Because I've never been ... I don't think I've ever been this restricted before" (April 21, 2020).

Resilience

The most noteworthy category regarding the intervening conditions to facilitate the participants' coping strategies was their *resilience*. Five participants noted that they were not carried away by the fact that the virus broke out. One participant expressed that she experienced *no emotional changes* during the COVID-19 lockdown. Bonnie said, "I haven't been depressed, or down in the dumps, or sad about it, because that just defeats the purpose of me being active" (April 17, 2020). Another participant mentioned that he experienced *no changes in physical condition*, because he was able to maintain his exercise routine in the midst of the pandemic.

Elvin stated:

I have a treadmill in our little room upstairs. We exercise in the room with a treadmill, weightlifter, and weightlifting equipment. So, I have not been inhibited from exercising by not being able to go to a gym, because I've got enough equipment at home, and things I want to do. (July 8, 2020)

The participants in the older-old age group acknowledged the *resilience they had gained from critical life or medical events* that they had experienced throughout their lives such as World War II, cancer, or being close to dying. Kayla said that her experience during World War II gave her life insights for dealing with the current global pandemic. She stated:

I'm not letting it worry me. I do wish we would hurry up and get vaccines and other tests that would help us to get back to normal. But I've lived through World War II, so I don't really let it get the best of me. (April 22, 2020, Kayla)

Bonnie mentioned her critical medical experience last year that gave her a more transcendental view of death. "No, I really haven't [any fear]. And you know, I think part of it is that I was so close to dying last May, I'm just grateful for the extra time given to me" (April 17, 2020).

The participants in the older-old age group emphasized that they were not getting impatient or anxious for the pandemic to be over. The following quotes represented their *optimistic anticipation of getting back to normal*:

- "Just stay at home. I know it's hard for you guys because there are too many things to do outside. But believe me ... you will have time after a year to do more" (April 17, 2020, Artie);
- "If you can't change it, then don't worry about it. And I accepted that. I do want the doctors and the scientists to try to find something to help us all" (April 22, 2020, Kayla).

Participants mentioned that they *feel safer by complying with the guidelines*. Artie said, "I don't feel afraid because I know the solution, you should stay at home" (April 17, 2020). Bonnie tried to limit her unnecessary outside activities but still keep her exercise routine, maintaining a calm feeling.

Well, I like to get in my car and go do my shopping. I still go to Kroger, and I go to Sam's, but I wear a mask and gloves ... Of course, I do miss seeing my kids, my family ... But, other than that, you know I still stick to the routine I've had ... Actually, I haven't been bored at all, I've kept myself busy. (April 17, 2020, Bonnie)

Physical and Emotional Restriction

The prominent category of intervening conditions that constrained the participants' strategies were *restrictions on physical activeness* or *physical impacts* from the COVID-19 pandemic. Ten participants agreed that their activity levels have been restricted during the pandemic. The following statements depict the *loss of public or group exercise opportunities*:

- “I haven't been going to the gym lately ever since the virus, pandemic” (July 1, 2020, Clifford);
- “I'm not doing it, I miss the activities and the exercise class and going to the gym” (April 21, 2020, Emilia).

The participants also felt a sense of *loss for their family or group meetings*, although they mentioned that they have been able to talk to their families on the phone:

- “I don't go shopping now. I don't visit my children right now. We call each other on the phone” (April 20, 2020, Tacey);
- “Not since January, I think. I see them. They call me on FaceTime” (April 21, 2020, Emilia).

Four participants emphasized that they experienced physical impacts from the restriction of physical activeness. The following three quotations depict their *diminished health conditions* or *weight gain*:

- “I feel heavy. I need to exercise. So I have not weighed myself, and I don't want to. Not now” (April 21, 2020, Sherry);
- “I'm having trouble with my lower back right now. I think it's because we know we're not doing the exercise classes” (April 20, 2020, Tacey);

- “I’m doing the coronavirus weight gain [laughing]. I didn’t have this before” (July 1, 2020, Diane).

The other prominent inhibitor for the participants’ strategies was the *emotional restrictions* due to the pandemic. Seven participants expressed their emotional distress during the pandemic. Emilia described how she felt excessive *fear and anxiety*, and how it overcame her during the beginning period of the pandemic.

There was a lot of fear. When I went to bed one night, I had almost a panic attack. I couldn’t breathe and felt short of breath ... From then onwards at night, I would start off sleeping by sitting up with a bed pillow ... and then as the night goes on, I can lie down again. One of the things that remains, I have been sleeping with the light on. That gives me comfort for some reason. I also went through a period of fear that something was wrong with my breathing, but I have gotten over that by adjusting to it. (April 21, 2020, Emilia)

Diane expressed her *feeling of isolation* and emotional distress from not being able to go out freely than before.

I feel very cooped up. You know, it’s like you can’t just say, ‘I’m going to the mall or going here,’ you know? My big excursions are ... on one day, I actually got to go to the meat market, the vegetable market, and the grocery store. You know, I think that’s when it hit me hard [how isolated we’ve been]. (July 1, 2020, Diane)

While one participant expressed her *disappointment from the loss of exercise opportunities*, she accepted the unavoidable situation. Sherry shared, “I’ve been very disappointed, as everyone has been ... because we enjoyed that class so much. But, I mean, you know, life is what it is. So, that’s my only comment, is that I have missed [exercise class] a great deal” (April 21, 2020).

Another participant who had been regularly participated in her exercise class, expressed how the loss of exercise opportunities caused her emotional distress as well as discouraged her motivation to exercise. Nicole said, “It’s terrible, because I want the classes, I want the routine, I want to walk out to my door and go to the [exercise] room. And I just, I’m not a very good at discipline when it just comes to me” (April 20, 2020).

Table 16

Strategies and Intervening Conditions in COVID-19 Pandemic

Element of the paradigm model	Categories (Definition)	Representative codes
Action/Interactional Strategies	Deliberation (Careful consideration before taking action or situations occur)	protective behaviors, compliance with the prevention policies
	Adaptation (Act of changing personal behaviors or beliefs to make them more suitable for a new situation or purpose)	continuing minimal/personal exercise, substituting activities, virtual exercising/learning/online ordering, accepting unavoidable events as a part of life
	Active experimentation (Process of trying out a new idea or method to discover effective solutions)	deliberately keeping oneself busy, dispelling thoughts about the virus
Intervening Condition (Facilitator)	Resilience (Ability to cope with adversity or sources of stress, and quick recovery from difficulties)	no change in emotional/physical condition, resilience from previous critical life or medical event, optimistic anticipation of getting back to normal, feeling safer by complying with the guidelines
Intervening Condition (Inhibitor)	Physical and mental restriction (Conditions that limit what a person can do or that limit amount or size of desired actions)	loss of public/group activities and opportunities, loss of family/group meetings, diminished health condition/weight gain, feeling fearful/anxious, feeling isolated, feeling disappointed, loss of exercise opportunities

As described in the sections above, all the categories under each element of the paradigm model, which are causal conditions, context, intervening conditions, and consequence were linked around the core category of *older adults' physical identity shift*. For the final conceptualization of all categories and presentation of theoretical integration, I provide a diagram.

Conceptualization of Physical Identity Shift in Later Life

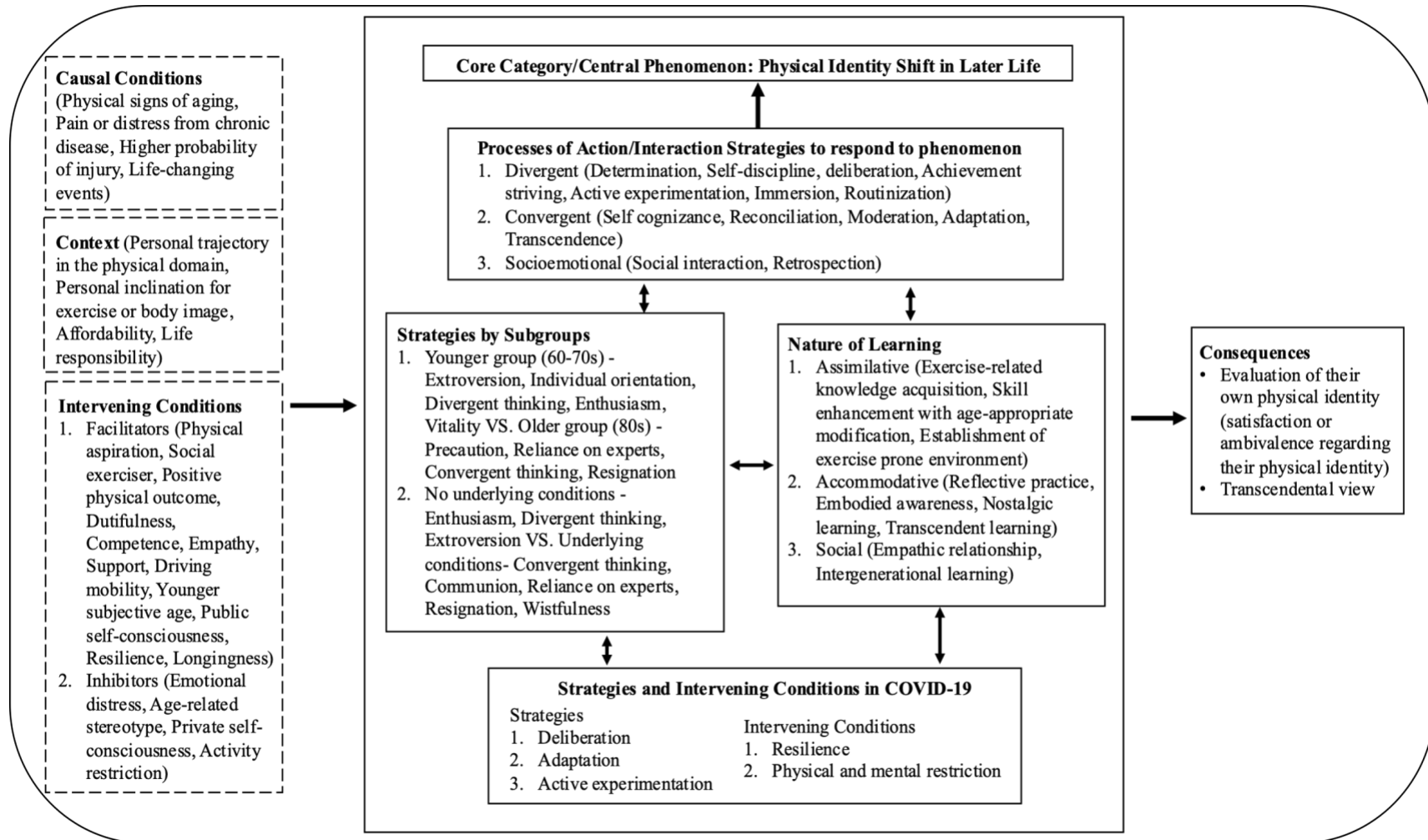
All the categories described in the open, axial, and selective codes contributed to the core category, which is depicted as a diagram. I used diagramming as a tool for integrating the categories and presenting the final theory (Strauss & Corbin, 1990). For the conceptualization of the model, I carried out multiple drafts of diagramming (see Appendix L). The schematic diagram represents data analyzed from multiple rounds of interviews (see Figure 5). Each of the rectangular boxes with a solid line represents a part of the paradigm model (i.e., phenomenon, action/interactional strategies, and consequences) that played a major role in explaining the physical identity development process model. Three rectangular boxes with a dotted line represent conditions that led to the phenomenon (i.e., causal condition), facilitated or constrained the strategies (i.e., intervening conditions), and the participants' personal context that pertained to a phenomenon (i.e., context).

The participants' *physical identity shift* (i.e., phenomenon) to better adjust to their aging bodies and physical changes may be caused by the *physical signs of aging, pain or distress from chronic disease, a higher probability of injury, and life-changing events* (i.e., causal conditions). The contextual conditions within the process of physical identity shift were each individual's different *personal trajectory in the physical domain, personal inclination for exercise or body image, affordability, and life responsibility* (i.e., context). The conditions of *physical aspiration,*

social exerciser, positive physical outcome, dutifulness, competence, empathy, support, driving mobility, younger subjective age, public self-consciousness, resilience, and longingness (i.e., intervening conditions—facilitators) acted to promote the participants’ strategies for how they processed their physical identity development and learned to adjust. In contrast, the conditions of *emotional distress, age-related stereotype, private self-consciousness, activity restriction* (i.e., intervening conditions—inhibitors) hindered the participants from effectively processing their physical identity development. The participants managed the phenomenon through *determination, self-discipline, deliberation, achievement striving, active experimentation, immersion, and routinization* (divergent process); *self-cognizance, reconciliation, moderation, adaptation, and transcendence* (convergent process); and *social interaction and retrospection*. Activating the participants’ processes of physical identity shift (i.e., action/interactional strategies), they may end up reaching states of *satisfaction with their own physical identity* or *ambivalent emotions regarding their physical identity (getting used to it, but still unwelcome)* and a more transcendental view (i.e., consequences).

Figure 5

Model of Physical Identity Development in Later Life



Summary

In this chapter, I presented five key findings. I began with an overview of the participants' characteristics and background information, including their levels of physical activity and exercise status. The key findings were then organized according to the categories and subcategories based on the six elements of the paradigm model: phenomenon, causal conditions, context, intervening conditions, action/interactional strategies, and consequences (Strauss & Corbin, 1990). The major findings that emerged from data derived from the individual interviews included: (a) core category of physical identity shift in later life; (b) three processes of older adults' action/interactional strategies; (c) strategies by age subgroups and underlying conditions; (d) nature of learning; and (e) strategies and intervening conditions during the global pandemic (COVID-19). I then provided a conceptualization of physical identity shift in later life using diagramming as a tool for integrating the categories and presenting the final middle-range theory. As I aimed to describe how to derive the final theory from data systematically obtained, I provided extensive samples of quotations from participants, codes, categories/subcategories, and properties were articulated in the report. By using participants' own words, I provided the readers who search for applications for their own situations with sufficient descriptive data to make transferability possible.

One primary finding of this study highlighted the different coping strategies for physical decline between relatively younger-old and older-old adults. Also, older adults who had underlying conditions versus no underlying conditions differently managed their aging experiences. The second major finding pertained to assimilative, accommodative, and social aspects of learning that occurred in the process of managing the age-related physical changes. The final major finding was that older adults accepted aging and adapted their physical identity

in which they attended to divergent, convergent, and socioemotional processes. Consequently, older adults reached states of satisfaction with their own physical identity or developed transcendental views on the finitude of physicality. Nevertheless, participants also agreed that the age-related physical changes were still unwelcome. The final additional finding highlighted the participants' lifestyle changes and perceptions of their health and physical activity during the 2020 pandemic.

The following chapter discusses my interpretations of the findings and synthesis of the data that surfaced as findings in this chapter. In Chapter V, a summary of the study, a discussion on this study, implications, limitations, and recommendations for future research are provided.

CHAPTER V

SUMMARY, DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

This last chapter comprises a summary of the study, a discussion of the findings, and recommendations for future research.

Summary of the Study

The purpose of this study was to examine older adults' perceptions of their physical identity through their engagement in learning about physical activity. Specifically, I explored the role that learning about and learning how to do particular activities played in identity development for older adults, as well as the meanings older adults attached to their engagement in the physical activity. I employed a grounded theory approach to develop a substantive theory accounting for the specific factors and their relationships comprising the process of older adults' physical identity development through participation in their physical activity learning.

All data were collected in Bryan and College Station in Texas during the spring and summer of 2020 from the individual interviews, field notes, and observation of the participants' activity. The interviews were based on a semi-structured, open-ended interview guide. Each interview lasted approximately 60 minutes. Theoretical sampling helped me decide what data would illuminate the final theory.

Fifteen older adults participated in this study, including six categorized in the "highly active" and nine in the "active" levels of physical activity. All participants were engaged in physical activity or personally meaningful activities that incorporated enough physical activeness including at least two of the following activities: walking, senior exercise program, gym, self-

workout at home, golf, water aerobics, swimming, and cycling. Participants' age ranged from 67 to 89 years.

The research questions guiding the study were as follows:

1. How does older adults' participation in physical activities affect their perceptions of aging?
2. What is the nature of learning for older adults who participate in physical activity?
3. How does older adults' engagement in learning about physical activity shape their identity in later life?

The data analysis revealed the (a) processes of older adults' physical identity development in later life, (b) strategies by age subgroups and underlying conditions, (c) nature of learning, and (d) strategies and intervening conditions in the global pandemic. I then provided a conceptualization of physical identity development in later life using diagramming to present the final middle-range substantive theory.

Discussion

The findings I described in the previous chapter were grounded in the data and lead to the generation of a substantive theory of older adults' physical identity shift in later life. In the following section, I discuss how the concepts that emerged from the data can relate to the existing literature. The primary findings of the analysis were a final model depicting (a) divergent and convergent modes of strategies and socioemotional aspects of physical identity development in later life; (b) different strategies employed between younger-old versus older-old age groups, and between participants who have underlying conditions and those who do not; (c) nature of learning for older adults who participate in exercise (i.e., assimilative, accommodative, and social learning); and additionally, (d) older adults' lives, where the unexpected COVID-19

pandemic threatened their health and normal activity, was considered as another important finding.

The main process of physical identity shift not only included how older adults developed, but also how they maintained their physical selves in the face of aging. Thus, the grounded theory derived from this study advanced the existing literature by (a) adding a contextual explanation of identity development at later life bringing up the concepts of divergent, convergent, and socioemotional processes, and the categories; (b) discovering the factors of older adults' age and underlying conditions influencing the coping strategies; (c) adding a contextual description and echoing the existing concepts of adult learning; and (d) accentuating the recurring process of physical identity development. In the following sections, I respond to the three research questions. I highlight the contributions of the findings in addressing the gaps in the literature. Implications and recommendations are addressed in the subsequent section. This chapter finishes with a conclusion.

Discussion of Research Question One

To answer the first research question, I sought to explore how older adults' participation in physical activities affected their perceptions of aging. The participants' strategies in the convergent process answer the first research question. The participants indicated that they had realized (a category of self-cognizance) and actively addressed (a category of reconciliation) age-associated changes in physical and mental conditions through regular participation in physical activities. The participants became more attentive to bodily sensations while involved in their physical activities so that they could be proactive to age-related changes or health issues. In the

following sections, I tie the findings regarding the first research question into theory and literature.

The findings have addressed that a convergent phase started when the participants began to realize their age-related changes in physical or mental conditions and abilities. While engaging in physical activities, they were attentive to bodily sensations and appropriated multiple pragmatic knowledge from their life experiences to relieve the discrepant feelings from aging bodies. This finding is supported by the prior studies regarding the relationships between involvement in physical activity, bodily awareness, and perception of aging (Erden & Güner, 2018; Fougner et al., 2019). In this regard, my finding paralleled Fougner et al.'s (2019) study, which found that older women exercisers showed body awareness and eagerness to understand their bodily sensations and signs of aging during exercise participation. Similar to Erden and Güner's (2018) study regarding the effects of body awareness on the emotional condition, pain, and quality of life among older adults, the participants in this study who demonstrated high sensitivity to detecting the internal bodily signal expressed confidence to respond to age-related physical changes.

Furthermore, my finding provides a contextual explanation of older adult exercisers' self-cognizance by bringing up the concepts that emerged from the participants' experiences. For example, the participants analyzed the self in terms of their exercise and body shape, were aware of exercise threshold, were cognizant of the causes of pain when exercising, understood exercise motivation, tried to learn about exercise mechanisms, and acknowledged exercise limitations. In other words, older adults' experience, in which they began realizing their own physical conditions and abilities, led their proactiveness toward the aging process.

This finding can also be explained to some extent by an active aging model (WHO, 2002). “Active aging is the process of optimizing opportunities for health” (WHO, 2002, p. 12) that suggests “a general lifestyle strategy for preservation of physical and mental health as people age” (Walker, 2002, p. 124). The findings in this study corroborated the findings of a great deal of the previous work in older adults’ involvement in learning and active aging (Boulton-Lewis et al., 2006; Mendoza-Ruvalcaba & Arias-Merino, 2015). Consistent with Boulton-Lewis et al.’s (2006) study, which found that an individuals’ attitude toward learning and state of health was the most important representation to achieve active aging, my finding indicated that the older adults demonstrated their intention of resuming the past exercise programs or being curious about learning new exercise with maintaining above average physical activeness or health conditions. Similar to Mendoza-Ruvalcaba and Arias-Merino’s (2015) study, which found that the involvement in an active aging promotion program brought about older adults’ improved dimensions of active aging (i.e., physical activity, nutrition, cognitive function, and quality of life), the participants in this study mentioned that their regular participation in a senior fitness program stimulated their optimistic view on the aging process.

This finding challenges the rhetoric in the broader context of aging in a society that has suggested that exercise is a means to fight against biological aging. Consistent with the literature arguing with the notion of the anti-aging purpose of the exercise (Tulle, 2008; Vincent, 2006), the participants in this study did not regard aging as an object that they can defeat, but rather as being actively involved in the process of compromising between ideal physical abilities or body image and reality as they got older. In this regard, the finding paralleled Tulle’s (2008) work that reconstructed the notions of the aging body in the modern society where people uncritically consider exercise as a measure of anti-aging. The participants in this study constantly customized

a younger, ideal body image to fit their present self-body image in which they faced physical decline or pain while exercising, and thus they never battled against the provision of nature. Moreover, the participants modified their exercise purpose in line with their physical condition with increasing age (e.g., physical independence, endurance, or fall prevention) rather than strenuous muscle strengthening or speed improvement.

Discussion of Research Question Two

To answer the second research question, I investigated the nature of learning for older adults who participated in physical activity. Two major modes of learning contributed to answering the second research question. The participants experienced the integrated learning processes of acquiring exercise-related knowledge/skills and reconstructing previously established knowledge on physical activities and their bodies. In the following sections, I tie the findings regarding the second research question into theory and literature.

The findings have addressed that older adults actively engaged in the acquisition of exercise-related knowledge and skills as part of informal learning. Such learning by addition of new knowledge, information, and skills is consistent with the concept of assimilative learning in prior studies (Illeris, 2002, 2003; Piaget, 1977). The participants in this study demonstrated a strong desire to learn and understand the physiological or psychological mechanism associated with the physical activity, actively adopted suitable technology to enhance their exercise performance, continued skills or posture enhancement with age-appropriate modification, and intended to establish an exercise-prone environment. In particular, knowledge acquisition about physical activity enables learners to become physically literate so that they have skills and confidence for better engaging in physical activity (Wang et al., 2019). In this regard, my findings of older adults' process of assimilative exercise learning highlight the importance of

acquiring proper exercise-related knowledge as necessary for older adults to know how to safely exercise in an age-appropriate manner.

The findings also addressed how older adults learn by engaging in reflective practice, maintaining high embodied awareness, often bringing reminiscence about activities that they enjoyed in the past, and seeking a transcendental view on the human body. This finding expands understanding of the concept of accommodative learning (Illeris, 2002; Piaget, 1977), which explains learning by reconstructing previously established knowledge. As a part of accommodative learning, the participants in this study actively analyzed the changes in their body conditions and emotions when exercising; often immersed themselves in the process of the activity; pushed themselves in exercise beyond the threshold to feel the exhilaration; learned from reminiscing about particular activities they once enjoyed; and developed a sense of humor and wisdom. These participants' learning experiences in exercise can add an explanation of accommodative learning in the physical domain.

The findings regarding older adults' exercise learning through engaging in assimilative and accommodative learning processes highlighted their highly self-directed manner of learning engagement. Consistent with the seminal studies regarding self-directed learning in adult education (Knowles, 1975; Tough, 1978), the participants often directed their own exercise learning processes by practicing Knowles's (1975) major steps of self-planned learning. The participants' self-directed learning steps involved (a) exercise-prone climate setting, (b) diagnosing learning needs, (c) formulating exercise, health-related goals, (d) identifying material resources or expert advice for learning, (e) applying appropriate exercise learning strategies, and (f) evaluating learning or performance outcomes, which directly corresponded the major self-directed learning steps in Knowles's work (Merriam & Baumgartner, 2020). In this regard, this

finding expands understanding of the areas of self-directed learning that occurred in older adulthood, which explains physical activity and health-related contexts.

The findings regarding accommodative learning addressed older adults' reflective aspect of learning as the participants experienced their embodied awareness and engaged in reflective practice. Reflection includes the total response of the learners to a situation or event in which they recapture the experiences and evaluate them both at the time of learning and after learning has happened (Boud et al., 1996; Schön, 1983, 1987). Similarly, the participants in this study engaged in reflection both while exercising and after the activity has completed. For example, they were aware and fully concentrated on the process of the activity in which they slightly pushed themselves beyond the threshold and simultaneously monitored themselves to not exceed their limitations too much for the duration of the workout. These findings paralleled one of the key concepts from Schön's (1983, 1987) reflection-in-action. Also, consistent with another reflective concept of reflection-on-action practice (Schön, 1983, 1987), the participants in this study analyzed themselves about their physical conditions and emotion related to their physical activities in their daily life.

Further, findings regarding accommodative learning suggested that nostalgic learning is one of the unique aspects of older adulthood and can contribute to a better understanding of older adults' learning experience. Nostalgic learning is consistent with the prior studies of the effects and meanings of retrospection (Batcho, 2020; Butler, 2002; Wolf, 1992). Similarly, Butler's (2002) study regarding older adults' engagement in life review emphasized that retrospection leads to resolution, atonement, and reconciliation of past issues. In this regard, my findings add a further contextual description of how older adults earned lessons learned from the process of

reminiscence, in which they visited past pleasurable memories when engaging in the particular activities or with people whom they enjoyed engaging in the activities.

Such nostalgic learning is important in older adulthood because the process of recalling enjoyable moments when they were more physically active and engaged in many physical activities than the present buffered the effect of lament, melancholy, or remorse about irreversible physical changes. In this regard, the findings paralleled Batcho's (2013, 2018, 2020) series of nostalgia studies focusing on the psychological contribution of reminiscence to the present moment. Nostalgia can be understood as a mixture of pleasant feelings from happy memories and longing feelings resulting from realizing irretrievableness (Batho, 2020). In accordance with Batcho's (2018) study, which found that nostalgia based on reminiscence and reflection allowed for curative moments to address feelings of loss in which nostalgia itself functioned as autobiography, the findings in this study highlighted the participants' nostalgic learning as a part of negotiating ideal and present physical identity.

The finding regarding the final aspect of accommodative learning among participants highlighted a transcendental view on life. Wisdom, which connotes older adults' insight or way of behaving that lay beyond the practical experience of ordinary people, was one of the prominent aspects related to the participants' transcendent learning experiences. Consistent with the previous studies regarding late-life learning that emphasized transcendental goals (Jarvis, 1992; Moody, 1986), this study found that participants pursued existential learning and obtained wisdom. Older adults' wisdom-related knowledge in this study was particularly related to their physical changes and health. For example, participants showed gratitude for their current physical ability rather than focusing on what they lost as they got older. Moreover, some participants gave advice to younger people that they had learned from their life-long experiences

of exercise or shared their insights and resilience learned from life-changing medical experiences. In this regard, my research paralleled many prior studies grounded in the nature of the psychological developmental process (Erikson, 1963; Kindermann & Valsiner, 1995; Levinson et al., 1978; Vygotsky, 1978). As individuals enter their later stages of life, wisdom-related knowledge can facilitate personal contemplation on the meaning of life, awareness of the finitude of physicality, compromise between the younger self and present self, and endeavor to reach spiritual advancement.

Another prominent finding that contributed to accounting for transcendent learning was older adults' sense of humor. Participants demonstrated a sense of humor in multiple ways (i.e., self-enhancing, affiliative, self-defeating, and aggressive humor; Rnic et al., 2016) and used humor as a therapeutic means (Roth, 2002). For example, the participants in this study talked about various unpleasant aspects about aging or the unavoidable age-related physical decline, but they joked and laughed by pursuing a cheerful perspective in life. Such a self-enhancing type of humor can play a role in regulating emotions and elevating mood by making light of the discrepancies of life (Rnic et al., 2016). Another type of sense of humor that is accompanied by a slight self-disparagement in which participants said funny things about their aging body such as wrinkles, gray hairs, and reduced muscle paralleled Rnic et al.'s (2016) study regarding self-defeating humor style. Besides, the participants' use of an affiliative type of humor could help facilitate relationships and minimize interpersonal tensions in the interview conversation.

Discussion of Research Question Three

To answer the last research question, I explored "how" the participants shaped their identity through engagement in their physical activity and relevant learning in later life. Findings regarding this question are specifically important for this study because this question can provide

an integrated answer for the process of physical identity development in later life. The finding addressed the dichotomous processes of physical identity development among older adults. These divergent and convergent modes of coping strategies correspond to the notions of exploration and commitment respectively in traditional identity development theories (Marcia, 1980). Identity development with any form of learning can occur the dynamics between exploration and commitment in which individuals “search for new information relevant to forming an identity” (i.e., exploration or divergent); “sort through of information and the select among alternatives to arrive at a coherent set of goals and values” (i.e., commitment or convergent; Rathunde & Isabella, 2017, p. 219). In this way, identity development works best when individuals operate divergent and convergent processes (Berlyne, 1971; Rathunde & Csikszentmihalyi, 2006).

Among the specific traits of processes (i.e., divergent, convergent, and socioemotional processes) of the participants’ coping strategies to respond to age-related physical changes, categories of *adaptation* within the *convergent process* contributed to answering the last research question. The participants’ strategies of adaptation in the convergent process particularly accounted for how older adults maintain (a subcategory of assimilation), adjust (a subcategory of accommodation) their physical identity, and reach a more mature state of identity development (a subcategory of integration). In the following sections, I tie the findings regarding the subcategories of assimilation, accommodation, and integration under the category of adaptation into theory and literature.

As discussed in Chapter IV, the major subcategories of adapting age-related physical changes among older adults were *assimilation* and *accommodation* of aging effects. Assimilation can account for a way that older adults try to maintain their existing identity by adjusting

external factors with increasing age. For example, the participants acquired new exercise skills and formed exercise-related habits as ways to resolve negative physical effects or feelings from age-related physical decline or aging body image. The other major process of accommodation explains ways older adults reconstruct their existing identity by adjusting internal factors. For instance, the older adults actively participated in reflection in terms of their exercise practice, became more aware of bodily sensations during activities, or brought nostalgia about their activities that they enjoyed in youth.

This finding regarding the assimilation and accommodation processes is explained by identity process theory that explains the process of how people negotiate discrepant feelings when facing new experiences (Breakwell, 1986; Whitbourne, 1986). The identity process theory is originally based on the concepts of assimilation and accommodation process from the theories of Piaget (1977) and Erikson (1963). People want to enhance their psychological coherence when detecting discrepant feelings from a new situation (Jaspal & Cinnirella, 2010; Jaspal & Siraj, 2011). Such emotional distress from confronting new experiences that conflict with their existing identity is called “identity threat” (Breakwell, 1986; Jaspal & Cinnirella, 2010; Murtagh et al., 2014). In this study, older adults’ perception of aging bodies promoted their physical identity threat that they had not worried about when they were younger, such as physical signs of aging, pain or distress from chronic disease, a higher probability of injury, and life-changing events (i.e., categories of causal conditions in the paradigm model).

Some older adults in this study used assimilation as their primary coping mechanism when confronting age-related physical changes, and others used accommodation. However, these two modes of the process were not seen as mutually exclusive, rather sometimes operating simultaneously. Consistent with the prior identity threat studies (Cappeliez & Robitaille, 2010;

Rothermund & Brandstädter, 2003), my findings emphasized that assimilation helped older adults circumvent negative feelings from aging effects by enhancing exercise skills or transforming their exercise routine. Likewise, the studies employing identity process theory (Frazier et al., 2007; Jaspal & Cinnirella, 2010; Jaspal & Siraj, 2011; Whitbourne et al., 2002), this study also addressed the accommodation as a primary coping mechanism for older adults when dealing with age-related physical changes. The participants had revised their values and priorities in a way that they reevaluated their physical limitations with age, constructed new meanings in health, and thus transformed their physical identity.

Further, another significant contribution regarding the last research question is identifying how older adults experience and apply psychological coping strategies in their daily life. My findings suggested that while older adults accepted and got used to the aging effects, felt thankful for what they could do, and followed the provision of nature, they still regarded age-related changes as an unwelcome experience. This finding can add a critical condition to the existing identity process theory that mainly explains that people reach a more mature final stage as a balanced identity (Whitbourne, 1986; Whitbourne & Collins, 1998; Whitbourne & Sneed, 2002). The participants sought to reach a more integrated stage by uniting segments of their prior experiences to a holistic state, and thus becoming closely linked to a new and existing self. However, such efforts on seeking a mature state, in which they live with the aging bodies and appreciate what they can do, does not necessarily mean they welcome aging bodies. In this way, my findings accentuated the ongoing and recurring processes of physical identity development, rather than considering it to be a linear process of reaching a final mature stage.

Discussion of Findings Regarding Coping Strategies by Subgroups

The next emerging categories showed older adults' coping strategies for dealing with the physical changes that come with age, as varied by their age grouping and the severity of underlying conditions. This finding of different characteristics within an older population can be explained, to some extent, by previous studies' subgrouping older people into young-old (65 to 74 years), middle-old (75 to 84 years), and old-old (85 years and older) groups such as different psychological aspects (Koo et al., 2017), biological differences (Zizza et al., 2009), different health behaviors (Lee et al., 2018), and different learning styles (Jin et al., 2019). However, older adults' differences in coping strategies of how to respond to age-related physical changes have not been explicitly studied. My research addressed this gap by identifying specific characteristics that younger-old and older-old adults demonstrated. For example, the coping strategy style of the younger-old group (e.g., individual orientation, divergent thinking, or enthusiasm) was somewhat contrary to the characteristics of the older-old group (e.g., reliance on experts, convergent thinking, precaution, or resignation).

This finding related to older adults' severity of underlying conditions somewhat contributed to demonstrating the contrasting characteristics among the participants. This discovery of different effects related to one's underlying health conditions on their perceptions of aging can be explained by previous studies regarding the relationship between fatigue qualities and underlying conditions among older adults (Hardy & Studenski, 2010), and the effect of underlying health conditions on older adults' new disability (Colón-Emeric et al., 2013). However, there were no studies regarding various coping strategies based on older adults' severity of underlying conditions. In this way, the present findings can contribute to explaining the various coping strategies older adults employ, such as those without underlying conditions

(e.g., enthusiasm, divergent thinking, and extroversion) and those with underlying conditions (e.g., convergent thinking, communion, reliance on experts, resignation, and wistfulness) as distinguishable characteristics.

Implications

Findings from this study have several implications for scholars and practitioners in the field of adult education and gerontology. In this section, I describe how my findings contribute to future research and practical applications.

Scholarly Implications

Findings from this study have implications for identity process theory and aging studies. The existing identity process theory accounted for the process of identity shift to be assimilation, accommodation, and a plateau-like stage of integrated balance (Breakwell, 1986; Whitbourne, 1986). I could echo the major concepts of existing identity process theory and further elaborate a contextual description of identity process theory. In this study, certain states that older adults reached through the process of identity development were *satisfaction with their own physical identity* or *transcendental experience by acknowledging the finitude of the human body*. These states aligned with the existing concept of assimilation and accommodation in the identity process theory and reinforced the mechanism of how individuals negotiate the experience of aging and existing identity (Breakwell, 1986, Whitbourne, 1986). Further, the older adults' strategies of managing age-related physical changes in this study emphasized the iterative characteristic of physical identity development. Thus, older adults may keep engaging in their physical identity shift process throughout life course as an ongoing process, rather than in a teleological, linear way. This can inform people's understanding and help them acknowledge that constant maintenance of one's physical self may be required until death.

Moreover, the present findings highlight older adults' heterogeneity. In many previous aging research, older adults were generally seen as homogenous in terms of age, race, class, ethnicity, and able-bodiedness (Chen et al., 2018; Lido et al., 2016; Narushima, 2008). This study emphasizes the different characteristics and coping strategies as differentiated between older adults' age subgroups and underlying health conditions. For example, both relatively younger-old adults and those without underlying conditions showed the characteristics of extroversion and divergent thinking, while relatively older and those who had one or more underlying conditions showed more resignation, convergent thinking, and reliance on experts. In this regard, such subgrouping is crucial for contemporary aging studies that can properly address issues regarding heterogeneous characteristics of people in four decades of generations and with various health conditions.

Practical Implications

This study has practical implications for instructors, program coordinators, and directors of senior institutes. First, my findings regarding different characteristics based on younger- and older-old adults can inform practitioners in senior centers to better understand the significant variability among the senior clients. An older population can be characterized as heterogeneous because of their variability in the aging experience, which also implies varied directions of development across individuals or groups (Kelley-Moore & Lin, 2011; Nelson & Dannefer, 1992; Spini et al., 2016). Thus, older adults showed different interests in terms of types of exercise, the purpose of exercise, and perceptions of self-body as they get older. A better understanding of age-specific characteristics and interests can help practitioners to identify appropriate educational programs and physical activities that improve older adults' physical and psychological health. In this way, when developing senior programs and activities, older adult

educators or instructors should consider various interests and thus they can provide a wider variety of age-specific activities. For example, senior activity programs should also reflect the senior members' different psychological aspects (Koo et al., 2017), biological differences (Zizza et al., 2009), different health behaviors (Lee et al., 2018), various cultural beliefs about aging, and different learning styles (Jin et al., 2019) based on age subgroups.

My finding regarding the older adults' new experiences related to physical activity in the pandemic also has critical implications. As the data collection was conducted from before COVID-19 until after the surge phase began, one of my findings revealed participants' experiences and emotions related to their physical activity during the pandemic. Participants experienced restrictions on physical activities, physical impacts from a lack of exercise, and increased desire to use technology for self-exercise throughout the COVID-19 pandemic. While most of the participants seemed interested in and motivated to use technology as an alternative exercise programs, their engagement in virtual exercise classes or self-directed training at home using technology was sporadic or was at a beginner's level such as watching exercise videos or video user-generated content (e.g., YouTube). In this regard, adult educators and instructors in public health, nursing, or fitness fields also need to be ready to incorporate mobile instruction with a variety of content. Thus, mobile health and physical activity education should guide proper exercise practice for older adults in a virtual environment that has become necessary during the pandemic and more important in a post-COVID era.

Limitations and Future Directions

In this section, I outline the limitations of this study and suggestions for addressing the limitations. First, participants in this study were active or highly active in terms of levels of physical activity and that they are regularly engaged in a physically active lifestyle. However,

28% of adults aged 50 and older in the United States are still categorized as physically inactive (Centers for Disease Control and Prevention, 2019; U.S. Department of Health and Human Services, 2018). Therefore, the findings may be limited to such a particular subgroup of the older adult population and cannot be generalized to other older populations with different levels of physical activeness. Future research may investigate the experiences of older adults who are less physically active, or inactive. Moreover, examining the varied exercise status among older adult subgroups including nonexerciser, sociable nonexerciser, active living, solitary exerciser, social exerciser, and extreme exerciser may also illuminate older adults' experiences and perceptions of health and participation in physical activity that are different from what I found in this study.

The participants in this study were mostly White, middle-class, had high educational attainment, and secure occupations. Future research may take various demographics into account and consider older adults who are in marginalized and underserved groups. Thus, the potential participants will need to be considered in future research including those who live in rural areas, who are ethnically and culturally diverse including LGBTQ community, and who have varied socio-economic status. In particular, older adults who are isolated either because of their geographical distance or poor accessibility to the mainstream sources of information should also be considered in future research. Such physical or social isolation from social and health services can cause more health, economic, and transportation or mobility issues than those who gain easy access to such resources (Sadler et al., 2010). For example, future researchers may focus on older adults who geographically reside further away from a community senior center or exercise facilities to examine their experiences of health and physical activity.

Further, the findings in this study implied that perception of body image may be influenced by the gender norms in society. In other words, women and men participants

demonstrated different values regarding ideal body image. While women participants had a desire to maintain both a good-looking and properly working body, men participants placed more value on how their body works properly, maintaining independence, and not becoming dependent on others, than on how their body looks. In this regard, it would be interesting to explore how older adults perceive their body images with age through a feminist lens and also considering ageism and ableism.

Conclusion

Older adults aged 65 and older who are physically active were the major population considered in this dissertation study. The purpose was to develop a substantive theory accounting for the specific factors and their relationships comprising the process of older adults' physical identity development through participation in their physical activity learning. Specifically, I examined the role that learning about and learning how to do particular activities played in identity development for older adults, as well as the meanings older adults attached to their engagement in the physical activity.

The timeliness and significance of this study are found in the global trends toward an aging society and increased desire for healthy aging in late life. Following the demographic trends and major perspectives on adult development of biological, psychological, and sociocultural aspects, health-related issues hold a central place in older adulthood. Older adults become more attentive to the condition of their health and physical functions than in their younger years (Schuller & Watson, 2009; Song & Kong, 2015). Thus, conducting a study on how physical self-perceptions influence the emotions, cognition, and behaviors with increasing age by focusing on older adults who engage in learning about physical activity, and those who may experience conflicting sets of self-beliefs with age, was significant. Therefore, this study

was an attempt in this direction, and it has the potential to provide insight into the process of physical identity development and curative breakthrough for older adults in the face of aging.

To examine older adults' perceptions of physical identity, I conducted a qualitative study employing grounded theory. I interviewed 15 individuals aged 65 and older who are physically active. All participants' levels of physical activity were active or highly active in compliance with the guidelines of the U.S. Department of Health and Human Services (2018). I used theoretical sampling, constant comparative analysis, three phases of coding, and memoing for data collection and analysis. Specifically, I employed the paradigm model (Strauss & Corbin, 1990) as an analytical tool that guided me in systematically organizing linking categories and a core category. For my final theoretical conceptualization, a theoretical diagram aided me in visualizing various categories and presenting a final theory.

The most significant contribution of this study was discovering the processes of older adults' physical identity development. Older adults accepted aging and adapted their physical identity in which they attended divergent, convergent, and socioemotional processes. My finding suggested that through the process of physical identity development, older adults reached states of satisfaction with their own physical identity or transcendental views on the finitude of physicality. However, older adults kept engaging in their physical identity development process throughout life course as an ongoing process rather than a linear way.

The second significant contribution is that the finding of this study highlighted the different coping strategies of physical decline between relatively younger-old and older-old adults. Also, older adults who had underlying conditions and no underlying conditions differently managed their aging experiences. Thus, there is a need for aging research based on

varied subgrouping that can properly address issues regarding heterogeneous characteristics of people.

Third, this study contributed to revealing the nature of learning and the relevant learning aspects when older adults participated in physical activities. In this regard, the findings have addressed that older adults engaged in learning by the acquisition of exercise-related knowledge and skills as a part of assimilative learning. Also, as a part of accommodative learning, older adults engaged in reflective practice, maintained high embodied awareness, often brought reminiscence about activities that they once enjoyed, and sought a transcendental view on the human body. Further, findings regarding accommodative learning suggested that nostalgic learning, sense of humor, and wisdom are the unique aspects in older adulthood and can contribute to better understanding older adults' learning.

Additionally, this study responded to older adults' life as experienced during the COVID-19 global pandemic. The additional findings highlighted older adults' lifestyle changes and perceptions of their health and physical activity during the pandemic. In this regard, my findings also suggested that older adults' broadened opportunities for physical activity during the pandemic as well as post-pandemic, by mobile health and physical activity education, are necessary.

The findings of this study reiterate the importance of context in the study of aging and understanding the nature of the ongoing process of human development. Future aging studies need to take into consideration not only varied demographic information of the older population, but also the context of age subgroups and individual health-related factors. In this study individuals' various causal conditions, context, and intervening conditions shaped how they coped with age-related physical changes.

Finally, this study highlighted the importance of understanding the interplay between aging and the process of physical identity development for many aging societies that are seeking longevity and vitality into late life. In this way, the present study contributes to the field of adult education for further educational agendas for late-life learning as well as in gerontology and health-related fields of practice.

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APPENDIX A
IRB APPROVAL

DIVISION OF RESEARCH



APPROVAL OF RESEARCH
Using Expedited Procedures
(Common Rule – Effective January 2018)

February 24, 2020

Type of Review:	Initial Review Submission Form
Title:	Older Adults' Physical Identity Development through Learning: A Grounded Theory Study
Investigator:	Elizabeth Roumell
IRB ID:	IRB2020-0159
Reference Number:	105847
Funding:	Internal Funds
Documents Approved: <small>*copies of stamped approved documents are downloadable from IRIS</small>	Consent Form_V1.1 1.1 Observation Protocol 1.0 Focus Group Interview Guide_V 1.0 1.0 Letter of Support_Phillips Center docx 1.0 Recruitment Flyer_V 1.0 1.0 Participant Invitation Letter_V1.0 1.0 Interview Guide_V1.0 1.0 Dissertation Proposal for IRB_Bora Jin 1.0
Special Determinations:	Written consent in accordance with 45 CFR 46.117/ 21 CFR 50.27
Risk Level of Study:	Not Greater than Minimal Risk under 45 CFR 46 / 21 CFR 56
Review Category:	Category 7: Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Dear Elizabeth Roumell:

The IRB approved this research on 02/24/2020.

Before 01/23/2021, you are to submit an Administrative Check-In Form to the HRPP/IRB. If the HRPP/IRB does not receive the form, there will be no approval of new research after 02/23/2021.

In conducting this research, you are reminded of the following requirements:

- You must follow the approved protocol;

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176
<http://rcb.tamu.edu>

DIVISION OF RESEARCH



- Any changes to the research must be submitted to the IRB for review and approval prior to implementation;
- Unanticipated problems or other reportable events (including protocol deviations) as described in "[IRP-029 Reportable New Information](#)" must be reported to the IRB within 5 working days of learning of the incident;
- You must notify the IRB of study completion.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,
IRB Administration

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176
<http://rcb.tamu.edu>

APPENDIX B

RECRUITMENT LETTER

Research Invitation Letter



College of Education and
Human Development

*Department of
Educational
Administration and
Human Recourse
Development*

574 Harrington Tower
College Station, TX 77843-
4225
Call: (415) 601-2586

Dear [insert the name of the facility]'s Senior Members,

My name is Bora Jin. I am a Ph.D. candidate from the department of educational administration and human resource development at Texas A&M University. I am writing to invite you to participate in my study about older adults who participate in various recreational activities and regular exercise. Specifically, I am very interested in how older exercisers' wellbeing in later life is influenced by engaging in leisure and physical activities.

For this study, I am looking for seniors who are over 65 years of age and are willing to interview with me at your personal convenience. I am expecting to meet you between February and June 2020.

In appreciation of your time, you will receive a \$30 Amazon gift card.

If you would like to participate or have any questions about the study, please email or contact me at the information below.

Thank you very kindly for your consideration,

Sincerely,
Bora Jin
Email: realbora00@tamu.edu
Phone: 415-601-2586



IRB NUMBER: IRB2020-0159D
IRB APPROVAL DATE: 02/24/2020

APPENDIX C

RECRUITMENT FLYER

2020 Spring

Inviting Research Participants

Dear Senior Members,
We are looking for seniors, who are 65 years and older and can participate in research study on 'Active Seniors'.

You may qualify if you

- * Are 65 years and older
- * Love to exercise or maintain an active lifestyle

Participation involves

- * Individual interview
- * Observation of your activity (optional)
- * Focus group interview (optional)

If you are interested in learning more about this opportunity:

- * You can go to the front desk and pick up an invitation letter
- * You may contact me directly to schedule a conversation at your convenience

In appreciation for your time and your valued input, you will receive a personalized, \$30 Amazon gift card.

Please contact: Bora Jin, Ph.D. Candidate at TAMU
415-601-2586 or realbora00@tamu.edu



IRB NUMBER: IRB2020-01690
IRB APPROVAL DATE: 02/24/2020

APPENDIX D
LETTER OF SUPPORT

Letter of Support

Date: January 15, 2020

To: Texas A&M University Institutional Review Board

Subject: Letter of Support for Bora Jin's Dissertation Study IRB Application

To Whom It May Concern,

My name is [REDACTED] and I am the Head [REDACTED] at [REDACTED]. We have given its approval for Bora Jin to conduct her dissertation study with us. We understand that she may recruit potential research participants through our center.

Ms. Jin has shared with us the purpose of the study regarding examining older adults' perceptions of their physical identity through engaging in learning about physical activity. It is our intention to support her research by allowing her to recruit potential study participants.

If you have any questions, please contact me using the information included below.

Sincerely,

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Bryan, TX 77802

[REDACTED]
[REDACTED]

APPENDIX E

CONSENT FORM

Title of Research Study: Older Adults' Physical Identity Development through Learning: A Grounded Theory Study

Investigators: Dr. Elizabeth Roumell and Bora Jin

Why are you being invited to take part in a research study?

You are being asked to participate in this study because you are over 65 years of age and are actively participating in physical activity.

What should you know about our research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has caused any harm, talk to the Principal Investigator, Elizabeth Roumell, Ph.D. at earoumell@tamu.edu. You may also contact the Protocol Director, Bora Jin, at realbora00@tamu.edu.

This research has been reviewed and approved by the Texas A&M Institutional Review Board (IRB). You may talk to them at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu, if

- You cannot reach the research team.
- Your questions, concerns, or complaints are not being answered by the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Why is this research being done?

We are interested in learning more about what older adults think about the level and kinds of activities they participate in. We are especially interested in talking with adults who maintain an active lifestyle. Our aim is to learn more about what people think about the relationship between their personal activities and hobbies and their views about aging. We would like to learn more about what kinds of activities you pursue, where you go to participate in such activities, and what an active lifestyle means to you personally.

We are also interested in how you learn more about new opportunities to maintain an active lifestyle.

How long will the research last?

We expect the individual interview would take about 60 minutes. If you are interested in participating in the physical activity observation, which would consist of 30 minutes of active observation of one of your activity sessions. You will also have the opportunity to participate in a focus group conversation if you are interested in participating. The focus group conversations last about 90 minutes to 120 minutes.

How many people will be studied?

We expect to enroll about 15 to 50 people in this research study at this site, other sites in the local area, and potentially other communities as needed.

What happens if I say “Yes, I want to be in this research”?

a) Individual interview

You will be invited to an individual interview from one of the following formats: face-to-face, phone, or online interview. You will be asked to schedule the interview at your convenience. Most interviews last approximately 60 minutes. The interview will be conducted in a lounge or an office room in the fitness facility, or in another public place (e.g., coffee shop) depending on your preference. In the case of a phone or online interview, the interview will be conducted at your location. During our interview, we are hoping you will share your feelings and thoughts about living an active lifestyle, aging, your own activities and interests, body perception, and your learning process. For the purpose of these interviews, we would like to make an audio recording for accuracy in data collection. If you do not want the interviews to be audio recorded, then you will not be able to participate. At the end of the interview, we may ask if it would be okay to observe some of your sports or activities. Additionally, if you participate in the interview you will also be invited to participate in a follow-up focus group conversation.

b) Observation (optional)

Following the interview, we will also extend an invitation for the opportunity to schedule an observation session of your sports or fitness activities at your convenience. During the observation, I will observe your activities and take notes. The session would consist of 30 minutes of observation during one of your regular activity sessions.

c) Focus group (optional)

After the interview, you will also be invited to an opportunity to participate in a future focus group session. The focus group sessions will take place with 5 to 8 individuals to discuss how physical activities and an active lifestyle have impacted your quality of life. The focus group session will take place at your fitness center or a public location, and will be scheduled to last about 90 to 120 minutes.

What happens if I do not want to be in this research?

Participation in the study is entirely voluntary. You can choose to discontinue the interview or participation in any part of the study at any point in time.

What happens if I say “Yes”, but I change my mind later?

You have the right to change your mind at any time with no consequence.

Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this research. However, the possible benefits to you for participating in this research include improved knowledge about the benefits of physical activity, increased interest in physical, recreational, and social activities, and/or greater motivation to become more active.

What happens to the information collected for the research?

We will work to ensure minimal use and disclosure of your personal information, including this research study and any other records. However, we cannot promise complete privacy. Organizations that may inspect and copy your information include the TAMU HRPP/IRB and other representatives of this institution.

The record of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely in the investigator’s laptop with full disk encryption and password-protection. No identifying information will be reported. In all records, you will be given a unique code. All other documents and files will be identified by the participant’s identifying code and not their name. Only the two main researchers involved in the study will have access to the interview information. All information and associated documents, including audio-recording files that contain interview data, will be deleted and/or destroyed 5 years after the completion of the study. De-identified data will be retained for future research purposes.

What else do I need to know?

If you agree to take part in this research study, we will pay you a \$30 Amazon gift card for your time and effort. Your decision not to participate in the focus groups or observation will not affect the compensation that you were already given in the individual interview.

If you are interested in joining in a future focus group interviews, everyone will be asked to respect the privacy of the other group members. All participants will be asked not to disclose anything said within the context of the discussion, but it is important to understand that other people in the group with you may not keep all information private and confidential.

APPENDIX F

INTERVIEW GUIDE

Thank you for agreeing to speak with me today. I am a doctoral student at Texas A&M University working on my dissertation. The purpose of this interview is to learn how your participation in physical activities influence how you see yourself and your learning experiences about the activity. Your interview is important to me and there are no right or wrong answers. With your permission, I would like to record this conversation. The interview will last about 60 minutes. More details are available on this consent document. Please take a time to read this and there are signature sections at the end of this document. While reading this, please feel free to ask any questions.

I. General Information

I want to hear about your daily routine.

- Where do you spend your time?
- What kinds of activities are you involved in?
- Who do you hang out with during the week?
- Can you tell me how old you are?

II. General Physical Activity

Now, I'll ask about your PA in general.

- Is being physically active a high priority in your life?
- People refer to PA in various ways such as exercise, workout, a favorite hobby, and so on. How do you define PA in general? What do you consider as a PA? Why?
- What kinds of activities are you engaged in now?
- Can you describe your main motivation for participating in that exercise?
- Some people like to exercise alone, others like to do it in groups. How do you like to do PA?

III. Learning

I'll ask about your learning experiences about that activity.

- What kinds of things do you do to improve your exercise?
- Do you like learning new things?
- Some people find that learning new ideas or skills related to physical activity helps them participate in that exercise. How do you like to learn about new ideas or skills for that exercise?
- What has helped you the most in learning and developing your skills in PA?
- What concerns do you have about doing this exercise? How do you address these concerns during exercise?
- How have you deliberately improved your knowledge about this exercise?
- What other new PAs have you learned in the last few years?
- What kind of PAs do you want to learn or engage in? Can you tell me why?

IV. Aging

Now, I want to hear about your thoughts on your *body*.

- What are your general thoughts about the aging process?
- How would you describe yourself in terms of age? Do you think you are old?
- If you think about your experiences with your aging body, how critical are you of your body? Why?
- Have you tried to be less critical of your body? Can you tell me an example?
- When something is bothering you about your body as age increases, what that was and how that makes you feel?

Physical activity

- You mentioned earlier how you practice PA. Has how you practice them changed over time for example as compared with your age of 40s, 50s or in the last few years? How and why?
- If something is bothering you when doing exercise, can you tell me what that was? And how does that make you feel?
- Do your thoughts on growing older influence your PA? What made you think that way?
- What are other people's general reactions to you when you are out being active, or when you are talking about exercise?
- In your experience, do you think it is easy to be physically active? If not, what makes it harder for you?

V. Physical Identity

Exercise identity

I want to hear about how you see yourself in terms of exercising.

- Think about a situation when you describe yourself to others. Do you usually include your involvement in exercise?
- Do you have several goals related to your exercise? Can you tell me what they are?
- In your life, do you consider exercising as a central factor to your self-image?
- Do you think other people see you as someone who exercises regularly?
- If you were forced to give up exercising, how would you feel?
- How often do you think about this exercise or anything related to this exercise in your daily life?

Activity

- Tell me a little bit more about yourself as you think of how you participate in PA. What is your personality like during that exercise?
- Think about a time when you initiated a new PA. What was the experience like?
- When you were able to keep participating in PA over a long period, can you tell me what that was?
- What made you sustain that exercise? Or what hindered you to sustain that exercise?
- Think about a time when you did a PA and the time just flew by. Can you describe how enjoyable was that experience and what made it enjoyable?
- Tell me about a time when you became frustrated with PA. What made it frustrating to you?
- Tell me about a time when you became bored with PA. What made it boring to you?
- If your friend was going through a hard time with doing regular exercise, how would you react and what would you say to them?

- If you were going through the same thing, how would you react and what would you say to yourself?
- Are there differences between those two? Why do you think that?
- Do you ever compare yourself to others in relation to this exercise? How and why?

Body image

- How do you feel about how your body looks?
- How do you feel about how your body works?
- Have you noticed any changes in your body over time? Please describe it.
- How do/did these changes make you feel?
- How much does what you look like matter to you?
- How much does what your body can do matter to you?
- Which is more important to you—how your body looks or how your body works? Why?

Everybody has a different ideal body image.

- How would you describe an ideal body?
- How would you compare your own body to this ideal?
- How important is it to you to conform to this ideal? Why?
- What kinds of things have you done to make your body fit these ideals if anything?

VI. Recruiting participants

Do you know any other person who can interview this topic?

Closing comments

Is there anything else you would like to talk about before we finish the interview?

APPENDIX G

OBSERVATION PROTOCOL

Observation Protocol

Date and Time:

Location/Physical setting:

Persons Present:

Events/Activities:

Purpose of the event/activity:

[include outcomes, interactions/dynamics between individuals, context or relevance of the event/activity to the study]

Time	Place	Descriptive Notes	Reflective Notes *Observer comments (OC): *Sensory impression (SI):



IRB NUMBER: IRB2020-0159D
IRB APPROVAL DATE: 02/24/2020

APPENDIX H

OPERATIONAL AND THEORETICAL MEMO

* Operational memo (OM): the directions to the researcher-self such as sampling and data collection

* Theoretical memo (TM): the researcher's inductive or deductive thinking about potentially relevant categories, properties, dimensions, and their relationships

3/9/20

Interview 1F

OM: I just completed my first interview on [REDACTED]. Tomorrow, I will have another interview at the same place, so I should get going a little earlier than today. The facility comprises two sections of buildings. In the building, there are many activity rooms in each corner and at each level.

TM: the interview took exactly 45 minutes and 20 minutes of the first greeting and consent form process. The total time of the meeting was 60 minutes. But I expected the duration of the interview would be an hour. How can they talk longer than 50 minutes?

The location of the voice recorder was pretty good, but the next time I should place them closer to the interviewees.

Several interview questions needed to be clarified.

- "Do you like learning new things?" People might say yes, but it's hard to answer the examples? → "Do you like learning new things in general? Do you also like learning new things related to your exercise?"
- "Do your thought on growing older influence your exercise?" People might not clearly understand this question. Also, they usually say no. → "Do your thoughts on growing older hinder your exercise?"
- "If you were forced to give up". This question seems to be interesting, but people may be difficult to describe how bad they feel. → "If you were forced to give up exercise, how would you feel? Would your daily life be dramatically changed?"

3/12/20

Transcribing 3F

TM: Inspiration by older than her, who is in the 90s and physically active. I feel motivated and have a more positive view toward older adults or aging itself when talking with the participants. Like she gets inspired by older than her, I got inspired by her. → Learning from older (than me) people who have done that and been there; strong persuasion.

3/17/20

Transcribing 7F

OM: When I ask about the aging question, "what are your general thoughts about the aging process?" Many of them couldn't understand at once. I figured out 2 reasons: my accent of 'general thought'; the aging process itself. I will need to ask the question more from the participants' side → "When you hear about the word 'aging', what comes to your mind first?"

3/19/20

Transcribing 8F

TM: I have interviewed quite a lot of the 80's women. In this population, I could see many common things and notice data saturation. Especially, when asking questions about learning related to the exercise, many of them do not consider themselves as learners. They said all love

to learn new things, but in terms of exercise, they rely on the instructor's guidelines as their learning sources. → This is probably because when they were asked about their learning experiences, formal/nonformal types of learning might come to their mind first.

Interview 10F

TM: As I anticipated while transcribing the previous participants, her answer was pretty much the same as what I expected → nothing new information occurs. But I have to be cautious that the data saturation occurred within the interview with a certain age group in a similar living situation (i.e., 80s white women). I am looking forward to hearing from tomorrow's interviewee, who is a man and a young-old.

3/21/20

Transcribing 11M

OM: He became obsessive about lying on his back several times a day. → when coding others, focus on the word 'obsession', 'make a point' 'I was all over the' "I am into it".

TM: At the end of our interview, he told me why he decided to participate in the interview because the topics I am interested in seemed to be so personal, people might not want to talk about this. He said the other man that I distributed the invitation with him said he did not want to share because he knows he is not doing what he should be doing. → The scope of study I really want to see might not be someone who know they are not doing what they should be doing.

3/23/20

Transcribing 5M

TM: Many of the participants' motivation to exercise seems to be their health (the 80s) and both taking care of grandchildren and their health (60s-early70s). → lots of code might have to do with 'their family'.

3/29/20

Transcribing 9F

TM: Public health concerns (i.e., Corona Virus) appear in the transcript. An occurrence of disease hinders their activity. → Address this pandemic when coding.

I deliberately ask about their activity before the virus happens.

4/7/20

OM: When I read each transcript, I go back and forth between the voice recording and the transcript to remind their voice and sounds. It reminds me of the day of the interviews, the participants' voice, vibe.

4/17/20

2nd round of interview

OM: I feel responsible to address this serious ongoing health issue into my study because I consider older people may be more vulnerable and their activities tend to be on-site learning, which makes their feelings more restricted. BUT, they seem to be calm and never feel fear. Is it because they don't have many discrepancies between their daily life before and after the COVID-19 situation?

4/18/20

TM: The second round of data collection has been giving me think about 'resilience'. "Do older adults all develop their capacity for resilience or do some more vulnerable older adults break emotionally and mentally with the passage of time?

e.g., GT course assignment

5 phases of physical identity shift: Determination, Immersion, Adaptation, Accommodation, Integration.

Confronting pandemic would add these concepts into the 5 phases: Adversity, stress-related growth, and resilience (think about how these concepts might be added in the process)

5/11/2020

TM: I see 3F and 4F both show salient physical identity (maybe 4F is a little bit stronger than physical identity). They may be exemplified as 'social exerciser' and 'solitary exerciser' (while 4F prefers to exercise in a group, she is focused, high physical achievement-striving). When exercising, 4F does 1) not allow any disruptive actions and 2) can encourage others, not preach because they should do themselves.

Salient physical identity may represent higher self-consciousness.

TM: Whenever all the participants mention their unpleasing body image, they laugh a lot. I see laughing means they get accepted the changes.

5/21/2020

TM: Physical fitness includes cardiovascular endurance, muscle strength, muscle endurance, flexibility, and body composition.

TM: Big five personality traits - extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Conscientiousness and neuroticism relate to health behavior.

5/22/2020

TM: Socioemotional Selectivity Theory (SST) can explain the enhancement of emotion regulation ability with age.

Strength and Vulnerability Integration Theory (SAVI) understands both strengths and vulnerabilities related to age in the context of the individuals' current circumstances.

TM: accepting and resigning what they used to do need to be separated. Accepting is a more active way to compensate for what they used to do but can't do anymore (I still need to clarify what the active means). Resigning is surrendering and living with the physical decline without acceptance.

Additionally, controlling and compensating may describe how older adults cope with physical decline/aging. Controlling is various strategies to enhance their feelings. Compensating is various strategies to handle the situation practically. When controlling was lost, compensating can be used to regain control.

6/10/2020

Literature review

TM: the concept of 'third age' and 'fourth age' is important in my data analysis because these two subgroups of older adults have different characteristics. I might place the 60s-70s to the third age and 80s-90s to the fourth age because they present quite different characteristics in compliance with the below descriptions.

Third age - "a period of later life characterized by relative freedom, health, leisure, personal achievement, and independence that generally begins at retirement from work or family obligations and ends when one reaches the Fourth Age" (27).

"There is a stark contrast between a period of relative health and activity in the 'third age' during which they can roll back the years, and the subsequent desire to be active during what may be a long period of dependency and declining physicality in the 'fourth age' (22).

"While the third age is characterized by new opportunities and activities, the fourth age is a time of decreasing mobility, dependence and bodily decline" (38).

Fourth age - "can come at any time, but is it often compressed into the last couple of years before death...is characterized by sickness, disability, dependency, decrepitude, frailty, and the

imminence of death, rather than a natural progression of life that can also be a positive experience” (27).

6/16/2020

Meeting with Dr. Stough

Grounded theory can change the design (emerging design)

Conducting the subsequent interviews may or may not align with my original research questions. I may discover new things.

OM: Try to reach again to 3 participants who did not complete the 2nd interview.

OM: The second round of interviews was just a month later the outbreak of the COVID-19, which may not enough time to pass to hear about their experiences. Try the third round of interviews from late September to mid-October with focused interview questions based on 1st and 2nd data analysis.

For the next meeting: prepare a short presentation about emergent categories, grouping, any analytical work. We may figure out what I might want to ask for the participants 6 months later of the shutdown.

6/18/2020

TM: There is no such thing as the completed process of acceptance. 8F said, “when you get older, I think that’s not that important. But that still kind of hurt your feelings sometimes that you wish you could look better”.

6/22/2020

TM: The core category encapsulates the grounded theory as a whole. At this point, ‘physical identity shift with age’ seems to be a core category (central phenomenon).

The paradigm model (Strauss & Corbin, 1990, p.96-97)

Causal Conditions: Events, incidents, happenings that lead to the occurrence or development of a phenomenon.

상태를 일으키는 것 (다리 부러짐).

Phenomenon: The central idea, event, happening, incident about which a set of actions or interactions are directed at managing, handling, or to which the set of actions is related.

상태 (교통)

Context: The specific set of properties that pertain to a phenomenon; that is, the locations of events or incidents pertaining to a phenomenon along a dimensional range. Context represents the particular set of conditions within which the action/interactional strategies are taken.

산

Intervening Conditions: The structural conditions bearing on action/interactional strategies that pertain to a phenomenon. They facilitate or constrain the strategies taken within a specific context.

Strategies 를 더 북돋는/억제 시키는것 (담요, 추위)

Action/Interaction: Strategies devised to manage, handle, carry out, respond to a phenomenon under a specific set of perceived conditions.

상태 해결방법 (몸 따뜻히 해줌, 911 부름)

Consequences: Outcomes or results of actions and interactions.

교통해결 또는 상태악화

6/24/2020

1. How does older adults' participation in physical activities affect their perceptions of aging?
2. What is the nature of learning for older adults who participate in exercise?
3. How does older adults' engagement in learning about physical activity shape their identity in later life?

TM: A brief summary of axial coding (the paradigm model)

Phenomenon: Physical identity shift with age

	Category	Subcategory
Causal Conditions	Sign of aging	
	Life-changing medical event	
	Pain or distress by chronic disease	
	*COVID-19	
Context	The personal trajectory in the physical domain	
	Personal inclination	
	Accessibility	
Intervening Conditions (facilitators)	Social interaction	
	Desire related to body	
	Personal belief	Body
		Social interaction
	Exercise motivation	Family
		Reverse action
		Exemplar
	Self-content	Genetic benefit
		*Secureness
		*Resilience
Sense of humor		
Intervening Conditions (inhibitors)	Lack of achievement	
	Sense of deprivation	Example codes: *everything becoming a standstill, *feeling left out
	Impatience	
	*Boredom	

	*Fear	
Intervening Conditions (mixed)	Driving ability	mobility/immobility
	Criticism on ineffectiveness	
	Self-consciousness	Example codes: comparing exercise ability/body image to others/ younger self; rigorous self-standard
	Reminiscence	
	*Calm emotion	
Action/Interaction	Moaning	
	Resigning	Getting accepted
	Accommodation	Practically admitting Example codes: accentuating what I still can do; seeking alternative treatment; continuing skill modification; refraining from overexercising; being cognizant of threshold Example codes (learning): openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; learning/understanding physiological/psychological mechanism when exercising
		Simply admitting Example codes: acknowledging fluctuation in physical and mental condition; doing exercise for maintenance not trying to get any better; not criticizing self; permission not to be perfect Example codes: *humbly admitting irresistible events as a part of life; *continuing minimal/personal exercise
	Integration	Taking care of self-welfare
Concerning others' welfare		
Consequence	The satisfaction of current status	Feeling satisfied with own physical ability/body shape
	Repetitive process	Getting used to it, but still hurting

Meeting with Dr. Stough

11:10:43 From Laura Stough: Disability also increases with age. The World Health Organization estimates that approximately 20% of people aged 70 years or older, and 50% of people aged 85 and older, report difficulty with Activities of Daily Living.

11:16:31 From Laura Stough:

<https://business.maps.arcgis.com/apps/opsdashboard/index.html#/dc74772707d94db9a7d24d>

<https://business.maps.arcgis.com/apps/opsdashboard/index.html#/dc74772707d94db9a7d24d30ffdcf36c>

OM: Theoretical Sampling

	Younger-old (n=5)	Older-old (n=7)
With Underlying Conditions	72 years (7F): pinched nerve in the back 76 years (11M): Heart failure, pacemaker 77 years (3F): chronic back pain	81 years (4F): arthritis, osteoporosis, heart issue, replacement knee 83 years (2F): Scoliosis 83 years (10F): going blind, heart failure 84 years (6F): bad knee, feet issues, back pain 85 years (1F): back issue 88 years (8F): severe back problems 89 years (9F): heart issue, hearing issue
Without Underlying Conditions	67 years (12F) 69 years (5M)	

Underlying medical conditions include asthma, chronic kidney disease being treated with dialysis, chronic lung disease, diabetes, hemoglobin disorders, immunocompromised, liver disease, serious heart conditions, severe obesity Centers for Disease Control and Prevention (2020 May). People who are at higher risk for severe illness. <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-higher-risk.html>

6/25/2020

OM: As I coded, there are some differences between the younger group and the older group. I grouped the 60s and 70s as group #1 and 80s as group #2. Then, each group is sorted by underlying conditions. However, group #2 without underlying conditions is vacant. Now I need to recruit at least 2 of the 80s without underlying conditions. I decided to contact my participants of the 80s to ask to connect their friends with extremely active, even more, active for them.

TM: I sorted codes of action/interaction strategies into the age subgroup. The numbers of code may not necessarily mean the subgroup's distinct characteristics. However, I can see the tendency of how younger groups manage and how older groups manage physical identity shift.

6/26/2020

TM: Their strategies devised to manage physical identity shift may fall into 1) group#1 oriented, 2) group#2 oriented, 3) regardless of subgroups... and more.

6/28/2020

TM:

Qadar, S. (Host). (2020, June 28). The psychology of nostalgia [Audio podcast episode]. In *All in the mind*. ABC. <https://www.abc.net.au/radionational/programs/allinthemind/the-psychology-of-nostalgia/12391746>

Kaitlin Luna, K. (Host). (2019, November 6). Does nostalgia have a psychological purpose? (No.93) [Audio podcast episode]. In *Speaking of psychology*. American psychological association. <https://www.apa.org/research/action/speaking-of-psychology/nostalgia>

I have been thought about the code "moaning" and "reminiscence". I have been struggling with conceptualizing these two codes and did not know how to specify or be differentiated each other. Last night, I came across listening to the podcast about nostalgia, a bittersweet feeling, can incorporate both "moaning" and my expression of "reminiscence". When I coded them, I coded some kind of bitterness emotion to "moaning" and sweetness to "reminiscence". Now, I feel a little clear about this paradoxical emotion of nostalgia.

I would go back to the transcripts and see if there are codes related to nostalgia.

7/7/2020

TM: In theoretical sampling, I figured out all participants fell into four sections: younger with, younger without, older with, older without underlying medical conditions. When I did not have any participants who fall into #2 without underlying condition, I only was able to divide them by their age like group 1 and 2 that was well aligned with my data analysis indicating #1 has a more practical way of admitting and #2 has more simply accepted or resignation. Based on the theoretical sampling process, I actively recruit those who fall into #2 without underlying conditions. The participants in this subgroup tend to perceive and act like #1. Thus, I might identify the codes (practically admitting) from group #2 without underlying conditions. Then, I will need to reframe the table (action/interaction strategy) by underlying conditions.

APPENDIX I

CODE MEMO

* Code memo (CM): conceptual labels, paradigm features, and indications of the process

Open Coding

1F

5/2/2020

When creating code in the initial stage of coding (open), I name them as lower case. Upper case codes might go to the intermediate stage of coding (axial).

2F

5/3/2020

I coded what the participant talk about her learning smartphone from BestBuy seller as 'Informal learning'. I will code all the statements about informal learning after several transcripts are coded.

5/5/2020

Their purpose of exercise may fall into 1) treatment of health issues, 2) maintenance, and 3) getting better (improvement of muscle strength or performance skills, lose weight).

3F

5/8/2020

CM: "Being cautious about getting out of bounds" sounds like "spare themselves with baseless fear. However, when the participants said, they know the difference between the pain of muscle strengthening and sharp pain, they are mindful of their body with sufficient evidence.

I made these two codes separate into "being worried and cautious about getting out of bounds" and "being mindful of the threshold".

CM: "Resigning what can't do anymore" implies the emotion when they are forced to accept their physical decline. "Not being able to do what it used to be" coded when they talk the reality and can't be seen as their negative emotions. Furthermore, "getting accepted" vs "accept" will need to be specified. In my pilot study, I figured out everything to "acceptance", but they need to be differentiated.

But, later these two codes may collapse into one category.

5/10/2020

CM: I code changeable body and emotional condition as "acknowledging to become sometimers". They get to know or learn the fact that the body or emotional status varies in every day or every situation.

The term "sometimers" is mentioned by several participants. I want this language as an in-vivo code.

CM: I specified code related to self-discipline as "beginning tasks and carrying them out to completion".

CM: 3F's statement about her body image put me rethink the meaning of self-consciousness. I looked up some outside psychological sources and found out 2 different terms when describing one's self-consciousness. Private self-consciousness is a tendency to introspect and focus on my inner feelings. Public self-consciousness is an awareness of myself as it is viewed by others. Private self-consciousness seems related to a more positive context when it comes to identity development through constant self-monitoring. But public self-consciousness may lose myself in a crowd and create shyness, anxiety. (Find more references about this).

Clarification of the terms: Conscientiousness (self-discipline) vs neuroticism (self-consciousness and anxiety)

4F

3/14/20

Transcribing 4F

CM: Her direct language condenses what her thoughts on aging and physical activity. "I just don't dwell on being older I do the best I can with the exercises. So far so good." → Meaningful quotation. 'So far so good' may imply her positive reflection on her past life.

5/11/2020

CM: Since the term superiority implies negative connotation, arrogant, I specified the code of feeling superiority into "excelling more than others in exercise ability" and "seeing self as the envy of other seniors".

CM: "Focusing on what I am doing in exercise" would align with reflection in action (immediate correction). This code can be developed further to the 'reflective learning' or 'experiential learning' concept.

CM: I like 3F's direct language of "not pity party". I coded this to "taking responsibility for their action". I might reanimate these in-vivo codes.

5M

5/12/2020

CM: "Establishing exercise-prone environment" implies the participants' proactive planning and build the environment for more exercise.

CM: "Social exerciser" was coded a lot in 5M. Joining in various local/nation sports events, making friends through participating in sports games, supporting seniors or people with disabilities for sports are all coded as "social exerciser".

I will need to specified this code.

CM: 5M has both "social exerciser" and "solitary exercise" as codes. I think his job promote him to participate in many local sports events, but he defined himself as a solitary exerciser.

5/14/202

CM: "increased exercise ability with age" can be compared with "decline in flexibility, longer recovery time". There should be abilities that are increasing with age and decline with age.

Endurance, focus, competence were increased with age.

Specify what abilities are increased with age or as longer practiced regardless of age.

6F

3/20/2020

Transcribing 6F

CM: Asking about the future desire to learn about new exercise, most of them in [REDACTED] don't want to start new things. → "I just want to keep up what I and doing"

5/16/2020

CM: "realizing physical/mental improvement by exercise" is changed to "being rewarded with ph/m improvement by exercise".

The feeling of improved physical and mental health encourage/reinforce their activities. Think about a proper term related to this phenomenon in psychology.

7F

3/28/2020

Transcribing 7F

CM: Exercise goal → many of them said their small everyday goals, such as go to the class, walk frequently (active living)

5/17/2020

CM: “accepting moderate physical ability/condition” was newly identified. This code implies the participant’s emotions toward inevitable aging and consequent body changes.
For the later coding, look at how they reconcile these types of emotions. Are they accepting, resigning?

8F

3/19/2020

CM: She considered doing errands at home as another type of exercise → Depending on their physical condition or as age increases, the meaning of PA varies.

5/18/2020

CM: Competence is “feeling capable and effective” when performing skills or movements.
When the participants say, “the best thing I can do”, “as much as I can do”, or “still can do”, these are not their competence in performing skills or movement.

CM: “seeing aging as unpleasing” is coded when the participants moan about aging or get accepted but still hurt their feelings.

This code implies that no one excited to get older. They get accepted the aging.

CM: “Unavoidable/Undesirable aging” connotes similar emotion with the above code. Aging is unpleasant, but they could not help accepting it.

When “aging unpleasing thing” and “satisfying their own body” coded together, I will put this code “Unavoidable/Undesirable aging”. Look up how this feeling can be described in psychology.

9F

4/6/2020

CM: Code anything related to the current COVID → see how this situation influences their life and emotion as well.

5/19/2020

CM: The participant’s desire not to be known as an old lazy lady is coded as “Public self-consciousness”.

CM: “being motivated by a group” does not necessarily mean “social exerciser”. Social exercisers primarily enjoy socialization when people gathering for the exercise than the exercise itself.

CM: “appreciating the beauty of nature” means they enjoy or know the change of nature and have feelings about nature.

As people get older, change of seasons or the beauty of nature catches their eye than younger. Find this phenomenon and link it to the transcendent view.

CM: “comparing exercise ability to others” is identified. This code can be linked to “a sense of rivalry”.

10F

4/4/2020

Transcribing 10F

CM: The ability of driving is important for older people. Whether having this ability or not determines their mobility, independence, helplessness. → Driving

When the participants talk about something that they can’t do anymore, they laugh. they don’t want to show the loss to be serious or want to show their acceptance of the loss. → Laughing

The participants anticipate their life by comparing with their parents. → Consider a genetic aspect as their life expectancy.

Things that I can change, I change. Things that I can’t, I accept. → assimilation and accommodation.

5/21/2020

CM: "Freedom from work/child-rearing responsibilities" might create positive and negative consequences for older adults' life. Fewer social roles can create fewer stressors or a feeling of emptiness.

CM: "Moaning on about what I can't do anymore" < resigning < not being able to do that I used to < being grateful for what I have now.

These codes can be explained depending on the tone and emotion toward their age-related changes.

5/23/2020

CM: Moaning on about what I can't do < resigning (surrendering without accepting) < practically/simply admitting because it is uncontrollable < being grateful what I can do now

5/24/2020

CM: Moaning on about < feeling impatient what I can't do <resigning < (efforts on) accentuating what I can now do < practically/simply admitting < feeling fortunate comparing with others < being grateful what I can do

11M

3/21/2020

Transcribing 11M

CM: He mentioned his deliberate efforts on lying on his back to adjust spine posture. → I am considering also this type of static exercise to be an important activity.

He mentioned a lot of times about the importance of 'active life'.

5/25/2020

CM: Moaning < feeling impatient < resigning (still having reluctance) < simply admitting physical changes without reluctance < accentuating what I can now do < feeling fortunate comparing with < practically admitting physical changes because it is uncontrollable <being grateful what I can do

CM: He feels he is doing something wrong if he neglects what he can do good for his body. I want to make this quote to code. It may be perfectionism? maybe opposite to "permission not to be perfect".

5/27/2020

CM: Moaning << feeling impatient << resigning (still having reluctance) << simply admitting (no reluctance) << accentuating what I can do now << practically admitting // Strategies: not letting body decline or mind downcast (something about determination, not taking an action yet)/ acquiring knowledge(L) / analyzing self in terms of exercise (L)/ continuing skill modification (L)/ learning from observation (L)/ compromising between ideal self and displeasing self << feeling fortunate comparing << being grateful.

In the phase of "practically admitting physical changes", learning takes place.

5/28/2020

CM: "feeling impatient with what I can't do/insufficient outcome" can occur both in strong and weak physical identity. He was impatient when putting enough effort into bulking up muscle, but his genetic makeup does not yield the sufficient outcome he expected.

5/29/2020

CM: Moaning << feeling impatient << resigning (still have reluctance) << *positive attribution to the health issues :: **accentuating what I still can do << simply (no reluctance, yet taking action) << practically // S: not letting decline / knowledge / analyzing self {***being cognizant of threshold / learning, understanding my body mechanism} / skill modification / observation / compromising ideal and mine << feeling fortunate << being grateful

*positive attribution to the health issues is the point that the reluctance is relieved.

** accentuating what I can do & positive attribution occurs at the same phase.

***being cognizant of the threshold and understanding my body mechanism are subsumed under analyzing self.

12F

5/30/2020

CM: Moaning << feeling impatient << resigning // positive attribution to the health issues; accentuating what I can do << simply admitting << practically admitting {Strategy: not letting decline; acquiring knowledge; analyzing self (being cognizant of threshold; learning and understanding my body mechanism); learning by observation; compromising ideal and mine; continuing skill modification; refraining from overexercising; } << feeling fortunate << being grateful.

“being cognizant of the threshold” and “refraining from overexercising” can be related. But, the first one is more like knowing the point (yet determination or carrying out). The second one more includes their determination not to overexercise or actually refrain from overexertion.

6/1/2020

CM: Moaning << feeling impatient << resigning (reluctance) // positive attribution to the changes; accentuating what I still can do // simply admitting << practically admitting {not letting decline; acquiring knowledge; analyzing self (threshold; body mechanism); observation; compromising ideal and mine; continuing skill modification; refraining from overexercising} <<feeling fortunate << being grateful

Throughout the whole phase (lined), “exercise giving reflective moments or stress breaker” occurs.

Each point of curative breakthrough can be facilitated by “exercise giving reflective moments”; “exaltation slight beyond a threshold”, which relates to “flow”.

6/2/2020

CM: Moaning << feeling impatient << resigning (reluctance) // facing up to reality; accentuating what I still can do // simply admitting << practically admitting {not letting decline; acquiring knowledge; analyzing self (threshold; body mechanism); observation; compromising ideal and mine; continuing skill modification; refraining from overexercising} << positive attribution to the changes << feeling fortunate << being grateful

CM: “feeling obligated to exercise”, “ comparing to others/younger self” can be ‘intervening condition (facilitator)’ of how they become more engaged in exercise.

Axial Coding

1F

6/4/2020

“practically admitting” {not letting decline; acquiring knowledge; analyzing self (threshold; body mechanism); learning by observation; compromising; continuing skill modification; refraining from overexercising; seeking alternative treatment

2F

6/5/2020

“simply admitting” {doing exercise for maintenance not trying to get any better; not criticizing self}

3F

6/6/2020

“practically admitting” {not letting decline; seeking alternative treatment; analyzing self (threshold; body mechanism); acquiring new knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising; openness to learn, then incorporate them or not}

6/7/2020

I refocus on how they express a “sense of humor”. When they talk about something that is not good, they use a sense of humor with laughing.

Moaning {seeing self-body as displeasing} << feeling impatient << resigning (reluctance) // facing up to reality {acknowledging becoming sometimers}; accentuating what I still can do; positive attribution to the changes // simply admitting {doing exercise for maintenance not trying to get any better; not criticizing self} // taking responsibility for own action // “practically admitting” {not letting decline; seeking alternative treatment; analyzing self (threshold; body mechanism); openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising} << feeling fortunate << being grateful

4F

6/8/2020

Moaning {seeing self-body as displeasing} << feeling impatient << reminiscing of activities they enjoyed in the past << resigning (reluctance) // facing up to reality {acknowledging becoming sometimers}; accentuating what I still can do; positive attribution to the changes // simply admitting {doing exercise for maintenance not trying to get any better; not criticizing self; continuing exercise what I can do} // taking responsibility for own action // “practically admitting” {not letting decline; seeking alternative treatment; analyzing self (threshold; body mechanism); openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising} << feeling fortunate << being grateful

5M

6/10/2020

“Aspiring to a certain activity or exercise” is identified.

Enjoying (without a specific goal) << Aspiring (desire to achieve a specific goal) << Excitement/intellectual satisfaction (when achieving the goal).

These codes pertain to flow.

6/12/2020

Moaning {seeing self-body as displeasing} → feeling impatient --- reminiscing of activities they enjoyed in the past → resigning (reluctance) --- facing up to reality {acknowledging becoming sometimers}; accentuating what I still can do; positive attribution to the changes; permission not to be perfect → simply admitting (no reluctance) {not being able to do that I used to do; doing exercise for maintenance not trying to get any better; not criticizing self; continuing exercise what I can do} --- taking responsibility for own action → practically admitting {not letting decline; seeking alternative treatment; analyzing self (being cognizant of threshold; being aware of the cause of pain or body mechanism); openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising} → feeling fortunate → being grateful

6F

6/15/2020

Moaning {seeing self-body as displeasing} → feeling impatient --- reminiscing of activities they enjoyed in the past → resigning (reluctance) --- facing up to reality; acknowledging fluctuation in physical and mental condition (nothing I can reverse biological aging); accentuating what I still can do; positive attribution to the changes; permission not to be perfect; seeing aging as a part of life → simply admitting (no reluctance) {not being able to do that I used to do; doing exercise for maintenance not trying to get any better; not criticizing self; continuing exercise what I can do} --- analyzing self (being cognizant of threshold; being aware of the cause of pain or body

mechanism); taking responsibility for own action; rigorous self standard; seeing exercise as underlying element of healthy life → practically admitting {being cautious about getting out of bounds; not letting decline; seeking alternative treatment; openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising} → feeling fortunate (my welfare) {excelling more than others in exercise ability/body shape → being grateful (taking others into account) {trying not to boast of exercise ability or not to preach; concerning for others' happiness and welfare} 'Practically admitting' shows how to 'begin tasks and carry them out through the completion'.

7F

6/17/2020

Moaning {seeing self-body as displeasing} → feeling impatient --- reminiscing of activities they enjoyed in the past → resigning (reluctance) --- facing up to reality; accentuating what I still can do; positive attribution to the changes; permission not to be perfect; seeing aging as a part of life → simply admitting (no reluctance) {acknowledging fluctuation in physical and mental condition (nothing I can reverse biological aging); not being able to do that I used to do; doing exercise for maintenance not trying to get any better; not criticizing self; continuing exercise what I can do} -- - analyzing self in terms of exercise; being cognizant of threshold; being aware of the cause of pain or body mechanism; taking responsibility for own action; rigorous self standard; seeing exercise as underlying element of healthy life → practically admitting {being cautious about getting out of bounds; not letting decline; seeking alternative treatment; openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising} → feeling fortunate (my welfare) {excelling more than others in exercise ability/body shape; feeling satisfied with own exercise ability or body} → being grateful (taking others into account) {trying not to boast of exercise ability or not to preach; concerning for others' happiness and welfare}

8F

6/18/2020

There is no such thing as the completed process of acceptance. 8F said, "when you get older, I think that's not that important. But that still kind of hurt your feelings sometimes that you wish you could look better". So, the process below may not indicate procedural elements. No linear steps. All steps may occur at the same time or advance towards higher stages by their inputs (learning, determination, younger year experiences).

6/19/2020

Moaning {seeing self-body as displeasing} → feeling impatient --- reminiscing of activities they enjoyed in the past → resigning (reluctance) --- facing up to reality; accentuating what I still can do; positive attribution to the changes; permission not to be perfect; seeing aging as a part of life → simply admitting (no reluctance) {acknowledging fluctuation in physical and mental condition (nothing I can reverse biological aging); not being able to do that I used to do; doing exercise for maintenance not trying to get any better; not criticizing self; continuing exercise what I can do} -- - analyzing self in terms of exercise; being cognizant of threshold; being aware of the cause of pain or body mechanism; taking responsibility for own action; rigorous self-standard; seeing exercise as underlying element of healthy life → practically admitting {being cautious about getting out of bounds; not letting decline; seeking alternative treatment; openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising; caring to be looking neat} → feeling fortunate (my welfare) {excelling more than others in exercise ability/body shape; feeling satisfied with own exercise ability or body} → being grateful (taking others into account) {trying not to boast of exercise ability or not to preach; concerning for others' happiness and welfare}

“Accountable exercise partner” code implies both situations where the partner encourages or discourages them.

11M

6/21/2020

“Compromising between ideal and reality” seems to align with the strategies of “try not to be sensitized”. 11M deliberately does not look at a mirror. A deliberate effort not to be sensitized by the fact of aging can circumvent their negative feelings.

“Rigorous self-standard” can align with “being frustrated when failing”.

12F

6/22/2020

“Being active in youth giving more sense of loss when losing physical activeness” and “outcome reinforcing more exercise” indicates that one who has a stronger physical identity may feel more sense of loss. Also, this type of people does more exercise not to lose their current ability.

[IC] facing up to reality →

Moaning {seeing self-body as displeasing}/ feeling impatient →

[IV] reminiscing of activities they enjoyed in the past

Resigning (reluctance of aging) →

[IV] positive attribution to the changes; seeing exercise as an underlying element of healthy life; rigorous self-standard

Practically admitting (may or may not have reluctance of aging) {accentuating what I still can do; being cautious about getting out of bounds; not letting decline; seeking alternative treatment; openness to learn, then incorporate them or not; acquiring knowledge; learning by observation; compromising; continuing skill modification; refraining from overexercising; caring to be looking neat; same age camaraderie; analyzing self in terms of exercise; being cognizant of threshold; being aware of the cause of pain or body mechanism; taking responsibility for own action} →

*** going through back-and-forth MRP for many years***

More Transcendence

[IV] positive attribution to the changes; seeing exercise as an underlying element of healthy life; taking responsibility for own action; rigorous self-standard

[IV] Wisdom-related knowledge

Simply admitting (no reluctance) {acknowledging fluctuation in physical and mental condition (nothing I can reverse biological aging); not being able to do what I used to do; doing exercise for maintenance, not trying to get any better; not criticizing self; continuing exercise what I can do; seeing aging as a part of life; permission not to be perfect}

[IV] Wisdom-related knowledge; acknowledging human mortality

Feeling fortunate (my welfare) {excelling more than others in exercise ability/body shape; feeling satisfied with own exercise ability or body} / being grateful (taking others into account) {trying not to boast of exercise ability or not to preach; concerning for others' happiness and welfare}

→

6/27/2020

The category of ‘informal learning’ under action/interaction strategies can be specified into self-directed, incidental, and tacit learning. Self-directed learning is that they initiate their exercise or activity alone or part of a group; incidental learning is that they had no intention of learning about the exercise or activity, but they become aware what they learned; tacit learning is a gradual internalization of values or skills without intention to acquire that knowledge/information.

To sub-categorize the types of informal learning, I go back to the participants' statements and see if they had intention and awareness about their learning.

13M

7/7/2020

New codes “being unaffected by aging” and “not concerning physical appearance” identified. 13M is the only person who falls into group 2 without underlying conditions. Overall, he expressed satisfaction with his current exercise ability and body functioning. Thus, he never feels that he is affected by the aging body and remains intact.

14F

7/11/2020

“Living with it and adopting” is identified from 14F. This code implies that they resign the changes, but the reluctance has been relieved and they decide to live with them. The past code of “simply admitting” and some of the codes from “aging as a part of life” can be emerged into this code.

15M

7/13/2020

Code “being unaffected by aging” is also identified in 15M, who is another group2 without underlying conditions.

Theoretical sampling: going back again to the raw data

7/14/2020

Code “living with it/adopting” has been emerged more when I reread the transcript. This code looks similar to “getting used to it, but still, need more/ still unwelcomed”. I code something that they decided to live with that without reluctance because it already has been incorporated into their daily life. But, I could see they think it is still unwelcome.

APPENDIX J

SAMPLE OF OPEN CODING AND CATEGORIZING

Categorizing codes	Open coding	
Categories	Representative codes	Participants' original statements
Self-cognizance	being aware of cause of pain/motivation/own body mechanism	It <i>causes</i> nerve <i>pain</i> down my right leg sometimes. So that is a kind of problem (Tacey). <i>If I am in pain</i> or whatever if... when I walk to my exercise class which is a nice little walk. By the time I get there, I <i>don't notice it [pain] anymore</i> it just, I walked it off so (Nicole). If it's serious...you <i>can tell</i> whether it's an ache or whether you really hurt badly and need some help. There's a difference (Karolyn). When I <i>noticed</i> when I hold in my core, my back feels better (Meghan).
	being cognizant of my threshold	...learning your <i>limits</i> and not trying to go over those limits (Sean). I knew my <i>limits</i> and I just had to stop (Kayla). I do them with <i>some degree</i> of understanding of <i>how much my body can take</i> (Stanley). Let the body tell me when it's <i>time to slow it down</i> or <i>stop</i> something (Kayla). If I feel as though I'm going to <i>get out of bounds</i> , I don't do that (Sherry).
	not being able to do as I used to	Getting out of bed is [laughing] is interesting in the morning because sometimes my back is pretty <i>stiff</i> , or <i>painful</i> (Nicole). It's <i>not the same as when I was younger</i> , of course (Tacey). I just <i>can't do the same</i> thing that I could have done <i>30 years ago</i> (Annika). As you age, your body <i>can't jump</i> and do the things that I did <i>when I was 30</i> (Clifford).
	analyzing self in terms of exercise/body	I try to <i>monitor</i> , tolerance for pulse rate and blood pressure, and how I feel, while I'm doing the exercise outside (Elvin). Sometimes I <i>find myself overdoing</i> it (Sean). I <i>listen to my body</i> (Kayla). I enjoy, enjoy it too, to be able to <i>figure it out</i> and do it (Clifford).
Determination	not letting body decline or mind downcast	I'm accepting and I will <i>keep fighting</i> to keep my mobility in my strength (Diane). I'm <i>not</i> gonna <i>let it</i> frustrate me (Kayla). I am <i>not</i> going to <i>let myself</i> (Stanley). I just <i>don't dwell</i> on being older (Bonnie)
	personal determination/motivation outweighing others encouragement	I <i>don't</i> want to <i>push people</i> (Artie). I don't mention it anymore. It's <i>their choice</i> (Tacey). I'm just driven. I tell that to <i>myself</i> (Stanley). ...because of <i>my desire</i> to do those activities (Clifford).
Self-discipline	beginning tasks and carrying them through to completion	Don't say that. <i>Get up and do</i> something (Sherry). I <i>make a point of keep moving</i> (Tacey). I <i>make myself get out</i> the door (Annika). I'll <i>make sure I go</i> (Meghan).

		I started back to activity right away (Bonnie).
	trying to keep in better shape	For me exercise is a lot of... keep [ing] in shape (Artie). I want to stay as fit as I can (Tacey) I want to be toned (Annika).
	applying rigorous standard to self	I only had a decent body image (Meghan). I like to push myself (Emilia). I am very determined about things (Sherry). I notice a difference if I go through a day where I don't really have anything pressing me (Stanley).
Deliberation	being cautious about getting out of bounds	I think I watch what I'm doing . And if I feel as though I'm going to get out of bounds (Sherry). You've got to come to watch what you do and if you're not used to it (Annika). I have to be careful walking because my balance is not as good as I would like. And I'm trying not to fall (Tacey). Particularly a little slower because I have to be careful that I don't slip and I don't fall (Kayla).
	refraining from overexercising	Especially if you don't keep them up and not overdoing it...sometimes I find myself overdoing it (Sean). My biggest concern is that I am energetic enough and enthusiastic enough that I find it very very easy to overdo it. I can go too far (Stanley). I suddenly realized no need to push myself . So I like to push myself (Emilia).
	CO_protective behavior/abiding by the rule	I am so willing to abide by the rules , because I sure don't want it (Nicole). Some of the young people that are not wearing masks at the store...But that's their choice. I wear a mask (Bonnie). We're wearing masks ...So we're taking precautions to try to keep everybody well (Tacey). My thoughts on it I am more careful because I'm in that very dangerous age group (Emilia).
Achievement striving	creating challenges for self-improvement	I've just bought a pair of whipped gloves to wear of water aerobics for more resistance (Bonnie). I just keep going even when things hurt (Karolyn). I'm always, even the things I can't do , I try to do it (Emilia). I need to be challenged (Stanley). I'm going more uphill inclines or I'm putting the time on or the speed (Annika). It's got to be a challenge to be able to hit that (Elvin).
	reaching a higher/ambitious goal	We need to raise the bar . The bar is too low and becomes complacent (Bonnie). I'm always trying to reach a higher goal . I'm an achiever (Emilia). I started building myself up to the 13 miles (Stanley). I exercise to shoot the best score that I can (Clifford). I want to play better than I do on Tuesday (Elvin).
	pushing beyond threshold to feel exhilaration	It's some spiritual levels that you elevated ...you get to that point where I can't do one more minute and then you do that one more minute (Emilia). You get to the point that you hit a wall and you know that and then the sweat breaks (Annika). General health and strength, keeping up a sort of like...I mean harshen the muscle (Elvin).
	setting exercise related goals	I'm more about keeping myself fit than I am about exercising for the purpose of bodybuilding (Stanley). I would try to set a little goal (Kayla). The main goal is to help lose some weight and get stronger (Sean).

		The target moved out to 80 (Elvin).
	plodding away at exercise/physical movement	I will do it slowly but I will try and try and try (Artie). I just keep going I guess. I try not to stop in and I keep moving (Tacey). To tell you the truth is I can just keep walking (Kayla). You study it out and keep practicing, keep working to get better, you don't give up (Clifford).
	intention of resuming what I used to do	I'll pick it up again (Meghan) I want to regain some of the activity (Emilia). I'm trying to come back to doing the same things I did before (Annika). I will go back to , I used to be a very avid bicycle rider (Diane).
Routinization	keeping exercise in a routine	It's a habit . It's learning a habit and doing it (Sherry). ...pretty regular about going (Meghan). I was a regular participant as a gym (Tacey). I write it on my calendars (Karolyn). It's just part of the day daily routine and activities (Sean). It gets built into your lifestyle (Elvin).
	doing easy exercises or posture correction throughout the day	I do a lot of that during the day just continue to move (Stanley). I take the stairs (Meghan). I do the stairs all the time (Bonnie). At least moving up and down the stairs (Stanley). That's why it takes a little time in the morning, in the afternoon (Elvin).
	keeping active life style	I keep busy (Nicole). I never liked to sit still unless I was reading (Meghan). I want to be outside and moving around (Stanley). I love gardening always (Tacey).
	avid walking	I have to walk a 10th of a mile from my apartment (Kayla). We'd walk a couple of miles to work (Emilia). There's a lot of places I have walked longer distances (Meghan).
Social interaction	having people who regularly talk and meet	we get together fairly regularly (Meghan). I'm very good friends with the neighbors (Stanley). We do it frequently together (Nicole). We like to go in there, visit with our friends (Karolyn).
	building camaraderie	We encourage each other and laugh about it (Meghan). I'm surrounded by people that are in the same situation (Meghan). It's kind of the same group we go to the exercise (Artie). The camaraderie . Just having other people with me (Nicole).
	valuing social interaction	None of us are perfect. That's when we need each other (Meghan). We still need to socialize as we get older (Tacey). It's a good thing that we can get together (Sherry). Oh, positive ...we share little things back and forth (Nicole).

Active experimentation	continuing skill/posture/ways/focus of exercise modification	<i>Try different things</i> versus doing the same thing wrong over and over and over again (Sean). I learned what's going on and <i>keep abreast of</i> everything in golf (Clifford). Just <i>keep changing</i> my golf swing (Diane).
	continuing to exercise what I can do	You should continue to do <i>what you can do</i> (Sherry). I just do <i>as much as I can</i> (Nicole). I just do the <i>best I can</i> (Tacey). I just have to say, I do the <i>best I can</i> (Kayla).
	CO_deliberately keeping self busy/forget to the virous	I <i>still stick to</i> the routine I've had... I haven't been bored at all, I've <i>kept</i> myself <i>busy</i> (Bonnie). I try to <i>keep busy</i> . I try <i>not to sit</i> for too long (Tacey). I <i>try not to think about</i> it sometimes it makes me feel crazy because I've never been. I don't think I've been restricted before (Emilia).
	using technology for exercise	I do have a <i>Fitbit</i> on and I <i>keep track</i> of it (Bonnie). I wear a <i>Fitbit</i> ...you can <i>see progress</i> right away (Annika). We actually have a <i>Wii</i> ...it's kind of telling you your <i>balance</i> (Annika). My children gave me an <i>Apple Watch</i> . When working out, I put it over (Elvin). <i>It [golf GPS]</i> is essential to play the game very <i>competitively</i> (Clifford).
	adopting suitable exercise or knowledge from varied expert	A <i>doctor</i> recommended it (Bonnie). The <i>doctor</i> said as long as I didn't have any pain, doing all this (Tacey). I use my <i>doctor's</i> counsel, telling me what he feels as though I can safely exercise for (Elvin). The <i>physical therapist</i> asked me if I'd done anything that caused the pain in my back (Meghan). The <i>trainer</i> can sometimes find just the right machines for you (Emilia). I do each one came from a different <i>therapist</i> or <i>exercise class</i> or something like that so I put together exercises that I've learned from a lot of <i>different people</i> . (Karolyn).
	opening to learn and then incorporate/not incorporate them	I also want to learn whatever helps me. I'm willing to learn (Tacey). But if there's something I think I could participate in like I <i>wouldn't mind doing</i> a dancing exercise class (Bonnie). <i>Just everything</i> . If it's something that is important, I incorporated it (Karolyn). I want to build that in, but haven't got there yet. That would be <i>good to add in</i> (Emilia).
	initiating activities/exercise	I do my <i>own exercises</i> in the morning (Karolyn). I've tried <i>opening up</i> . I have <i>opened up</i> some programs (Bonnie). I actually <i>organized</i> and <i>ran</i> old man Basketball League, that type of thing (Sean). Saturday, I go to the gym and I spend about an hour there on the machines <i>independently</i> (Emilia).
	establishing exercise-prone environment	I do have <i>workout equipment</i> in my garage, my garage is almost a four-car garage so I can get a lot of stuff in there (Stanley). I've just bought a <i>pair of whipped gloves</i> to wear of water aerobics for the resistance (Bonnie). We also have a <i>treadmill</i> and...another <i>machine</i> that does weights and stuff (Annika).
	setting aside time for exercise from work	Just trying to schedule it out in and <i>plan</i> it out <i>ahead of time</i> (Sean). I should have scheduled in a <i>block of time</i> (Annika). So, we're making a concerted effort to try to <i>carve out time</i> each day for us to do that (Stanley).

	comparing exercise ability/body image to others/ younger self	I'm a better shape than 90 percent of the people here (Kayla). I noticed I'm able to do it better than some people (Tacey). I can tell whether I can do better than they do or I could do worse. yeah, I compare (Karolyn).
	taking reflective moment/stress breaker when exercise	It's fun. It's not a have to think but get to think (Meghan). It relaxes me and it relieves stress (Sean). I am getting away from the routine. I'm doing something different and relaxing , letting my mind free up (Stanley). There's more of calmness with exercise (Annika).
	figuring out through reflective practice	I just try to talk, self-talk . And again, journaling helps (Meghan). Even if you just write a letter or you're not mailing anything, are you can burn it, or rip it up or whatever you want (Nicole).
	learning/understanding physiological/psychological mechanism	I would find out why they were having a hard time. I would really listen (Meghan). I have back issues. And so when I noticed when I hold in my core, my back feels better . That's so when I get up and leave and I'm walking, I hold in my core (Meghan). You go through the process of exercising and go through that soreness period , and then you stop (Sean). I just need to find the discipline to do it (Stanley).
	acquiring knowledge in terms of body/exercise	I'm trying to learn different ways to use my existing body instrument to hit it for further (Sean). There's a lot of material on the internet as well as own television (Sean). I follow the Golf Channel on the TV , the National Golf things and I read the golf magazine , I subscribe to golf magazine so that way I learned what's going on and keep abreast of everything in golf. (Clifford).
Immersion	being curious about learning new	I enjoy knowing different points of view (Meghan). I love learning new things (Emilia). By learning new things. I'm an avid learner (Diane). That's really why what drives me. I like learning new things (Stanley).
	feeling excited or intellectual satisfaction	I feel more that it's the intellectual level that I need to maintain (Stanley). I just loved the game . And that's why (Clifford). It was exhilarating to me to be able to do that (Stanley).
	focusing on what I am doing in exercise	I stay focused on the exercise. My mind doesn't wander (Bonnie). I focus on doing it (Sean). I used to concentrate on what I'm doing and pay attention to what I need to do (Artie).
	fully immersing in the process of activity (flow)	I am sure it was enjoyable. Then it goes fast (Karolyn). The time in the gym, just kind of flies by (Sean). It is amazing how quickly it goes by (Sean). Keep my mind occupied while I'm doing that (Stanley).
	enjoying the exercise itself	I thoroughly enjoy that (Meghan). It's a form of relaxation and enjoying just being outdoors (Sean). It made endorphins, made me feel real and good in my mind (Tacey). Biking is just pleasure (Diane). I just concentrate on the exercise... a form of entertainment (Elvin).

	using instructor as a primary source of knowledge	I can just count on the <i>classes</i> (Karolyn). I kind of like a <i>puppet</i> I just do whatever she does (Nicole). We <i>follow</i> up with the <i>instructor</i> (Sherry). I used to do what the <i>teachers</i> told me to do (Artie).
	taking advantage from an instructor-led fitness activity	If we're not doing it correctly, she will come and <i>direct you</i> (Bonnie). The <i>instructor</i> will <i>tell you</i> , you know what exercise going to do and why (Nicole). I've always felt that a <i>trainer</i> was a good, a <i>good incentive</i> (Emilia).
	appreciating the beauty of nature when exercising	Look at the <i>trees</i> blooming and the changes in the <i>seasons</i> and the <i>flowers</i> and the <i>plants</i> , and I would enjoy what's going on round about me (Emilia). The <i>weather's</i> nice. It's just nice to feel like you're <i>out in nature</i> (Annika). You can get <i>out</i> and be out in the <i>sunshine</i> (Meghan). The <i>trees</i> are blooming, the <i>birds</i> are singing, and the <i>wind</i> was soft and was beautiful, beautiful (Artie).
Retrospection	reminiscing about activities/situation	I was always very active <i>when I was younger</i> , I was very athletic when I was young (Emilia). I'm just <i>looking back</i> a bit since I wish I could do that again (Bonnie). I <i>enjoyed</i> my tennis. It was just I was just like watching the sun go up, come up and (Kayla). I <i>grew up with</i> a negative self-image for a long time (Emilia).
	wistful feeling because of knowing that I can never regain them	I <i>missed</i> that. And I'm <i>not</i> going to <i>ever play</i> tennis <i>again</i> . I'm <i>not ever</i> gonna do running or any of that (Emilia). We did some mountain climbing...I <i>can't</i> do that <i>anymore</i> . But it was fun. Yeah, we did it (Meghan). I must say, <i>at my age</i> ...Yes, sometimes it is <i>hard</i> . It's hard for me <i>when I cannot do things before</i> (Artie). It's kind of <i>gotten away from</i> it (Sean).
	learning from the reminiscence	I <i>realized how</i> negligent I've been of that through the years (Meghan). When I went from not riding a bike to riding a bike 26 miles that <i>was a painful experience</i> (Sean). I <i>find myself developing</i> a cadence or a rhythm (Stanley).
Reconciliation	maintaining current exercise without challenges/new exercise	I kind of <i>stick to</i> the <i>same</i> things (Sherry). Just <i>sticking</i> going to class (Karolyn). What I do is <i>enough</i> (Artie). <i>No new</i> ones. Pretty much I <i>stay</i> the <i>same</i> type of exercise (Artie).
	exercising for physical maintenance/ maintaining independency	It's <i>not necessarily strength building</i> on my part. It's flexibility, it's being ambulatory, being able to get up from a chair <i>without heavy assistance</i> (Stanley). You try to <i>stay well</i> so that's why I do it. <i>Stay well</i> (Tacey). I'm doing exercise, so <i>at least</i> there is no worst. It is, it is not painful, but it's not completely fine (Artie).
	exercising as treatment of health issue	When I broke my leg you had to do things in order <i>to get better</i> (Karolyn). I do that I've got some exercises, how <i>to strengthen</i> your back and I will do those sometimes (Meghan). I'd get up and go down to the <i>rehab</i> every day (Bonnie). The <i>doctor recommended</i> the exercises (Artie).

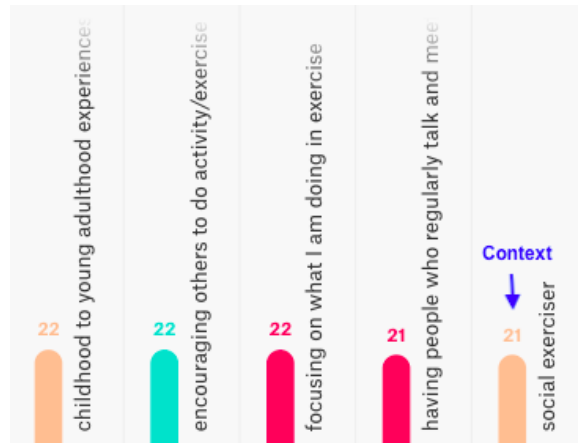
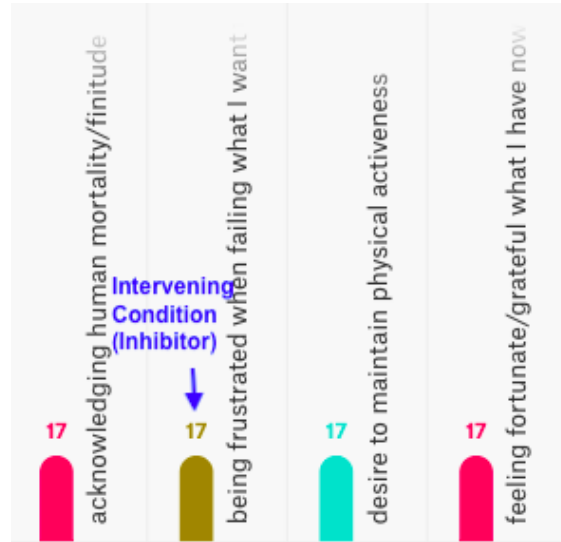
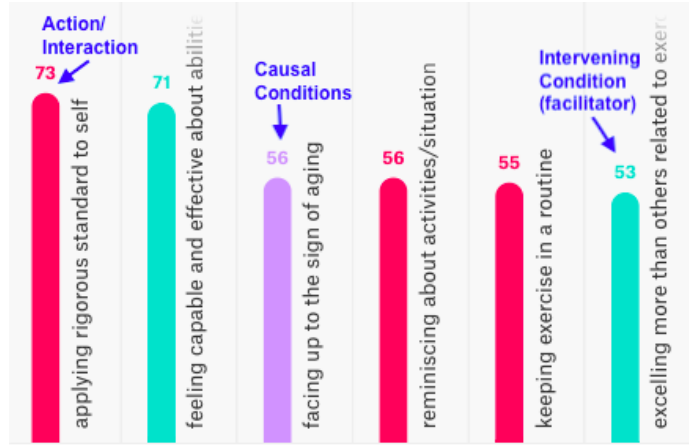
	prioritizing body functioning than appearance	I guess <i>how it works</i> , is probably more important (Tacey). Being a woman, I would probably say looks. But in a natural fact, more <i>how it works</i> (Emilia). That is <i>more important</i> to me than the look part (Elvin). Health is the <i>main thing</i> , and healthy and strong. You can do the things that you desire to do (Clifford).
	compromising between ideal/younger and present self/activity	So I try to <i>find a balance</i> between the two (Stanley). I got to <i>pace myself</i> a lot (Sean). So <i>instead of</i> doing it, intensely for 30 seconds. I might do it routinely for two minutes <i>just to maintain</i> (Stanley). I get very short of breath that's part of the heart failure. So, I have to do things <i>a little at a time</i> (Emilia). I know how much to push right now, and realize that I'm going to see results, I need to <i>just go slow</i> (Annika).
Adaptation	resigning what can't do anymore/changes	It's not. <i>Not now</i> (Sean). <i>Nothing you can do</i> all in the plan (Bonnie). <i>I don't need</i> to be playing football <i>anymore</i> (Stanley).
	caring to be looking neat	I like to <i>look nice</i> to my own <i>hair</i> . My hair is not too nice now. But I like to do a little bit of <i>makeup</i> (Bonnie). That makes me feel better when I <i>look a little better</i> (Tacey). I try to <i>dress nicely</i> as nicely as I can and <i>look as good</i> as I can and my clothes (Kayla).
	accentuating things I still can do	I just have to realize that there are so many things I <i>still can do</i> now (Meghan). I <i>still can do</i> pretty well (Tacey). Just the ability to <i>still do</i> it (Diane).
	CO_continuing minimal/personal exercise	I <i>still do</i> my morning bed exercises and take several short walks outside each day (Karolyn). I am doing <i>less exercise</i> . We will say I'm doing 50% less. But my priority is to exercise (Artie). My <i>only</i> consistent form of exercises now is going out into my back yard and swinging a weighted golf club...and walking in my neighborhood (Sean).
	CO_virtual exercising/learning/ online ordering	You can do for <i>seniors' videos</i> for seniors stretching. It's really quite good at lasts about 40 minutes (Bonnie). She's on <i>YouTube</i> so I did one of each of her exercises (Nicole). The class meets on <i>zoom</i> (Emilia). I ordered the groceries, <i>by the computer</i> and just go and pick it up (Artie).
	positively attributing to the changes/things accompanied by that changes	I was <i>thankful</i> for the exercise a lot (Meghan). It's working out pretty <i>well for me</i> (Tacey). I just really try to dwell on the <i>positive</i> (Bonnie).
	criticizing self about what I can't do anymore	I'm <i>critical</i> about that because...it's something that happens to us (Nicole). I'm <i>critical</i> , because I don't look as I used to (Tacey). I am <i>critical</i> of it my body. And I'm sorry that I didn't do anything about it sooner (Emilia). It makes me feel <i>disappointed</i> (Stanley).

	acknowledging fluctuation in physical/mental condition	One thing I've learned about <i>aging</i> is that we have what I learned to call <i>sometimes</i> (Meghan). <i>Sometimes</i> it'll take me maybe a week or two (Bonnie). <i>Sometimes</i> I do. And <i>sometimes</i> I don't. It's <i>varied</i> (Tacey). It's a matter of understanding that <i>not every day</i> is going to be (Annika).
	acknowledging human mortality/finitude	I was so <i>close to dying</i> last May (Bonnie). I will <i>die</i> sometime in the future (Emilia). I might <i>die</i> tomorrow. We don't know (Stanley). Goal is to keep walking <i>until they bury me</i> (Kayla).
	CO_just admitting irresistible events as a part of life	I mean you know <i>life</i> is what it is (Sherry). I don't complain because <i>everyone's in the same situation</i> (Bonnie). If you <i>can't change</i> it, then <i>don't worry about it</i> (Kayla).
	taking responsibility for own actions	I don't want to use my age as <i>an excuse</i> (Bonnie). Either <i>like it</i> and keep going <i>or</i> get discouraged and have <i>a pity party</i> that no one comes with you but me. I don't like those (Meghan). <i>I can't blame</i> it on anybody else it's <i>all me</i> (Stanley).
	living with it/adapting	Just <i>live with</i> it and <i>adapt</i> (Diane). I just <i>accepted</i> . it's just part of the old growing older sort of sense (Bonnie). I'll be ninety in a little over a month. I think about that occasionally but I'm <i>ready for it</i> (Kayla). I'm <i>going blind</i> . And, you know, all the things that have <i>happened to me</i> (Emilia).
	feeling fortunate/grateful what I have now	<i>I feel blessed</i> that I can (Emilia). I am just so <i>pleased</i> to be here, to be able to do the things I want to do (Bonnie). <i>Luckily</i> , I'm okay (Clifford). I'm <i>thankful</i> that I'm still doing what I'm doing (Tacey). I am fortunate not to have all these other constraints (Stanley).
	seeing aging as a part of life	I don't dwell on that I just, <i>it is what it is</i> (Bonnie). I'm trying to listen to <i>my body as I go</i> (Annika). I've just got to accept that. That's <i>a part of life</i> (Meghan).
Moderation	acknowledging different fitness levels/body shapes	I understand <i>some people</i> have headaches and you can't do this or that. And, but you <i>just have to keep going</i> . That's not what I'm all about, people need to do <i>whatever they can do</i> (Stanley). It's different for <i>different people</i> (Clifford). Everybody's <i>not the same</i> (Tacey).
	giving self-permission not to be perfect	I'm <i>not critical</i> of it (Meghan). she gives us or they give us <i>permission to not be perfect</i> , but just to try (Meghan). I'm <i>not trying to get better</i> at it (Karolyn).
	trying not to boast of exercise ability or preach	I don't like to say to them, it's almost like <i>bragging</i> (Nicole). I don't want to <i>flaunt</i> it. That is depressing to them, that's <i>bringing them down</i> (Stanley). <i>I don't preach</i> . I'm just observing (Bonnie).
Transcendence	sense of humor	I try to keep a <i>sense of humor...</i> I think <i>laughter</i> is <i>wonderful medicine</i> (Meghan). It's really <i>funny at my age</i> (Stanley)

	<p>You hear the <i>joke</i> all the time (Annika).</p> <p>My goal is to get out of here <i>[laughing]</i>. But I'll tell you I don't complain because everyone's in the same situation (Bonnie).</p> <p>The weight I'm not okay with <i>[laughing]</i> the arthritis is okay <i>[laughing]</i> (Diane).</p>
<p>seeing exercise as underlying element of healthy life</p>	<p>It's just an <i>important part of my life</i> (Sherry).</p> <p>The <i>healthier</i> they are, the <i>more productive</i> they are, and <i>happier</i> they are (Sean).</p> <p>It helps with my <i>general all over life</i> so (Nicole).</p> <p>I realized that it should be a life, a <i>life journey</i> as far as trying to stay in fairly decent physical shape (Elvin).</p>

APPENDIX K

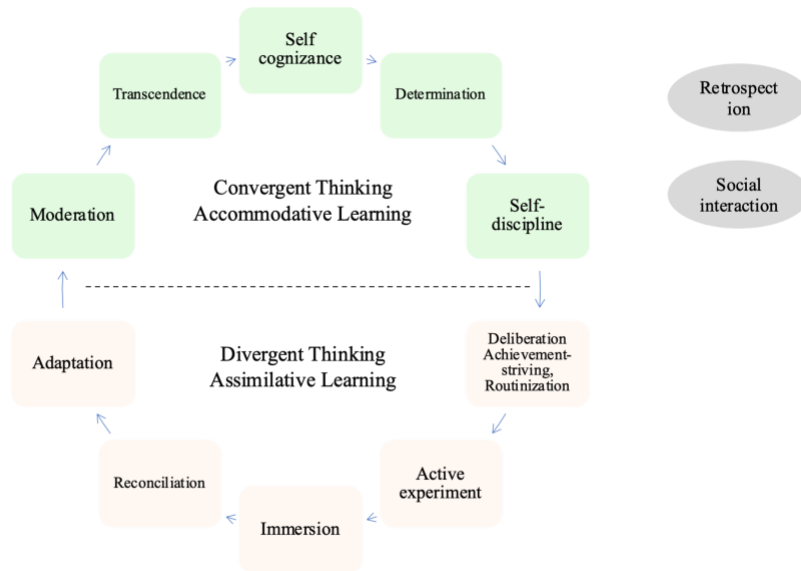
COLOR CODES OF EACH ELEMENT OF THE PARADIGM MODEL



APPENDIX L
 DIAGRAM DRAFTS

Draft Figure.

Older Adults' Action/Interactional Strategies



Draft Figure.

Conceptualization of Physical Identity Shift in Later Life

