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**LONGITUDINAL ASSOCIATIONS BETWEEN PLAYFULNESS AND RESILIENCE
FOR OLDER WOMEN IN A LEISURE-BASED CONTEXT:
A STUDY OF THE RED HAT SOCIETY**

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ABSTRACT

According to the broaden-and-build theory, older adult playfulness may have an important role in contributing to enduring positive resources (e.g., social connections, coping strategies). However, less research has examined application of the broaden-and-build theory outside the laboratory environment, and none has connected it to the leisure context in a longitudinal study. Although the Red Hat Society, the subject of this study, has demonstrated its ability to provide older adult playfulness according to the broaden-and-build framework (Mitas, Qian, Yarnal, & Kerstetter, 2011), previous research has not examined changes in older women in this broaden-and-build process.

The purpose of this study was to investigate and extend aspects of Fredrickson's (2001) broaden-and-build theory using data from a longitudinal sample of participants in the Red Hat Society (RHS), a social club for women aged 50 and older. More specifically, the current study examined the effect of older adult playfulness on resilience growth, defined as an outcome of the broaden-and-build process, or positive adaptation across the life span (Strurgeon & Zautra, 2010). In addition to observing within-person differences between older adult playfulness and resilience across a 12-wave study period in a multilevel model analysis, between-person variables were included to examine differences based on the life-span developmental perspective. Social support from RHS friends and RHS identity were controlled to avoid other potential resources contributing to resilience growth among the women in this sample.

Using longitudinal data from the research study *Does Leisure Promote Well-being? A Longitudinal Examination of Mature Women's Participation in Leisure-based Social Groups*, conducted by Yarnal, Son, Qian, and Chick at The Pennsylvania State University in 2009, and multilevel modeling (MLM) analyses, data from 101 participants were examined to see if older

adult playfulness contributed to resilience in older women, controlling for age, education, marital status, physical health, mental health, social support from RHS friends, and RHS identity.

The results supported the broaden-and-build theory and found both within- as well as between-person effects of older adult playfulness on resilience growth in this particular group. Monthly older adult playfulness predicted higher levels of resilience over the 12 study months, controlling for age, education, marital status, and social support from RHS friends. Furthermore, mental health, the average level of older adult playfulness, and RHS identity moderated the association between older adult playfulness and resilience.

The findings of this study added to the previous playfulness literature and connected the leisure and positive psychology fields by confirming that older adult playfulness facilitates resilience growth according to the broaden-and-build framework in a leisure-based context. Moreover, the findings provided additional evidence that resilience is a state-characteristic that can be changed by frequent positive leisure-based experiences.

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Chapter 1

Introduction

Playfulness is defined that individuals engage in a voluntary leisure activity for fun, enjoyment and pleasure (Chick, Yarnal, & Purrington, 2012). Older adults improve or maintain their cognitive, emotional, social and psychological functions through playfulness (Yarnal & Qian, 2011). Additionally, resilience may be increased by older adult playfulness. Resilience, the ability to bounce back from adversity (Smith et al., 2008; Windle, 2011), is an outcome of positive adaptation or development across the life span (Strurgeon & Zautra, 2010). Fredrickson's (2001) broaden-and-build theory adds a comprehensive explanation for this growth process: Positive emotions (e.g., feelings of joy and fun) broaden an individual's momentary thought-action repertoire (e.g., play and exploration), which allows for flexible attention and behaviors (Tugade, Fredrickson, & Barrett, 2004), and builds enduring personal resources (i.e., physical, intellectual, and social) over time (Fredrickson, 2000; 2006). Having been shown to relate to experiences of positive emotions according to the broaden-and-build theory, older adult playfulness may be a key component in the resilience growth process. That is, according to Fredrickson's (2001) broaden-and-build theory, experiences of older adult playfulness may build resilience and lead to a long-term well-being (Mitas et al., 2011).

The leisure literature has examined the association between positive emotions and the building of personal resources to adapt to life challenges. Indeed, leisure activity is a life-long involvement providing older adults an opportunity to continue personal growth and development (Kleiber & Nimrod, 2009). For example, engagement in leisure activity provides a stage for self-expression, social network development, and feeling useful (Son et al., 2007). Furthermore, the Red Hat Society is a leisure-based social group whose purpose is to provide older women with an

opportunity to have “fun, friendship, freedom, fulfillment of lifelong dreams, and fitness” (Cooper, 1998, <http://www.redhatsociety.com/>). Engaging in leisure activity in the Red Hat Society has been found to provide many of these benefits by offering positive resources (e.g., playfulness, social support) for older women, which in turn contribute to their well-being (Mitas et al., 2011; Yarnal, 2006).

Based on the life-span developmental perspective, however, individuals are differentially exposed to “risks of disease and/or protective factors as well as the social conditions that link the effects of risk and protective factors to the social environment” (Alwin & Wray, 2005, p. 8). That is, older adults may perceive different levels of positive resources from leisure activities based on their life-span development. To fully understand the association between older adult playfulness and resilience, the life-span developmental perspective was included in this study to examine a variety of factors that influence individuals’ development at multiple levels (i.e., within-person and between-person) of analysis (Lockenhoff, 2012).

The purpose of this study was to examine (a) the broaden-and-build theory in a leisure-based context, the Red Hat Society, (b) if its members perceive older adult playfulness to build resilience over time, and (c) if everyone presents a different growth pattern based on the life-span developmental perspective. A longitudinal study was designed to investigate how older adult playfulness contributes to resilience (within-person change) and if personal characteristics (e.g., age, education, and marital status) influence this broaden-and-build process (between-person differences). More specifically, the current study used both cross-sectional and longitudinal methods to collect data, using baseline demographic information to examine between-person differences among the RHS women, and monthly information on each individual to examine within-person changes over a 12-month period.

This study may be important in laying the groundwork for demonstrating the use of the broaden-and-build theory in a leisure-based context whereby resilience growth relates to older

adult playfulness over time. Furthermore, it may extend the older adult playfulness literature by providing strong evidence of the relationship between older adult playfulness and resilience in a longitudinal study.

Chapter 2

Literature Review

To develop the purpose of the current study and have a comprehensive understanding of my topic, I reviewed literature related to leisure and the Red Hat Society, older adult playfulness, resilience, social support and leisure identity. I also examined both the broaden-and-build theory and the life-span developmental perspective as potential theoretical frameworks for the study. Additionally, I considered the longitudinal research method to fully understand the benefit of using longitudinal data for this study in the leisure field.

Leisure and the Red Hat Society

According to Aristotle, leisure is “freedom from the necessity of labour” (Wearing, 1995, p. 69). Leisure experiences have been demonstrated to have a positive association with positive emotions (e.g., Janke, Nimrod, & Kleiber, 2008; Lennartsson & Silverstein, 2001), which is one of the key components in health promotion across the life span (Salovey, Rothman, Detweiler, & Steward, 2000). Moreover, older adults’ social leisure groups may provide psychological resources, including a sense of accomplishment and identity, better self-perceptions, and a means for redefining aging (Barrett, Pai, & Redmond, 2012). These findings suggest that a social leisure context such as the Red Hat Society could provide these benefits, perhaps prolonging life and preventing depression among older women (e.g., Mock et al., 2012; Son et al., 2007). In the following section, I define leisure, leisure for older women, and provide background on the leisure-based-context of the Red Hat Society.

Leisure Defined

Leisure is defined as any preferred and enjoyable activity participated in during one's free time (Kleiber & Nimrod, 2009), characterized by perceiving freedom and intrinsic satisfaction from free-time activities (Kelly, 1996). Three functions of leisure can help establish an individual's status and contribute to personal identity: relaxation, entertainment, and personal development (Torikildsen, 2002). As pertaining to perceived freedom, leisure is viewed as a self-understanding and self-improvement process (Iso-Ahola, 1980). Individuals experience a sense of leisure when an activity is not related to work and duties (Martin & Lopez, 1999).

The benefits of leisure participation vary: Individuals can enrich their meaning of life (Carruthers & Hood, 2004), recover from stress, and restore social and physical resources (Pressman et al., 2009) through leisure activities. The positive associations between leisure and health, including physical health and psychological well-being, have been examined in previous research (e.g., Carruthers & Hood, 2004; Hutchinson & Nimrod, 2012; Pressman et al., 2009). Researchers have demonstrated that formal leisure activities, such as volunteerism, religious activities, and club attendance, are negatively associated with mortality (Lennartsson & Silverstein, 2001) as well as depressive symptoms (Menec, 2003), and positively associated with physical functioning and level of happiness (Hutchinson & Nimrod, 2012). In addition, leisure can be perceived in different contexts: individual, community, national, and international (Torikildsen, 2002). Such differences in the benefits of leisure in certain contexts, e.g., by gender, culture, or age, have been recognized in previous studies (e.g., Hoitenga, 1999; Martin & Lopez, 1999). For example, Iso-Ahola (1980) defined leisure as personal development, nonwork time, relaxation, choice, and enjoyment in general, while a study defining leisure for older adults (Hoitenga, 1999) indicated that personal development is not viewed as leisure definition for this population.

Leisure for Older Women

From the life-span developmental perspective, the meaning of leisure varies not only by age but also by gender (Son et al., 2007) and social status (Mock, Shaw, Hummel, & Bakker, 2012; Siegenthaler & Vaughan, 1998). Previous research has focused on leisure and gender differences among older adults (e.g., Iwasaki & Smale, 1998; Son, Kerstetter, & Mowen, 2008; Wearing, 1995). Older women's perceptions of and participation in leisure activities (e.g., Riddick & Stewart, 1994; Siegenthaler & Vaughan, 1998) have been receiving increasing research attention. Many women devote much of their time to family across life course, but by midlife many start to spend their time in new and personal leisure activities for themselves (e.g., Marybeth et al., 2008; Wang et al., 2012).

Older women's participation in leisure activities is more frequent than men's during the aging process, especially informal and social leisure activities (e.g., talking on the phone with friends, neighbors, and relatives; getting together with friends, neighbors, or relatives to go out, or visiting in each others' homes) (Janke, Davey, & Kleiber, 2006). Older women are willing to invest time and energy in leisure activities for enjoyment in part because it reduces their image of being old (Genoe, 2010). Poole (2001) also indicated that older women participated in leisure regularly to keep their physical appearance. Not only do they seek physical benefits, but older women also tend to continue some of their leisure activities because they are seeking a social setting without men (Strain, Grabusic, Searle, & Dunn, 2002).

Older women may not define certain activities (e.g., spending time with friends) as leisure, but they experience a feeling of freedom and enjoyment in spending time with loved ones (Liechty & Yarnal, 2010). For example, some older women have defined leisure as freedom from other people's expectations. Leisure also provides them an opportunity to escape their current situation or to be themselves (Siegenthaler & Vaughan, 1998). Thus, leisure gives them a new

sense of self to balance other roles (e.g., as wife, mother or caregiver) (Thang, 2005). Leisure has been seen as a means of finding meaning in later life (Henderson, 1997). Many older women also believe that leisure activity becomes more important with age (Henderson, Hodges, & Kivel, 2002) and provides a stage for self-expression, social network development, and feeling useful (Son et al., 2007). For example, retired women have viewed leisure activities as enjoyable experiences with beneficial effects, such as coping, self-esteem, fulfillment, and therapy (Siegeenthaler & Vaughan, 1998).

Indeed, leisure engagement contributes to older women's health and psychological well-being. Janke et al. (2008) explored the relationship between leisure activity and depressive symptoms—such as feeling depressed and lonely—among widowed and married women in later life. They found that older widowed women who engaged in more leisure activities presented fewer depressive symptoms than those who did not or who were less engaged in such activities. Leisure activities, particularly those that promote social contacts, may be associated with better cognitive functioning (Reynolds, 2010). Longitudinal studies have also demonstrated that engaging in social leisure activities improves cognition and reduces the risk of developing Alzheimer's disease (Wang et al., 2006; Wilson et al., 2002). Previous research has suggested that participating in a social leisure context such as the Red Hat Society may prolong life and prevent depression among older women (e.g., Mock et al., 2012; Son et al., 2007).

A Leisure Context: The Red Hat Society

Previous studies have demonstrated the relationship between formal leisure activity and psychological well-being among older women. A leisure-based social organization, the Red Hat Society (RHS) can promote women's well-being because its purpose is to provide older women with an opportunity to have “fun, friendship, freedom, fulfillment of lifelong dreams, and fitness”

in a leisure-based context (Cooper, 1998, <http://www.redhatsociety.com/>). The RHS provides its members an opportunity to play and have fun, which can enhance and develop their self-identity, reduce stress, and enable them to perceive social support by building and strengthening friendships with other members (Mock et al., 2012; Son et al., 2007). Members of the RHS have indicated that it provides them unique experiences, giving them a new sense of joy and fun in their lives (Son et al., 2007). Additionally, participating in the RHS has been viewed as a coping strategy that has even partly compensated for the death of a loved one by providing an opportunity to build new relationships and change the survivor's circumstances (Hutchinson et al., 2008). In sum, the RHS has created a bonding opportunity for older women to enhance social support and to provide its members a sense of belonging, which improves well-being (Mitas et al., 2011; Son et al., 2010) and promotes a positive attitude toward aging (Barrett et al., 2012).

The concept of leisure as practiced by the Red Hat Society reflects Huizinga's understandings of play (Torikildsen, 2002). Both leisure and play are viewed as non-serious byproducts, which lead to more important ends (e.g., learning social skills and relieving stress). Leisure may provide an ideal area to explore and examine the playfulness construct (Barnett, 2011). The Red Hat Society, for example, is a leisure-based context that has been demonstrated as providing older women an opportunity to play and have fun (Yarnal, 2006).

Playfulness in Older Age

Explanations of playfulness come in two kinds: ultimate and proximate (Chick, 2001). The ultimate definition answers the question "Why play?" from an evolutionary perspective, while the proximate definition answers "How to play?" based on certain behaviors and immediate interactions of individuals with the environment (Yarnal, Chick, & Kerstetter, 2008). To fully understand how RHS women may benefit from frequent exposures to playfulness, over one year,

I focus on the proximate definition of older adult playfulness in this literature review section, and connect older adult playfulness to leisure.

Playfulness Defined

A proximate explanation of playfulness means that individuals engage in a voluntary leisure activity and/or freely choose non-serious behaviors just for fun, enjoyment, satisfaction, involvement, and pleasure (Chick, Yarnal, & Purrington, 2012; Glynn & Webster, 1992). Generally, playfulness has been conceptualized as an individual disposition that is manifested by the qualities or attributes that individuals bring to their environment (Bozionelos & Bozionelos, 1999). From her study of play among children, Lieberman (1977) indicated that playfulness is a style of activity engagement that has five behavioral dimensions: physical spontaneity, cognitive spontaneity, social spontaneity, manifestation of joy, and sense of humor (Barnett, 1990; Schaefer & Greenberg, 1997). Other studies have suggested similar dimensions in adult playfulness: creativity, curiosity, pleasure, and a sense of humor (Guitard, Ferland, & Dutil, 2005), and fun (Glynn & Webster, 1992).

In general, playfulness is not defined as a specific activity but by individuals' experiences (Csikszentmihalyi, 1981). Similarly, previous studies have asserted that playfulness entails situational or state-based stimuli (Qian & Yarnal, 2011; Yarnal & Qian, 2011). However, concepts of play and playfulness are slightly different: play is viewed as having a vital role in human development and rooted in personality, which "refers to its behavioral manifestations" (Magnuson & Barnett, 2013, p. 129), whereas playfulness is viewed as "the predisposition to frame a situation in such a way as to provide oneself with amusement, humor, and entertainment" (Barnett, 2007, p. 955). That is, play "is defined by attitudes and behavioral styles", and "playfulness is the term applied to this style and attitude", as in play activities (Hess & Bundy,

2003, p. 6). Playfulness has been well-examined in animals and children (Barnett, 1990), but little is known about adult playfulness in general (Bozionelos & Bozionelos, 1999) or older adult playfulness specifically (Yarnal, 2006).

Older Adult Playfulness

The function of playfulness may change across the life span and life stage (Yarnal & Qian, 2011). Children learn skills and real adult activities in the context of playfulness to prepare them for adulthood (Chick, Yarnal, & Purrington, 2012). However, adult playfulness allows individuals to learn new skills and information in order to adapt to their new environmental conditions when, for example, moving to new places, changing jobs, or making friends (Yarnal, 2006). Older adults may learn flexible attitudes and behaviors from playfulness that helps them adapt to modern society (Yarnal & Qian, 2011). Furthermore, older adult playfulness provides personal satisfaction and mechanisms for human interaction (Staemfli, 2007). Playful older adults could be “happy, optimistic, cheerful, joyful, positive, relaxed, and enthusiastic” (Yarnal & Qian, 2011, p. 72). Playfulness in later life may mean having fun in informal, non-obligatory, social interactions with friends (Yarnal, 2006). Yarnal and Qian (2011) appreciated the positive effect of playfulness in older adults and developed the Older Adult Playfulness Scale. They concluded that playful older adults are: (a) psychologically upbeat (e.g., happy, optimistic, cheerful, positive); (b) behaviorally impish (e.g., mischievous, naughty, teasing); (c) cognitively spontaneous (e.g., creative, whimsical); and (d) amusing (e.g., funny, humorous).

Playfulness is often linked to well-being outcomes, such as positive emotions (Stewart & Stewart, 1981); psychological well-being, resilience (e.g., Saunder, Sayer, & Goodale, 1999); physical well-being; and physical fitness (Proyer, 2013). Indeed, older adult playfulness and having fun can be tools for healthy aging that maintain or improve cognitive, emotional, social,

and psychological function (Yarnal & Qian, 2011). For example, playfulness has been viewed as a stress coping strategy to deal with daily stressors and contribute to better mental health and psychological well-being (Mannell, 1984; Qian & Yarnal, 2011). Furthermore, playfulness may contribute to resilience through its specific coping styles by dealing with stressors directly and readily (Magnuson & Barnett, 2013). That is, playfulness may foster resilience across the life-span (Fredrickson & Losada, 2005). Older adults may need a place or a venue to frequently have fun and explore playfulness in order to foster resilience. Individuals who have frequently positive emotions build emotional resources, which are important to emotional health (Yarnal & Qian, 2011).

Leisure As a Context for Playfulness

Previous research has demonstrated a positive correlation between playfulness and leisure participation (Mannell & Iso-Ahola 1984). Yarnal and Qian (2011) indicated that playfulness is “not invariant to situational or state-based stimuli” (p. 78). A leisure context may be a situation or state-based stimulus to facilitate playfulness. Indeed, many leisure activities involve adult playfulness (Sutton-Smith, 1997). Moreover, leisure provides an ideal area to explore and examine the playfulness construct (Barnett, 2011). Both playfulness and leisure studies have examined their positive effects in regard to psychological outcomes (Qian & Yarnal, 2011). For example, group leisure activity is viewed as a context for older adults in which to enjoy their free time without constraints (e.g., Cohen, 2006) and to play and develop friendships, which improves their psychological health (Qian & Yarnal, 2011). The Red Hat Society is thus a leisure-based context that provides older women with an opportunity to play, have fun, and perceive social support (Yarnal, 2006). Furthermore, playfulness may predict health outcomes among RHS women (Hutchinson, Yarnal, Stafford-Son, & Kerstetter, 2008; Son et al., 2007; Yarnal, 2006).

The definition of playfulness according to older women in the RHS is a positive experience. That is, playing with other RHS members is fun, meaning “freedom from worry, responsibility, loneliness, isolation, stress, and depression” (Yarnal et al., 2008, p. 246). Additionally, fun is one of the central components of human playfulness (Burghardt, 2005; Yarnal et al., 2008). Indeed, Yarnal et al. (2008) suggested that the RHS may provide members with “new knowledge of the role of leisure in maintaining or enhancing cognitive and emotional health” (p. 254).

Further, older adult playfulness is viewed as a positive resource and strong adaptive function that enables older adults to cope with stressful situations, which may thus foster resilience (Magnuson & Barnett, 2013). Playful activities are viewed as positive means to explore the environment in order to broaden one’s mind and build physical, intellectual, and socially durable resources (Fredrickson, 2000). Yarnal and Mitas (2008) suggested that older adult playfulness be explored as an antecedent to and component of resilience according to Fredrickson’s (1998) broaden-and-build theory, because older adult playfulness is a form of broadening that builds positive outcomes (i.e., social connections, close friendships, and optimism) as is the case with RHS women (Mitas et al., 2011).

Resilience Across the Life Span

The positive feelings associated with playfulness during leisure engagement may be a source for facilitating the broaden-and-build process and resilience growth among older women. Resilience is defined as the ability to bounce back from adversity (Smith et al., 2008; Windle, 2011); risk (Ong, Bergeman, & Boker, 2009); and loss and hardship (Tugade & Fredrickson, 2004). Further, resilience is viewed as an outcome of positive adaptation or development across the life span (Strurgeon & Zautra, 2010). In the following section, I introduce resilience, the broaden-and-build theory, and their link to leisure studies.

What Is Resilience?

Resilience is defined as “the capacity to maintain or regain psychological well-being in the face of adversity” (Ryff, Friedman, Morozink, & Tsenkova, 2012, p. 87). There are three characteristics of resilience: recovery, sustainability, and growth (Zautra, Hall, & Murray, 2008). Individuals with higher levels of resilience are open to new experiences (Block & Kremen, 1996), which may cultivate positive emotions through relaxation (Wolin & Wolin, 1993). For example, Werner and Smith (1992) found that highly resilient individuals elicit positive emotions through their use of humor. Positive emotions are thus associated with better psychological well-being and developmental growth when a person faces challenges (Ong et al., 2009) such as chronic pain (Strurgeon & Zautra, 2010) or loss of a loved one (Rossi, Bisconti, & Bergeman, 2007). Furthermore, individuals in later adulthood foster resilience to recover from accumulating negative conditions and to maintain or even improve their health (Shen & Zeng, 2010). Therefore, maintaining physical and cognitive functions are a sufficient indicator of resilience for older adults (Guadalupe, Ambriz, Izal, & Montorio, 2012). However, achieving resilience differs by persons across the life course (Windle, 2011), as some recover, sustain, and develop their resources and gain better health across the life span despite illness while others do not (Ong & Bergeman, 2004). For example, individuals at age 60 with higher levels of resilience reported stable well-being despite an increase in levels of ill health (protective stabilizing), and individuals at age 70 and 80 with higher levels of resilience reported increasing well-being when ill health increased (protective reactive) (Windle, Woods, & Markland, 2009). So, what causes the difference between these two groups? Is resilience a state-characteristic changed by age or environment?

The literature has debated whether resilience has a state- or trait-like nature. Some researchers view resilience as a trait-like, stable personal characteristic over time (Strurgeon &

Zautra, 2010) based on personality (Tugade & Fredrickson, 2004). That is, resilience is viewed as personality trait, which cannot be changed. Researchers' main research goal is to examine individual differences in order to explain why some individuals overcome difficulties better than others (Ambriz, Izal, & Montorio, 2012). For example, McCrae and Costa (1997) suggested that highly resilient individuals reported specific personality traits (e.g., conscientiousness, extroversion, agreeableness, and openness). Furthermore, Perna and colleagues (2012) treated resilience as a personality trait to examine its difference among older adults when studying the link between resilience and health behavior. Their results indicated that high resilience is positively associated with more health behaviors (e.g., eating more fruit/vegetables, doing more physical activities). However, Schoon (2006) argued that assuming that resilience is a personality trait "bears the danger of blaming the victim, or rendering individuals personally responsible for their problems" (p.16).

Indeed, according to the life-span developmental perspective, resilience has a dynamic nature that "is not fixed, but will fluctuate over time, as new vulnerabilities and strengths arise from changing life circumstances" (Luthar, 2006, p. 741). Some researchers indicated that resilience is not a stable personality trait, which can be changed overtime, and described it as: "(a) ordinary; (b) adaptable and can be learned; (c) cultivated overtime; and (d) context dependent" (White, Driver, & Warren, 2010, p. 24). That is, resilience is a dynamic state process "resulting from the combination of diverse protection and risk factors", which may "develop at any moment of one's lifetime and can change as a function of one's personal, family, and social resources, as well as one's context and age" (Ambriz et al., 2012, p. 834). For example, older adults (i.e., older than 64) were more resilient than young adults (i.e., younger than 26) because of past experiences (Gooding, Hurst, Johnson & Tarrier, 2012). Sturgeon and Zautra explained that resilience is a state-characteristic because it "may have a more immediate impact on the day-to-day adaptation to chronic pain" (p. 109), and is influenced by individuals' daily positive social

interaction or positive affect. That is, individuals with a satisfying life course seem to have a higher level of resilience. Researchers suggest viewing resilience as a dynamic process to explain longevity and successful aging (Lavretsky, 2012).

In this study, resilience is viewed as a state-like variable which involves behaviors, thoughts, and actions, or a product of a dynamic process of adaptation to everyday challenges in the aging process (Lavretsky, 2012; Ong et al., 2009; Sturgeon & Zautra, 2010; Windle, 2011; Zautra et al., 2008). That is, resilience may change by the correlation of the person with their environment over time. Individuals may develop different levels of positive resources to achieve a higher level of resilience in different physical and social environments (Zautra et al., 2008). Research demonstrates that the process of resilience growth from positive resources can be explained by the broaden-and-build theory (Fredrickson, 2001). Tugade and Fredrickson (2004) suggested using broaden-and-build theory as a framework to understand the construct of resilience.

The Broaden-and-Build Theory

Positive emotion is one of the most important factors for building resilience (Fredrickson, 2000; 2006) according to the broaden-and-build theory. Unlike negative emotions (e.g., fear and threat), which narrow attention to cope with immediate threat, positive emotions (e.g., joy and interest) broaden an individual's immediate link between thought and action (e.g., play and exploration), which allows for flexible attention and behaviors (Tugade, Fredrickson, & Barrett, 2004), and builds enduring personal resources that can change individuals' lives (i.e., physical, intellectual, and social) (Fredrickson, 2000; 2006). For example, affection, one type of positive emotion, may be important for a lifelong supportive relationship, and build resources for better health (Cohn et al., 2009).

Positive emotions that broaden thought-action links may include novel and creative thoughts and actions. Individuals who experience frequent positive emotions may build resources to help them deal with future life challenges and promote survival skills across the life course (Meeks, Van Haitsma, Kostiwa, & Murrell, 2012). That is, the broadened states of mind may “trigger an indirect accumulative process of building valuable personal resources” (Mitas et al., 2011, p. 32), such as social connections, coping strategies, and environmental knowledge (Fredrickson, 2006). These resources help individuals overcome future difficulties (Mitas et al., 2011). Therefore, the experiences of positive emotions build enduring resources, such as resilience growth in the process of adaptation, and lead to long-term psychological well-being (Mitas et al., 2011; Tugade & Fredrickson, 2004). Frequent experiences of positive emotions may also predict resilience growth for older adults (Cohn et al., 2009; Zautra et al., 2008). For example, Folkman and colleagues (1996) indicated that finding positive meaning in daily life decreased a person’s level of depression and contributed to long-term psychological well-being. Moreover, with time and repeated experience, the enduring personal resources from the broaden-and-build process may provide both intra-individual (e.g., increased resilience) and inter-individual (e.g., enhanced social relationships) resources (Fredrickson, 2000).

In addition, the process of broaden-and-build may trigger an “upward spiral” over time, i.e., positive emotions can broaden one’s mind and build personal resources, which may facilitate positive emotions later as a habitual mode of thinking (Fredrickson & Joiner, 2002, p. 172). Indeed, one benefit of having positive emotions is to create more positive ones in the future (Lyubomirsky et al., 2005). The key ingredient in the broaden-and-build process is the ability to maintain high levels of positive affect (Meeks et al., 2012).

Leisure activities have demonstrated their effects on health outcomes by maintaining positive affect according to the broaden-and-build theory (Perna et al., 2012). Also, the experience of pleasant leisure activities has been used to treat depression by increasing frequent

positive emotions in a broaden-and-build process (Fredrickson, 2000). Indeed, leisure activity is a “context for realizing and utilizing human strengths and resilience” for older adults and is viewed as healthy behavior and pleasant (Iwasaki, 2007, p. 233). Thereby, leisure may be a context for individuals to broaden their minds by perceiving positive emotions, and thus build durable personal resources, such as resilience, to counter life difficulty and stressful events in older age (Hutchinson & Nimrod, 2012; Iwasaki & Smale, 1998; Mitas et al., 2011).

Resilience in the Leisure Literature

The leisure literature has examined the association of positive emotions with building personal resources to adapt to life challenges (Mitas et al., 2011) but has found less of a link between the broaden-and-build theory and resilience. For example, older adults with dementia viewed leisure as a space to resist ageist stereotypes and to feel empowered (Genoe, 2010). However, leisure is also viewed as a coping strategy that enables elders to reduce immediate stress and increase general psychological well-being (Iwasaki, 2001). For example, individuals participating in a retirement leisure activity program offering courses, travel/study programs, and social activities to members received positive emotional and behavioral responses through exploration and self-discovery (Kleiber & Nimrod, 2009), which may be the “broadening” part of the broaden-and-build theory.

Mitas et al.’s (2011) study is the only exception in the leisure literature that relates the broaden-and-build theory to resilience in older persons. Their study found that older women in the Red Hat Society broadened their minds and derived valuable enduring resources from these social connections, which produced optimistic dispositions that made them look forward to the future. That is, this type of leisure activity provided a positive social context for these older women in which to broaden their thoughts and actions and build close friendships, a process of

positive growth (Mitas et al., 2011). Moreover, the process of broaden-and-build not only occurred when positive emotions increased but also as participants with average and stable levels of positive emotions built their personal resources (Cohn et al., 2009; Mitas et al., 2011).

Although the broaden-and-build theory has been examined in the leisure literature, researchers have not yet provided direct evidence of linkages between leisure and resilience growth. The leisure context is mainly viewed as an environment in which individuals can gain personal resources, such as immediate social support (Windle, 2011) and playfulness (Mitas et al., 2011). These resources may then benefit resilience growth according to the broaden-and-build theory. Therefore, there is a need to examine the relationship between resilience and leisure (Mitas et al., 2011; Ong et al., 2009), and how it links to health across the life span (Fredrickson, 2000; Ong, 2010; Shen & Zeng, 2010; Zautra et al., 2008).

The Life-Span Developmental Perspective

Leisure activity is a life-long involvement that is important because it provides older individuals with an opportunity to continue growth and development. In fact, previous research has suggested using the life-span developmental perspective to understand older adults' involvement in leisure activity (Janke et al., 2006). To provide a full picture of the life-span developmental perspective and how it influences leisure among older adults, I review its association with leisure in this section.

Life-Span Developmental Perspective Defined

The life-span developmental perspective has three key propositions. First, development is a lifelong process that can occur at all ages. For example, Lockenhoff (2012) suggested using this

perspective to study older adults' retirement life because late life development is a dynamic process, involving both gains and losses, that is influenced by a variety of factors (i.e., mental, physical, and financial). Second, human development is a multidimensional and multidirectional process (Alwin & Wray, 2005) that differs by person (Spiro, 2001). Third, life-span development is influenced by a person's contextual, socioeconomic, and cultural factors. Contextual factors refer to historical events and the timing of events in a person's life. More specifically, contextual factors allow researchers to examine the degree of difference in the development of individuals in a given context with similar ages, birth cohorts, or backgrounds (Nimrod & Janke, 2012).

Socioeconomic and cultural factors are related to the person's development and adaptation across the life span (Nimrod & Janke, 2012). This framework can be used to examine "why people are differentially exposed to risks of disease and/or protective factors as well as the social conditions that link the effects of risk and protective factors to the social environment" (Alwin & Wray, 2005, p. 8). For example, researchers have demonstrated the socioeconomic factor, i.e., social status, including both ascribed (e.g., gender, ethnicity, and age) and achieved (e.g., education, income, and marital status) affect health across the entire life course (Alwin & Wray, 2005). In short, not everyone changes in the same ways.

According to the life-span developmental perspective, health is viewed as a developmental construct or a state (Spiro, 2001) that can be changed by age, environments, and occasions. Leisure is often examined as a healthy behavior to moderate the link between negative factors (e.g., stress, risk behaviors, depressive symptoms) and health outcomes (e.g., physical health and psychological well-being) among older adults based on the life-span developmental framework (Hao, 2008; Janke et al., 2008; Pressman et al., 2009).

The Life-Span Developmental Perspective on Leisure

Previous literature has examined links between leisure activity and social status, educational level, and marital status and health from the life-span developmental perspective (Janke et al., 2006). Researchers have suggested three ways that leisure can relate to socioeconomic status and health (Pressman et al., 2009). First, a person's financial situation is significantly correlated with the types of leisure activities that they choose to engage in. For example, those with better financial situations tend to participate in more formal leisure activities (e.g., volunteerism, religious activities) (Janke et al., 2006), while those in lesser financial situations seek support from social leisure activities (e.g., hanging out with friends at a club) (Mock et al., 2012). Research also demonstrates that older women in lesser financial situations have reduced opportunities for leisure activities and tend to be more involved in household activities (Paillard-Borg et al., 2009). Second, a person's educational level is another distinct part of their social status, and if viewed as an indicator of socioeconomic status, may significantly affect choice of and involvement in leisure activities (Strain et al., 2002). For example, older adults with a lower educational level are less involved in social leisure activities (Paillard-Borg et al., 2009), while those with a higher education level may engage in more leisure activities because of concerns about health (Lee & Bhargave, 2004). Third, marital status is also a significant factor in leisure engagement. Research demonstrates that it is important for some couples to engage in physical leisure activities and hobbies together (Wang et al., 2011). On the other hand, single individuals may choose to participate in social leisure activities on their own, such as seeing movies, dancing, or going to bars (Lee & Bhargave, 2004).

Leisure may be a central life domain during life transitions e.g., adults retire from work or children leave home) and provides a positive element of aging and health (Nimrod & Janke, 2012). The role of leisure in later life includes self-renewal (Kleiber, 1999), self-protection, and

personal transformation (Janke et al., 2008). Older adults find part of their meaning in life, both social and psychological, in valued leisure activities (Hutchinson & Nimrod, 2012; Siegenthaler & Vaughan, 1998). That is, leisure provides an opportunity for older adults to remain physically, socially, and mentally active (Hutchinson & Nimrod, 2012; Lennartsson & Silverstein, 2001), helping them to adapt to the aging process and to be independent (Wearing, 1995). In sum, research has demonstrated that leisure participation helps older adults adapt to the restrictions of chronic conditions (Hutchinson & Nimrod), to overcome negative life events (e.g., losing a loved one) (Janke et al., 2008), and, moreover, to have better physical health and psychological well-being, especially among older women (Everard, Lack, Fisher, & Baum, 2000). Based on the life-span developmental perspective, individuals' social roles and activity involvement vary by age, social status, or periods of life (e.g., education, work status, retirement) (Riley, Kahn, & Foner, 1994). Thus, individuals' social network relationships and the support they perceive from them differ by age across the life span.

Social Support

A social network is defined as “a set of linkages among an identified group of people, the characteristics of which have some explanatory power over the social behavior of the people involved” (Bowling, Farquhar, & Browne, 1991, p. 549). Social support is one of the most important functions of social networks (Ashida & Heaney, 2008), and has been linked to better health outcomes among older adults (Seeman, Lusignolo, Albert, & Berkman, 2001). Leisure activity is viewed as a way to perceive social support through making friends and developing these relationships (Coleman & Iso-Ahola, 1993). To fully understand the potential effects of social support on the association between older adult playfulness and resilience, in this section I review social support in the leisure literature.

Defining Social Support

A social network is “a set of people with whom one maintains contact and has some form of social bond” (Bowling, Farquhar, & Browne, 1991, p. 549). Although they may differ by type, the general functional characteristics of a social network include social engagement, social support, social influence, and social comparison (Berkman & Glass, 2000). Specifically, social support is one of the most important functions of social networks, which occurs when individuals provide help to their network members (Ashida & Heaney, 2008). Social support is defined as “the emotionally sustaining qualities of relationships” (e.g., a sense that one is loved, cared for, and listened to) (Umberson & Montez, 2010, p. 56) and a “powerful, fundamental, and extremely pervasive human motivation” (Baumeister & Leary, 1995, p. 497), which is usually perceived as deriving from regular, pleasant and ongoing relationships, such as with family, friends, and coworkers (Carruthers & Hood, 2004; Smith & Christakis, 2008; Thoits, 1995).

Social Support for the Older Adult

Social support has been linked to a variety of better health outcomes among older adults (Seeman et al., 2001), such as mortality (e.g., Berkman, Leo-Summers, & Horwitz, 1992); cardiovascular, endocrine, immune systems, and mental illness (e.g., Kawachi & Berkman, 2001; Umberson & Montez, 2010); and physical health (e.g., Ashida & Heaney, 2008). Specifically, social support increases its positive effect on both physical and mental health as people age (Golden, Conroy, & Lawlor, 2009; Lennartsson & Silverstein, 2001; White, Phylogene, Fine, & Sinha, 2009).

Social support from different sources may have different effects. For example, older adults who spent more time with partners reported higher global life satisfaction, whereas those

who spent more time with friends reported higher immediate well-being (Mannell & Zuxanek, 1986). That is, social support from friends is important for immediate enjoyment for older adults; however, support from their family can buffer the stress of daily life (Coleman & Iso-Ahola, 1993). This result corroborates the buffering model and the relationships model in the social support literature. Social support buffers stressful encounters for individuals as shown by the buffering model (e.g., Adams, Leibbrabdt, & Moon, 2011), whereas a supportive relationship as indicated by the relationships model increases levels of well-being (Elliott & Shewchuk, 1995). All of these relationships provide a sense of belonging and social identity, demonstrating their positive influences on the improvement of psychological well-being (Kawachi & Berkman, 2001). Senses of belonging and positive relationships also promote health-related behaviors (Adams et al., 2011; Ashida & Heaney, 2008). Leisure activity is one type of health-related behavior that has been associated with health and with the development of friendships (Coleman, 1993).

Social Support in a Leisure Context

Social leisure participation mediates the link between stress and health, because it relieves daily stresses, and thus maintains/improves health and well-being (Adams et al., 2011) and increases physical function (Everard, Lach, Fisher, & Carolyn, 2000), especially for older adults (Fuller-Iglesias, Sellars, & Antonucci, 2008; Golden et al., 2009). Indeed, Rutter (1987) concluded that there are two protective factors for older adults: individual factors and social factors. Older adults may improve their health and well-being by putting efforts into their health by themselves (i.e., individual factor), and by perceiving social support from their leisure environment (i.e., social factor). Furthermore, social support is a durable, positive psychological resource for older adults even though they may face many physical limitations in their aging

process (Fuller-Iglesias et al., 2008). Individuals view leisure activity as an avenue to make friends and develop these relationships (Coleman & Iso-Ahola, 1993). For example, Elliott and Shewchuk (1993) examined depression, social support, and leisure activities among individuals with physical disabilities. Their results indicated that leisure activities predicted a higher level of social support and a lower level of depression.

Researchers have also pointed out that there are individual differences in this association. For example, individuals with different gender and social status may choose different social leisure activities and perceive social support in different ways (Kawachi & Berkman, 2001; Umberson & Montez, 2010). Individuals with a lower level of education or who are a racial minority still reported poorer health despite being involved in social leisure activities (White et al., 2009). Gender is another factor that affects the link between social support and health. Men usually have a larger social network whereas women are usually more intimate with fewer social network members (Thoits, 1995), and provide as well as perceive more social support than men (Kawachi & Berkman, 2001). In general, women's social roles change many times across their life span, including wife, mother, and/or career woman. Therefore, older women may view leisure as freedom that they can choose to experience by themselves without the pressure of social roles, thus developing friendships and perceiving positive health outcomes (Kerstetter et al., 2008).

Researchers have suggested identifying differences in social support not only by gender and social status, but also by social groups with different social network patterns, and how they are positively associated with health (Golden, Conroy, & Lawlor, 2009). The Red Hat Society is an example of the latter as it provides its members an opportunity to make friends and develop friendships (Kerstetter et al., 2008). The RHS members provide and perceive social support from each other, which supports their health and well-being (Son et al., 2008; 2010). Additionally, older RHS women view this type of social group participation as "central to the enhancement of their relationships with others, including their relationships with spouses, children, grandchildren,

other women, and the general public” (Son et al., 2008, p. 99), and build their social identity through membership in the RHS (Kerstetter et al., 2008).

Leisure Identity

Identity in older age may be vulnerable or change because of a person’s retirement and the independence of many older persons’ children. Therefore, leisure activities “may offer alternative sources of self-definition and self-esteem” (Reynolds, 2010, p.136). That is, leisure activities and social support in later life may help older persons maintain a continuity of identity over the lifespan, which is important in positive aging. Older adults may define the self from their leisure activities and group memberships (Fiske & Chiriboga, 1990).

Defining Leisure Identity

An individual can have multiple roles or identities (Strachan, Brawley, Spink, & Jung, 2009). Identity is “the set of meanings applied to the self in a social role or situation, defining what it means to be who one is in that role or situation” (Jun & Kyle, 2012, p. 355). Generally, identity is viewed as a primary motivator of behavior because a set of meanings serves as a behavioral standard and means of evaluation (Jun & Kyle, 2011). According to identity theory, identities and their associated expectations provide a standard for behavior, prompting individuals to act in a particular role (Flora, Strachan, Brawley, & Spink, 2012), and maintain consistency between their identity and related behavior (Gecas & Burke, 1995). Individuals may differ in the meanings they associate with a given identity because these meanings may provide a personally relevant standard for identity-related behaviors (Strachan et al., 2009).

Research has demonstrated that leisure provides a social context in which individuals can develop their identities (Shamir, 1992), which is positively associated with psychological well-being (Bartko & Eccles, 2003). However, a structured leisure context (e.g., participating in leisure activities or sports with others) is much more effective than a less structured one (e.g., watching television), possibly because a structured context provides sufficient challenges and requires some effort to learn skills and form friendships (Trainor, Delfabbro, Anderson, & Winefield, 2010). Those challenges and effects are needed in identity development through having opportunities to structure one's leisure activities. Furthermore, the experience of positive feelings from leisure involvement may contribute to leisure identity development (Kleiber, 1999). The effect of developing a leisure identity has also been examined in relation to gender, especially for women. Relationships with family and friends significantly influence women's identities (Cancian & Oliner, 2000). Care work, emotional work, and family are tied to women's identity development throughout their life course (Calasanti & Slevin, 2001). However, leisure activities can provide opportunities for women to escape traditional gender roles and to build a different identity (Shaw & Henderson, 2005; Yarnal, Son, & Liechty, 2011). In addition, leisure identity is linked to positive health outcomes. Hardcastle and Taylor (2005), for example, investigated leisure-time physical activity and identity in older women over the course of ten weeks, finding that exercise identity was associated with psychological well-being and health.

Further, engaging in a group activity enhances an individual's identity and creates a group identity (Esabrooks, Harden, & Burke, 2012). Group identity refers to the degree to which the group is viewed as an important component of its members' social identity (Wann, Rogers, Dooley, & Foley, 2011), and is often related to members' attendance patterns. For instance, one study found that individuals who strongly identified with American Kennel Club (AKC) events reported a higher commitment to AKC-related activities (Baldwin & Norris, 1999). Furthermore, group identity is related to social and psychological well-being by reducing members' feelings of

loneliness, increasing their satisfaction with their social life, and giving them a sense of social integration and coherence (Wann et al., 2011). A leisure-based context, such as the RHS, may provide an environment in which to develop a group identity for its members, and potentially increase involvement through group meetings and given group roles (e.g., responsibility for contacting other participants, helping set up before group sessions) (Esabrooks et al., 2012).

Leisure Identity For RHS Women

Researchers have examined RHS members' identity with certain RHS activities, such as buying, owning, and wearing RHS products like red hats and other clothing (Marybeth et al., 2008). As with previous findings, Stalp, Williams, Lynch, and Radina (2009) indicated how these products create a group identity through "conspicuous consumption" because RHS women felt they looked similar to the other members when wearing these products (p. 225). Yarnal et al. (2011) examined dressing and body image among women in the RHS, suggesting that the dress and clothing encouraged membership identity. Additionally, Barrett, Pai, and Redmond (2012) examined a gendered subcultural framework in the RHS and found that it created an aging group identification, shaped by dress and consumption, and provided a context to enhance women's psychological well-being. Indeed, the RHS gives its members "an identity external to their central roles of wife and mother" and by "encouraging a positive attitude toward aging" (Barrett et al., 2012, p. 529). According to the life-span developmental perspective, identity may develop over time in order to adapt to the environment or certain occasions (Strachan et al., 2009), which is difficult to measure in a short period. Therefore, to examine the pattern of development in a life-span developmental framework, longitudinal data were not optional but necessary (Spiro, 2007).

Benefits of Longitudinal Data

The majority of previous research studies that have assessed the associations between leisure and health have used cross-sectional data (e.g., Coleman & Iso-Ahola, 1993; Golden et al., 2009; Son et al., 2008). However, Janke et al. (2006) suggested using a life-span developmental perspective to examine longitudinal changes in leisure behaviors for older adults since life in older age involves both gain and loss. Moreover, using longitudinal data in the current study was particularly important for examining the effect of older adult playfulness on resilience growth for the following reasons.

First, leisure and psychological experiences are dynamic and cannot adequately be assessed globally using data at only one time point (Crouter & Pirretti, 2006). Using longitudinal data collected from the same group of individuals during more than one wave makes possible the observation of individual changes over time (Yee & Niemeier, 1996). Therefore, a longitudinal study can measure change in an outcome (e.g., resilience) and/or reveal individual patterns of change. That is, a longitudinal study design can investigate change within persons by using an intra-individual approach, which allows researchers to characterize individual patterns of change over time rather than just examine patterns in relation to those of other participants. For example, using longitudinal data, researchers can examine if older adult playfulness is broadening and if it builds resilience over time based on the broaden-and-build theory. Second, from a life-span developmental perspective, longitudinal research that repeats the same measurement with the same group of people is necessary to examine inter-individual differences in order to capture which factors cause between-person differences over time (Nimrod & Janke, 2012; Spiro, 2007). For example, previous research has demonstrated that the level of social support and leisure identity may cause between-person differences in health and well-being improvement (e.g., Flora, Strachan, Brawley, & Spink, 2012; White et al., 2009). Additionally, a longitudinal analysis

increases its statistical power and the capability of estimating a greater range of conditional probabilities (Yee & Niemeier, 1996).

However, few life-span development and leisure researchers have examined the association between older women and leisure activity from a life-span developmental perspective (Son et al., 2008). Longitudinal research is therefore needed to explore the relationships between leisure activity and positive resources (e.g., positive emotions, playfulness, resilience), and to investigate how these relationships are affected by personal characteristics (e.g., social status, gender, education, and health status). These relationships may improve health over time across the life span (Strain et al., 2002). Furthermore, researchers have demonstrated that leisure is a stress survival strategy that builds resilience and increases psychological well-being (Iwasaki, MacTavish, & MacKay, 2005), but how that growth process occurs is still unclear.

Chapter 3

Research Purpose

Previous research has demonstrated positive associations between leisure participation and health among older women; less well known is: (a) the role that playfulness may have in the relationship between leisure and health; and (b) whether resilience is improved by these associations, particularly for older women in a leisure-based context. According to the broaden-and-build theory of positive emotions, playfulness may have an important role by contributing to resilience growth. However, according to the life-span developmental perspective, not every individual exhibits the same level of playfulness. Therefore, the RHS may be a leisure-based context that facilitates this broaden-and-build process, and should allow for investigating at both within-person changes as well as between-person differences in resilience growth over time. More specifically, we may learn how the differences in the RHS older women's playfulness trajectories contribute to resilience growth over time. Do socioeconomic and health status create different personal curves in this leisure-based context?

Therefore, the overarching purpose of my dissertation was to use the broaden-and-build theory to guide the examination of the relationship between playfulness and resilience. That is, I examine whether resilience is a building resource enhanced by older adult playfulness, controlling for personal characteristics (i.e., age, education, marital status, physical health, and mental health). In order to achieve the research purpose, I used 12-month longitudinal data collected from members of the Red Hat Society. I assumed that there would be within-person changes (i.e., changes in resilience) as well as between-person differences (i.e., in older adult playfulness, social status, and health status) in older adult playfulness and resilience among older women participating in the leisure-based context of the RHS over a 12-month period. Given that previous studies have found associations between playfulness, resilience, social support, and

leisure identity, both social support from RHS friends and RHS identity were controlled in the current study to confirm that older adult playfulness is the only resource that may contribute to resilience growth.

The independent variable, older adult playfulness, is defined as individuals engaged in a voluntary activity for fun and pleasure (Stewart & Stewart, 1981). The dependent variable, resilience, is defined as the ability to bounce back from adversity (Smith et al., 2008; Windle, 2011), risk (Ong et al., 2009), loss and hardship (Tugade & Fredrickson, 2004), and is viewed as an outcome of positive adaptation or development across the life span (Strurgeon & Zautra, 2010). The context for the current study, the Red Hat Society, has demonstrated its ability to provide older adult playfulness, positive emotions, and social support to its members, as well as to improve their well-being (e.g., Mitas et al., 2011; Mock et al., 2012; Son et al., 2007; 2010).

Given the theoretical positions taken in this study and the current status of the field of leisure studies, the goal of this study was to answer the following questions: (a) During the months when each RHS woman experienced more playfulness, did she have a higher level of resilience (within-person change)? and (b) Do the RHS women with higher overall levels of playfulness have higher overall levels of resilience than those with lower overall levels of playfulness (between-person differences)? In considering these questions, I examined the long-term associations (i.e., within-person changes and between-person differences) between monthly playfulness and monthly resilience in a 12-month longitudinal dataset collected from 101 RHS women during a study by Yarnal et al., at The Pennsylvania State University in 2009.

Demographic variables (i.e., age, educational level, and marital status) and health status (i.e., physical health and mental health) from the baseline dataset were included as predictors. In addition, monthly social support from RHS friends and monthly RHS identity were included as control variables.

I examined a total of eight hypotheses based on the two research questions (Figure 3-1), based on the broaden-and-build theory (Fredrickson, 2001) and life-span developmental theory (Alwin & Wray, 2005). First, the broaden-and-build theory suggests that resilience increases when a person experiences enduring positive emotions, particularly playfulness, which is viewed as a component of positive emotions, and has demonstrated an association with resilience (Mitas et al., 2011). Therefore, the first two hypotheses were proposed:

H1: Increasing playfulness is associated with increasing resilience (within-person change).

H2: Individuals with higher levels of average playfulness are associated with more resilience than those with lower levels of average playfulness (between-person differences).

Second, according to life-span developmental theory, a longitudinal study design is necessary to examine both inter-individual differences (between-person differences) and intra-individual changes (within-person changes) over time (Nimrod & Janke, 2012; Spiro, 2007). The resilience literature has demonstrated that individuals' levels of resilience differ by age groups (Windle et al., 2009) and by other demographic factors (e.g., education, marital status, physical health, and mental health) across the life course (Windle, 2011). Based on these findings, an additional four hypotheses were proposed:

H3: Older age is associated with more resilience than younger age (between-person differences).

H4: A higher level of education is associated with more resilience than a lower level of education (between-person differences).

H5: Being married or living with a partner is associated with more resilience than being single or widowed (between-person differences).

H6: A higher level of self-reported health is associated with more resilience than a lower level of self-reported health (between-person differences).

Finally, previous research has demonstrated that resilience growth is associated with social support and identity. To examine if playfulness, but not other factors, contributes to resilience growth, the RHS identity and social support from RHS friends were included in order to control their effects on the last two hypotheses, bringing the total number of hypotheses to eight:

H7: A higher level of RHS identity is associated with more resilience than a lower level of RHS identity (between-person differences).

H8: A higher level of social support from RHS friends is associated with more resilience than a lower level of social support from RHS friends (between-person differences).

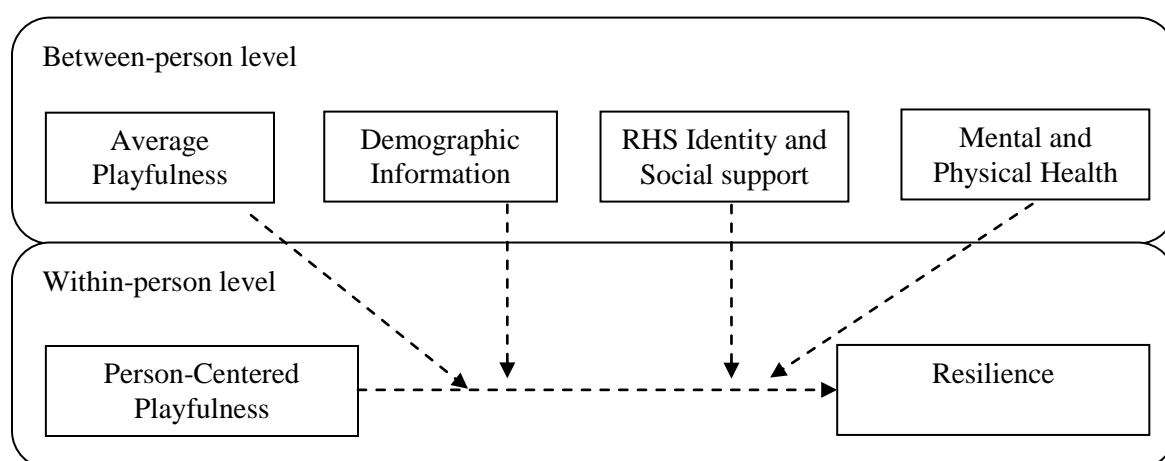


Figure 3-1: Multilevel Model for the Hypotheses

I used multilevel modeling (MLM) to examine the eight hypotheses. MLM is a statistical model of parameters that vary at more than one level. That is, MLM allows researchers to examine participants' within-person changes at the first level and between-person differences at the second level. MLM has been used to examine leisure according to many health-related factors (Christ, Sibley, & Wagner, 2012), such as leisure activities and alcohol use among college students (Finlay, Ram, Maggs, & Caldwell, 2012), and gender and leisure time physical activity among middle-aged and older adults in a health program (Van Tuyckom & Van de Velde, 2013).

Chapter 4

Methods

The present study used data from the research study titled *Does Leisure Promote Well-being? A Longitudinal Examination of Mature Women's Participation in Leisure-based Social Groups*. The Institutional Review Board of The Pennsylvania State University approved the study. This chapter discusses the characteristics of the participants as well as procedures for data collection and analysis.

Participants

The data for my dissertation study were used to examine how RHS women may improve their resilience by engaging in older adult playfulness in this leisure-based context over the 12 months of the study. Demographic information for the RHS sample is shown in Table 4-1. Among the women who responded to the baseline questionnaire (N=204), 62% were retired and 29% were homemakers. The majority of the sample was composed of Whites, 93.5%, with 2.5% being African Americans respondents. More than half of the sample was married (67.2%); 52% were in an adequate financial situation; and 46.1% had some college education. Additionally, 60.2% of the sample had been RHS members for 6 to 10 years.

Table 4-1: Demographic Information for the Red Hat Society Sample for This Study

Variables	Frequency	Percentage (%)
Age		
51-60	66	32.3
61-70	102	50.0
71-80	30	14.7
81-90	3	1.5
Ethnicity		
White	185	90.7
African American	5	2.5
Hispanic	1	0.5
multi-racial	2	1.0
other	3	1.5
do not indicate	2	1.0
Financial situation		
inadequate	2	1.0
barely adequate	33	16.2
adequate	106	52.0
comfortable	54	26.5
Educational level		
middle school	1	.5
high school	26	12.7
some college	94	46.1
bachelor's degree	32	15.7
some graduate school	23	11.3
master's degree	24	11.8
doctoral degree	1	.5

Table 4-1: Demographic Information for the Red Hat Society Sample for This Study (continued)

Variables	Frequency	Percentage (%)
Marital status		
married	137	67.2
separated	1	.5
divorced	25	12.3
widowed	25	12.3
single	5	2.5
in a relationship	8	3.9
Employment status		
employed	34	16.7
Employed part-time	24	11.8
self-employed	16	7.8
Retired	124	60.8
Homemaker	58	28.7
Year of membership in RHS		
Less than 1	2	1.0
1–5	74	36.3
6–10	123	60.2
11 and above	4	2.0

In order to understand the characteristics of the RHS women and how those characteristics may differ from those of the general population, I compared the RHS sample with women from the general U.S. older population (U.S. Census Bureau, 2011); the results are shown in Table 4-2. The majority of U.S. older female sample was aged 60–69 (77.98%), White (80.1%), had a high-school education (27.4%), and was married (53.3%). Compared to the general U.S. older female population in 2011, the RHS women reported higher levels of education (99.5% of the RHS sample had a high-school education or more), were slightly more racially homogeneous (90.7% of the RHS sample were White), and more were married (67.2% of the RHS sample were married). The results of this study should be interpreted carefully to avoid over generalization since the RHS sample may be not representative of all older adult females in the U.S.; thus, I take these demographic differences into account when interpreting and discussing the results.

Table 4-2: Demographic Comparison Between the General U.S. Older Female Population and the RHS Women

Variables	General U.S Frequency(%)	RHS Women Frequency(%)
Age		
55-59	10,055(24.44)	66(32.3)
60-69	15,544(37.79)	102(50.0)
70-79	9,035(21.96)	30(14.7)
80 and over	6,502(15.81)	3(1.5)
Ethnicity		
White	32,950(80.1)	185(90.7)
African American	3,413(8.3)	5(2.5)
Hispanic	2,880(7.0)	1(0.5)
Asian	1,399(3.4)	No data
other	494(1.2)	5(2.5)
Educational level		
elementary or high school, no diploma	12,771(12.1)	1(0.5)
high school	29,192(27.4)	26(12.7)
some college	18,092(17.1)	94(46.1)
bachelor's degree	14,784(13.8)	32(15.7)
some graduate school	6,462(6.1)	23(11.3)
master's degree	9,062(8.5)	24(11.8)
doctoral degree	1,162(1.1)	1(0.5)
Marital status		
married	21,934(53.3)	137(67.2)
separated	625(1.5)	1(0.5)
divorced	5,897(14.3)	25(12.3%)
widowed	10,173(24.7)	25(12.3%)
single	2,507(6.1)	5(2.5)

Note: * Data collected in RHS women from age 51.

Data Collection Procedure

This study used both cross-sectional and longitudinal methods to collect data. The cross-sectional method provided the demographic information used to examine between-person differences among the RHS women while the longitudinal method provided monthly information on the individuals' information used to examine within-person changes over time. In general, a longitudinal study has three methodological features: (a) at least three waves of data, (b) an outcome variable that may change systematically over time, and (c) a time variable (Singer & Willett, 2003). In this study, the cross-sectional method was used in the baseline questionnaire while the longitudinal method was used in the monthly questionnaire. The total number of waves was 12, one wave for each month, which was the time variable. Other studies have demonstrated the value of this approach (e.g., Andrews, Tennant, Hewson, & Vaillant, 1978), as collecting both cross-section and longitudinal data can be used to observe changes in health-related outcomes (e.g., psychological well-being and positive emotions) over time and the differences between individuals (e.g., coping style and social support).

Both cross-sectional and longitudinal data were collected through the Internet. Research has demonstrated that there is a positive impact of the Internet on the conduct of psychological research: Changing the costs of data collection and making self-reported survey easier to conduct, specifically for subject recruitment (Krant et al., 2004). Previous researchers recruited subjects by posting their questionnaires online rather than hiring and training interviewees for recruiting research subjects. Furthermore, conducting a longitudinal survey study, such as a repeated measures survey over time via the Internet, is more effective than traditional survey methods. Relatively inexpensive and easy to approach specific samples over time with a good overall response rate (Troop, 2002). For example, Troop (2002) compared a previous traditional pencil-and-paper trauma survey and his online repeated measures trauma survey. The results indicated

that the response rate to his online longitudinal research (41%) was lower than a traditional survey (63%), but 41% of the response rate was at an acceptable level according to previous literature.

Online data collection for this study consisted of three phases: (a) a sign-up sheet to participate in the study (cross-sectional data; Appendix A); (b) a baseline survey (cross-sectional data; Appendix B); and (c) 12 monthly surveys (longitudinal data; Appendix C). The sign-up sheet was posted on the RHS website from August 2010 to September 2010. Members aged 50 or more who were interested in participating in the study clicked on a URL link on the RHS website, which took them directly to an online sign-up sheet. This sheet provided a brief description of the study, collected information on each member's age, length of their RHS membership, email address, and willingness to complete a questionnaire each month for 12 consecutive months. A total of 292 completed the sign-up sheet, of which 204 were willing to participate in the monthly survey. This method of data collection was approved by The Pennsylvania State University Institutional Review Board (Local IRB approval 33698).

The baseline survey, which was administered to collect demographic characteristics (i.e., age, education, marital status, financial situation, race, and employment status); number of children, number of grandchildren, years of membership in the RHS, and health status (i.e., mental health and physical health); and personality of the participants in September 2010, took about 30 minutes to complete online. The 292 women who completed the sign-up sheet subsequently received an email that included a URL link; this link took them directly to the online questionnaire posted on Survey Monkey, a commercial online software data-gathering tool. A total of 204 women completed the baseline questionnaire, equating to a response rate of 69.86%.

An identical monthly questionnaire was used to monitor the participants' long-term experiences and associations with being a member of the RHS. This questionnaire was distributed

via the Internet to the same sample of 204 women each month from October 2010 to September 2011. Each month, participants who indicated interest in participating in the monthly portion of the study on the sign-up sheet received an email that included a URL link; this link took them directly to the monthly questionnaire posted on Survey Monkey. The participants were asked about their monthly experiences of resilience, playfulness, social support, RHS identity, active living, and quality of life in relation to their involvement in the RHS. Each survey took about 20 minutes to complete. A total of 101 participants completed all 12 months of data collection. This process is summarized in Table 4-3. Table 4-4 showed the number of monthly sample within 12 waves. After first wave, the number of participants kept dropping slightly, but there were 20 participants dropped at the seventh wave, which was more than other months.

Table 4-3: Demographic Timeline for Online Data Collection (Sample size)

Survey	Information Collected	Date	Tool for Collection
Sign-up sheet (N=292)	Age, email address, willingness to participate in the monthly survey to collect data for a year.	From August 2010 to September 2010.	A URL link on the RHS website, which took them directly to an online sign-up sheet.
Baseline survey (N=204)	Physical and mental health, ego-resiliency, personality, RHS identity, chronic stressors, demographic information.	September 2010 for three weeks.	Email with a URL link that took them directly to an online questionnaire posted on Survey Monkey.
Monthly surveys (N=101)	Ego-resiliency, playfulness, social support.	Monthly (October 2010 to September, 2011).	Email that included a URL link that took them directly to an online questionnaire posted on Survey Monkey.

Table 4-4: Sample Sizes of Monthly Questionnaires

Month	1	2	3	4	5	6	7	8	9	10	11	12
Size	228	198	190	171	161	149	129	121	125	118	105	101

Measures

For the purpose of my dissertation, data on social status and health (both physical and psychological) were drawn from the baseline questionnaire, while data about social support from RHS friends, RHS identity, older adult playfulness and resilience were derived from the monthly questionnaires. These data were used to address the research questions of this study.

Self-Reported Health

Self-reported health was measured in the baseline questionnaire from self-reported ratings of physical health and psychological well-being from the RHS women. The self-reported physical health scale was assessed using the 10-item Physical Functioning Scale (PF-10) scale (Hays, Liu, Spritzer, & Cella, 2007), which is an adaptation of the 25-item physical functioning measure from the Health Insurance Experiment. The inventory consists of 10 items on a 3-point Likert-type scale (1 = yes, limit a lot; 2= yes, limits a little; 3 = no, no limits at all). To calculate an indicator for self-reported physical health, the following equation for the 10-item Physical Health Scale was used: $\text{Transformed Scale Score} = [(\text{Raw Sum Score} - 10) / 20] \times 100$. The main question was “The following items are about activities you might do during a typical day. Does your health now limit your ability in the following activities? If so, how much?” This question was followed by 10 activities, such as moderate activities, bathing or dressing yourself, and walking one block. A larger score represents a better level of physical health. The reliability is 0.925.

Self-reported psychological well-being was measured by the Mental Health Continuum Short Form (MHC-SF) designed by Keyes (2002), which is derived from the Mental Health Continuum Long Form (MHC-LF). The MHC-SF consists of 14 items, each measured on a 6-

point Likert-type scale (1 = never to 6 = every day), which were derived chosen from the 40-item MHC-LF as the most important items representing the construct definition of well-being. A sample item is “During the past month, how often did you feel happy in life?” The sum of the items is an indicator of self-reported mental health. A higher score on the MHC-SF reflect a greater level of self-reported mental health. All scales above have been used in previous studies and were found to be reliable (e.g., Cella et al., 2011; Lamers et al., 2011).

Both physical health and psychological well-being measurements are self-reported measurements rather than observed indicators. Self-reported health measurements are relatively easy and inexpensive to collect. Research has demonstrated their validity across countries, populations, and gender (e.g., Gallo & Rabins, 1999; Painter et al., 2003). In Kuhn, Rahman, and Menken’s (2006) study of comparison between self-reported and observed health indicators, the results indicated that the self-reported measures were reliable, and were similar to observed measures in predicting mortality at older ages.

Older Adult Playfulness

The Older Adult Playfulness Scale was used to measure older adult playfulness in the monthly questionnaire. Participants answered identical questions comprising this scale over 12 months, which allowed me to examine changes in individuals across the 12 waves. The Older Adult Playfulness Scale, an extension of Barnett’s (2007) Young-adult Playfulness Scale, was designed by Yarnal and Qian (2010) to test if playfulness is an important component of healthy aging in older adults. They identified 15 qualities of a playful older adult, which they described in a 4-factor measure: upbeat, impish, spontaneous, and amusing.

Playfulness is defined “as a disposition that involves reframing a situation to amuse others and to make the situation more stimulating and enjoyable” (Qian & Yarnal, 2011, p. 192).

Playfulness benefits older adults by maintaining cognitive function as well as promoting healthy emotions and aging (Yarnal & Qian, 2011). The Older Adult Playfulness Scale consists of 15 items on a 10-point Likert-type scale (1 = very little to 10 = a lot of). Sample items include “cheerful” and “funny.” The sum of the items is an indicator of older adult playfulness. A higher score reflects a greater level of playfulness. Yarnal and Qian (2010) tested its reliability in an older adult group, and found that the scale is “a reliable measure of playfulness” (Yarnal & Qian, 2010, p. 74).

Resilience

The ego-resiliency scale (ER89) designed by Block and Kremen (1996) was used to measure the self-reported monthly psychological resilience of RHS participants in this study: this scale is widely used in psychological research (Ong, Bergeman, & Boker, 2009). Ego-resiliency is defined as “the capacity of the individual to effectively modulate and monitor an ever-changing complex of desires and reality constraints” (Block & Kremen, 1996, p. 598). Block and Kremen (1996) developed the ego-resiliency scale to examine the relationships between IQ and ego-resiliency. This scale consists of 14 items on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). Sample items included “I enjoy dealing with new and unusual situations” and “Most of the people I meet are likeable.” The average of each item is an indicator of ego-resiliency. A higher score reflects a greater level of ego-resiliency. This scale has been used in previous studies and was found to be reliable (e.g., Caldwell & Shaver, 2012; Farkas & Orosz, 2013).

RHS Identity

RHS identity was measured by the RHS Identity Scale in the monthly questionnaire. The RHS Identity Scale was modified from the Exercise Identity Scale (EIS; Anderson & Cychosz, 1994). The EIS Scale was originally developed to measure which exercise contributes to the formation of individual role identity. In order to encompass more than just physical activities, the RHS identity Scale appreciated the potential contribution of social activities to identity development in the RHS. The RHS identity is closely related to the concept of leisure identity, which is related to “social commitment, the level of effort and skill involved in the activity, time investment, continuance commitment and non-financial commitment to work” (Shamir, 1992, p. 301). This scale consists of 9 items on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). Sample items include “I consider myself to be healthy when I participate in the Red Hat Society activities” and “Being a Red Hatter is a central factor to my self-concept.” The average of the items is an indicator of RHS identity. A higher score reflects a greater level of RHS identity. Although the Red Hat Society Identity Scale has not been examined in any other study, the alpha reliability test from our sample was .90, which indicates that the Scale is reliable.

Social Support from RHS Friends

Social support from RHS friends was measured by two social support subscales in the monthly questionnaire: social support from intimate/close friends in the RHS and social support from other friends in the RHS. Each social support subscale contained three items—each modified from those contained in the 2004 Health and Retirement Study (HRS)—that ask participants to indicate what level of social support they had received in the past four weeks on a 4-point Likert-type scale (1 = not at all to 4 = a lot). The original social support scale included

five subscales: social support from partner, social support from children, social support from intimate/close friends in the RHS, social support from other friends in the RHS, and social support from outside RHS friends. To address the purpose of this study, only RHS-related items (i.e., social support from intimate/close friends in the RHS and social support from other friends in the RHS) were combined and examined as an indicator of social support from the RHS friends. Sample items include “How much does she really understand the way you feel about things?” and “How much can you rely on her if you have a serious problem?” A higher score reflects a greater level of social support from RHS friends.

Social Status

Social status data included age (i.e., below 50, 50–55, 56–60, 61–65, 66–70, 71–75, 76–80, 81–85, 86–90, 91 and above); marital status (e.g., single, widowed, separated/divorced, in a relationship, married); financial situation; highest degree of education (e.g., elementary school, middle school, high school, some college, bachelor’s degree, some graduate school, master’s degree, doctoral degree); ethnicity (e.g., White, African American, Hispanic, Asian, other), years of RHS membership; and employment status (e.g., unemployed, self-employed, employed part-time, employed full-time, homemaker, retired).

Data Preparation

Data preparation for the 12-wave monthly dataset involved two steps: data merging and data cleaning. Each participant was asked to provide her first name and the first letter of her last name to create a personal identity when filling out the baseline survey and to use this identity when answering the monthly questionnaires. The personal identity was used as an identification

variable to connect the baseline and monthly data, and allowed researchers to create a longitudinal file for each respondent. The longitudinal file was merged with the baseline data into the monthly data for each person (Figure 4-1). Most longitudinal research uses this one-to-one match (i.e., personal identity in baseline data matched to personal identity in monthly data) in the longitudinal merging process (Langa et al., 2011).

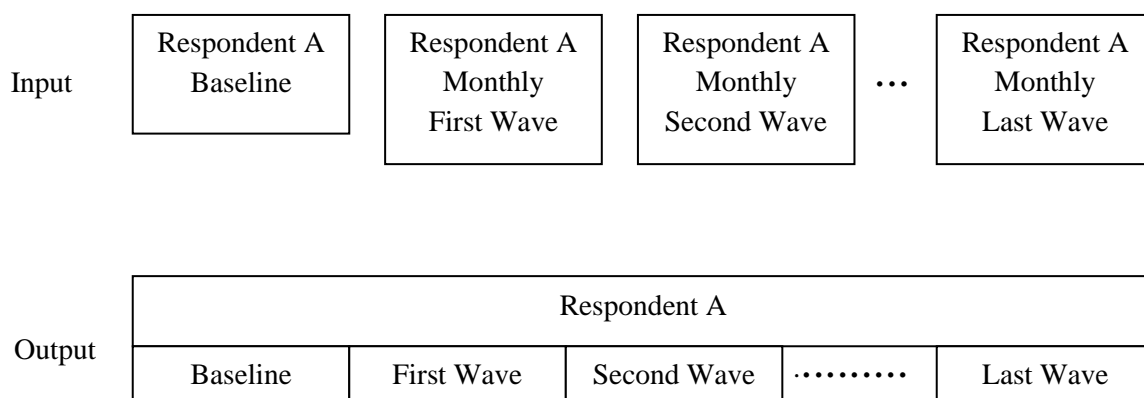


Figure 4-1: Longitudinal Data Merging Process

After merging the monthly and baseline data into a longitudinal file for each participant, I then cleaned the data. The main purpose of data cleaning is to manage missing data. The main issue with longitudinal studies is “drop-out,” where some individuals withdraw from the study before its completion. Longitudinal data with missing values is unbalanced over time because not all individuals have the same number of repeated measures (Nakai & Ke, 2011), which may further affect the analysis. The PROC MIXED procedure in SAS is a statistics package useful for dealing with missing data. PROC MIXED is a flexible program for multilevel models (Singer, 1998), which was developed to perform a mixed statistical model with random and fixed effects, can automatically omit occasions with missing values and missing covariates and assumes those occasions are missing completely at random (Schafer & Kang, 2005). That is, only completed longitudinal data were included for data analysis.

Data Analysis

Multilevel modeling (MLM) is a generalization of regression methods, developed in the late 1980s, to measure the long-term outcome changes among the participants' answer patterns (Rogosa & Willett, 1985). An MLM model consists of two levels: the first level characterizes "each person's pattern of change over time" while the second level "examines the association between predictors and the patterns of change" (Singer & Willett, 2003, p. 8).

To utilize MLM analysis in this study, I arranged the data into person-months, which allowed me to examine if playfulness and resilience varied over months within persons. In this study, Level 1, depicting within-person change over time, was used to describe changes in playfulness and resilience within the same individual over the 12 study months. Level 2 measures whether different people have different patterns of within-individual change and explores the predictors (i.e., age, education level, marital and health status) of these differences (Singer & Willett, 2003). Thus, Level 1 analysis was used to answer Research Question 1: During the months when a person experienced more playfulness, did she have higher resilience? Likewise, Level 2 was used to answer Research Question 2: Do individuals with higher overall levels of playfulness have higher overall levels of resilience? Hence, I not only analyzed the differences between participants, but also identified the factors that facilitated within-person change in resilience over time. In sum, MLM can be used to simultaneously study within-person change, between-person differences, and their interaction (Singer & Willett, 2003).

The power of MLM has been demonstrated by previous studies (e.g., Raudenbush et al., 1995; Reis & Gable, 2000). First, MLM separates between-person differences and within-person change; thus, it prevents these two levels from affecting each other in the analysis (Molenaar, 2004). Second, MLM includes every case in the analysis, regardless of the completeness of the data (Reis & Gable, 2000). Third, MLM examines both fixed and random effects, allowing

researchers to explain correlations in longitudinal data (Hedeker & Mermelstein, 2007). Last, MLM uses maximum likelihood estimation, a more precise and efficient estimation than regression analysis (Reis & Gable, 2000) because it can be developed for a large variety of estimation situations.

Because the research questions in this study are best answered using MLM, I determined that SAS 9.3 PROC MIXED was the best tool to conduct maximum likelihood estimation (MLE) regression analysis (SAS Institute Inc., 1996; Singer, 1998). PROC MIXED provides estimates of models using the general form of the equation (Schwartz & Stone, 1998) for fitting multilevel models, which was developed from the perspective of a “mixed” statistical model with both random and fixed effects (Singer, 1998).

In order to examine the research questions in this study, the predictor variable (older adult playfulness or OAP) was separated into within- and between-person components. Specifically, I calculated the mean over time for each individual as a between-person variable (e.g., OAP_Mean) and deviations around that mean as a within-person variable (e.g., OAP_Residual). I then conducted a multilevel model to separately and simultaneously examine the within-person and between-person associations between resilience and older adult playfulness. Before examining the research questions, I modeled a basic intra-individual association between the absolute amount of older adult playfulness and resilience at Level 1, and then introduced the overall mean level of older adult playfulness as the inter-individual variable at Level 2. This model provided a preliminary understanding of the characteristic of the two main variables in this study: resilience and older adult playfulness. The Level 1 and 2 models used for the analysis are as follows:

$$\text{Level 1: Res}_{i_t} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{i_t}) + e_{i_t} \quad (1)$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01} (\text{OAP_Mean}_i) + u_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} (\text{OAP_Mean}_i) + u_{1i}$$

In general, the Level 1 equation represents “Person’s mean + deviation from person’s mean” while Level 2 represents “Grand mean (of all persons’ means) + deviation of person’s mean from Grand mean” (Schwartz & Stone, 1998, p.84). At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rates of linear change over time which represents the association between resilience and older adult playfulness for person i . e_{ti} is the residual error.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variable (the overall mean level of older adult playfulness), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{10}), the effects of the between-person variable (the overall mean level of older adult playfulness), and a between-person error (u_{1i}).

To answer the first research question and how it is affected by demographic variables, I modeled the intra-individual association between the absolute amount of the older adult playfulness and resilience at Level 1, and then introduced inter-individual variables, including age, education, marital status, physical health, and mental health at Level 2. The Level 1 and 2 models used for the analysis are as follows:

$$\text{Level 1: } Res_{ti} = \beta_{0i} + \beta_{1i} (OAP_Residual_{ti}) + e_{ti} \quad (3)$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}age_i + \gamma_{02}education_i + \gamma_{03}marriage_i \\ + \gamma_{04}Physicalhealth_i + \gamma_{05}Mentalhealth_i + u_{0i} \quad (4)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}age_i + \gamma_{12}education_i + \gamma_{13}marriage_i \\ + \gamma_{14}Physicalhealth_i + \gamma_{15}Mentalhealth_i + u_{1i}$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which

represents the association between resilience and older adult playfulness for person i . e_{it} is the residual error.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of between-person variables (age, education, marriage, physical health, and mental health), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{10}), the effects of between-person variables (age, education, marriage, physical health, and mental health), and a between-person error (u_{1i}).

To answer the second research question and how it is affected by demographic information, I modeled the intra-individual association between variability in monthly older adult playfulness and resilience at Level 1. At Level 2, I introduced inter-individual variables, including age, education, marriage, physical health, and mental health, as well as the overall mean level of older adult playfulness. The Level 1 and 2 models used for the analysis are as follows:

$$\text{Level 1: Res}_{it} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{it}) + e_{it}$$

$$\begin{aligned} \text{Level 2: } \beta_{0i} = & \gamma_{00} + \gamma_{01}\text{age}_i + \gamma_{02}\text{education}_i + \gamma_{03}\text{marriage}_i + \gamma_{04}\text{Physicalhealth}_i + \gamma_{05}\text{Mentalhealth}_i + \\ & \gamma_{06} (\text{OAP_Mean}_i) + \gamma_{07}\text{age}_i * (\text{OAP_Mean}_i) + \gamma_{08} \text{education}_i * (\text{OAP_Mean}_i) + \gamma_{09} \\ & \text{marriage}_i * (\text{OAP_Mean}_i) + \gamma_{10} \text{Physicalhealth}_i * (\text{OAP_Mean}_i) + \gamma_{11} \text{Mentalhealth}_i \\ & * (\text{OAP_Mean}_i) + u_{0i} \end{aligned}$$

$$\begin{aligned} \beta_{1i} = & \gamma_{20} + \gamma_{21}\text{age}_i + \gamma_{22}\text{education}_i + \gamma_{23}\text{marriage}_i + \gamma_{24}\text{Physicalhealth}_i + \gamma_{25}\text{Mentalhealth}_i \\ & + \gamma_{26} (\text{OAP_Mean}_i) + \gamma_{27}\text{age}_i * (\text{OAP_Mean}_i) + \gamma_{28} \text{education}_i * (\text{OAP_Mean}_i) + \gamma_{29} \\ & \text{marriage}_i * (\text{OAP_Mean}_i) + \gamma_{30} \text{Physicalhealth}_i * (\text{OAP_Mean}_i) + \gamma_{31} \text{Mentalhealth}_i \\ & * (\text{OAP_Mean}_i) + u_{1i} \end{aligned} \quad (5)$$

At Level 1, the outcome, Res_{it} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the

level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i .

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of between-person variables (age, education, marriage, physical health, mental health, and the interaction between the overall mean level of playfulness and the other six variables), and a between-person error (u_{0i}). The within-person slope, β_{2i} , is a function of the mean between-person slope (γ_{20}), the effects of between-person variables (age, education, marriage, physical health, and mental health), and a between-person error (u_{2i}). Noting that the demographic variables (age, education, marriage, physical health, and mental health) may be correlated to each other, thus affecting the results, a correlation analysis was used to examine if these variables should be separated into different models.

Third, to control for the monthly RHS identity, I modeled the intra-individual relationship between monthly older adult playfulness, monthly RHS identity, and resilience at Level 1. At Level 2, I introduced the inter-individual variable, the overall mean level of older adult playfulness. The Level 1 and 2 models for the analysis are as follows:

Level 1: $\text{Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_i) + \beta_{2i} (\text{RHSID_Residual}_i) + \beta_{3i} (\text{OAP_Residual}_i^*$

$$\text{RHSID_Residual}_i) + e_{ti} \quad (6)$$

Level 2: $\beta_{0i} = \gamma_{00} + \gamma_{01} (\text{OAP_Mean}_i) + u_{0i}$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + u_{2i}$$

$$\beta_{3i} = \gamma_{30} + u_{3i} \quad (7)$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i .

This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i . β_{2i} is a

coefficient that defines the linear effect of the monthly RHS identity on resilience. β_{3i} is a coefficient that defines the linear effect of the interaction between monthly older adult playfulness and monthly RHS identity on resilience. The error-term e_{ti} represents intra-individual variation in frequency of resilience not accounted for by any of the variables included in the equations.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}) and a between-person error (u_{0i}). Each within-person slope (β_{1i} , β_{2i} , and β_{3i}) is expressed as a function of an inter-individual intercept, the effect of the inter-individual variable, and an inter-individual error term.

Last, to control for monthly social support from RHS friends, I modeled the intra-individual relationship between monthly older adult playfulness, monthly social support from RHS friends, and resilience at Level 1. At Level 2, I introduced the inter-individual variable: the overall mean level of older adult playfulness. The Level 1 and 2 models used for the analysis are as follows:

$$\text{Level 1: Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_i) + \beta_{2i} (\text{SUPPORT_Residual}_i) + \beta_{3i} (\text{OAP_Residual}_i * \text{SUPPORT_Residual}_i) + e_{ti} \quad (8)$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01} (\text{OAP_Mean}_i) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + u_{2i}$$

$$\beta_{3i} = \gamma_{30} + u_{3i}$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i . β_{2i} is a coefficient that defines the linear effect of monthly social support from RHS friends on resilience.

β_{3i} is a coefficient that defines the linear effect of the interaction between monthly older adult playfulness and monthly social support from RHS friends on resilience. The error-term (e_{ii}) represents intra-individual variation in the frequency of resilience not accounted for by any of the variables included in the equations.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}) and a between-person error (u_{0i}). Each within-person slope (β_{1i} , β_{2i} , and β_{3i}) is expressed as a function of an inter-individual intercept, the effect of the inter-individual variable, and an inter-individual error term.

Chapter 5

Results

The results of the descriptive statistics provided preliminary information on the RHS sample and were used to check if the models of this sample needed to be modified. I then examined the research questions based on all the models used in MLM. In order to provide preliminary information (i.e., intraclass correlation) for the longitudinal data, I used an additional MLM model—the unconditional model (i.e., the null model)—to examine if older adult playfulness contributes to resilience growth over time without the influence of any other factors. In other words, the results of the unconditional model show changes in the resilience outcome using only older adult playfulness as a predictor in the MLM equation.

Descriptive Statistics

A variety of descriptive statistics are presented in Table 5-1, including the means, standard deviations, and correlations between the baseline variables. This study collected data on resilience from both baseline and monthly questionnaires. These descriptive statistics provided preliminary information to properly analyze the data, which I then used to test the broaden-and-build theory over 12 months to determine if resilience is strengthened by playfulness. The 204 participants reported moderate baseline resilience on average ($M = 3.387$ on a 1 to 5 scale, $SD = 0.315$). Both physical health ($M = 73.946$ on a 10 to 100 scale, $SD = 25.748$) and mental health ($M = 70.675$ on a 6 to 84 scale, $SD = 10.502$) were adequate, with mental health being slightly better than physical health. Furthermore, only baseline resilience was significantly correlated with mental health. Participants with higher levels of mental health reported higher levels of baseline

resilience ($r = .402, p < .01$). In addition, older women in this sample with older age reported higher levels of financial status, and were married.

Table 5-1: Descriptive Statistics and Correlations for the Baseline Variables

Variables	1	2	3	4	5	6	7
1. Age							
2. Education	-.030						
3. Marital Status	.176*	-.053*					
4. Financial Status	.156*	.134**	-.216**				
5. Physical Health	-.179*	-.035	-.054*	.178**			
6. Mental Health	.062	-.024	-.149**	.286**	.035		
7. Resilience	.071	.039	-.128	.126	.110	.402**	
Mean	4.19	4.69	1.96	3.07	73.956	70.674	3.387
Standard Deviation	1.333	1.308	1.516	.692	25.748	10.502	.315

Notes: * $p < 0.05$, ** $p < 0.01$.

Means and standard deviations of monthly resilience and older adult playfulness across the 12 study months are provided in Table 5-2. On average, participants reported more stable monthly resilience scores than playfulness scores across the 12 study months. Although the average monthly playfulness score did not significantly increase, its standard deviation did; in other words, differences in monthly playfulness increased across the 12 study months. Individuals changed (i.e., increased or decreased) their levels of playfulness over time.

Table 5-2: Descriptive Statistics of the Monthly Variables.

		Resilience											
	1	2	3	4	5	6	7	8	9	10	11	12	
Mean	3.27	3.31	3.30	3.29	3.29	3.28	3.30	3.30	3.34	3.29	3.32	3.30	
SD	0.35	0.32	0.33	0.37	0.36	0.37	0.38	0.42	0.38	0.39	0.37	0.39	
Min	2.43	2.50	2.50	2.36	2.36	2.36	2.58	1.14	2.43	2.23	2.36	2.21	
Max	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
		Older Adult Playfulness											
	1	2	3	4	5	6	7	8	9	10	11	12	
Mean	102	104	102	101	100	98	97	101	102	98	100	100	
SD	25.3	25.9	27.1	30.1	28.6	29.4	29.1	27.9	28.5	30.2	28.8	28.9	
Min	24	24	29	28	35	15	17	15	20	18	32	49	
Max	150	150	150	150	150	150	150	150	150	150	150	150	

Note: Statistics based on 12 occasions nested within 204 participants for a total of 1,756 observations.

Model Modification

The baseline demographic results show correlations between (a) age and marital status, (b) education and marital status, (c) age and physical health, and (d) marital status and physical health. If the correlated variables were included in the same multilevel modeling equation, it may produce unreliable results since these variables share coefficient effects. The main models for Research Question 1 and Research Question 2 included all demographic variables in one equation. To avoid the correlations affecting the final results, I modified the two main models into six sub-models, described as follows. Each model includes the demographic variables not correlated with each other.

Modified Models for Research Question 1

Model 1-1: Age and education

$$\text{Level 1: Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{ti}) + e_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}\text{age}_i + \gamma_{02}\text{education}_i + u_{0i} \quad (9)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}\text{age}_i + \gamma_{12}\text{education}_i + u_{1i}$$

Model 1-1 includes age and education, demographic variables not correlated to each other. At Level 1, the outcome, Res_{it} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i . e_{it} is a residual error.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variables (i.e., age and education), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{10}), the effects of between-person variables (i.e., age and education), and a between-person error (u_{1i}).

Model 1-2: Mental health and physical health

$$\text{Level 1: } \text{Res}_{it} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{it}) + e_{it}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}\text{mentalhealth}_i + \gamma_{02}\text{physicalhealth}_i + u_{0i} \quad (10)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}\text{mentalhealth}_i + \gamma_{12}\text{physicalhealth}_i + u_{1i}$$

Model 1-2 includes mental health and physical health, demographic variables not correlated to each other. At Level 1, the outcome, Res_{it} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i . e_{it} is a residual error.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variables (i.e., mental health and physical health), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{10}), the effects of the between-person variables (i.e., mental health and physical health), and a between-person error (u_{1i}).

Model 1-3: Marital status

$$\text{Level 1: Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{ti}) + e_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}\text{marriage}_i + u_{0i} \tag{11}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}\text{marriage}_i + u_{1i}$$

Model 1-3 includes the demographic variable of marital status. At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i . This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i . e_{ti} is a residual error.

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variable (i.e., marriage), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{10}), the effects of between-person variable (i.e., marriage), and a between-person error (u_{1i}).

Modified Models for Research Question 2

Model 2-1: Age and education

$$\text{Level 1: Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{ti}) + e_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}\text{age}_i + \gamma_{02}\text{education}_i + \gamma_{03} (\text{OAP_Mean}_{ti}) + \gamma_{04}\text{age}_i * (\text{OAP_Mean}_i) + \gamma_{05} \\ \text{education}_i * (\text{OAP_Mean}_i) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}\text{age}_i + \gamma_{12}\text{education}_i + \gamma_{13} (\text{OAP_Mean}_{ti}) + \gamma_{14}\text{age}_i * (\text{OAP_Mean}_i) + \gamma_{15} \\ \text{education}_i * (\text{OAP_Mean}_i) + u_{1i} \quad (12)$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i .

This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i .

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variables (i.e., age, education, overall mean level of older adult playfulness, and the interaction between the overall mean level of older adult playfulness and age as well as education), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{20}), the effects of the between-person variables (i.e., age, education, and the overall mean level of older adult playfulness), and a between-person error (u_{2i}).

Model 2-2: Mental health and physical health

$$\text{Level 1: Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{ti}) + e_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}\text{mentalhealth}_i + \gamma_{02}\text{physicalhealth}_i + \gamma_{03} (\text{OAP_Mean}_i) + \gamma_{04} \text{mentalhealth}_i \\ * (\text{OAP_Mean}_i) + \gamma_{05} \text{physicalhealth}_i * (\text{OAP_Mean}_i) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} \text{mentalhealth}_i + \gamma_{12} \text{physicalhealth}_i + \gamma_{13} (\text{OAP_Mean}_i) + \gamma_{14} \text{mentalhealth}_i * (\text{OAP_Mean}_i) + \gamma_{15} \text{physicalhealth}_i * (\text{OAP_Mean}_i) + u_{1i} \quad (13)$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i .

This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i .

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variables (i.e., mental health, physical health, overall mean level of older adult playfulness, and the interaction between the overall mean level of older adult playfulness and mental health as well as physical health), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{20}), the effects of the between-person variables (i.e., mental health, physical health, and the overall mean level of older adult playfulness), and a between-person error (u_{2i}).

Model 2-3: Marital status

$$\text{Level 1: } \text{Res}_{ti} = \beta_{0i} + \beta_{1i} (\text{OAP_Residual}_{ti}) + e_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01} \text{marriage}_i + \gamma_{02} (\text{OAP_Mean}_i) + \gamma_{03} \text{marriage}_i * (\text{OAP_Mean}_i) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} \text{marriage}_i + \gamma_{12} (\text{OAP_Mean}_i) + \gamma_{13} \text{marriage}_i * (\text{OAP_Mean}_i) + u_{1i} \quad (14)$$

At Level 1, the outcome, Res_{ti} , is the reported level of resilience in month t for person i .

This outcome is a function of β_{0i} , an individual-specific intercept parameter, which represents the level of resilience at month 0, while β_{1i} captures the rate of linear change over time, which represents the association between resilience and older adult playfulness for person i .

At Level 2, β_{0i} is expressed as a function of the between-person intercept (γ_{00}), the effects of the between-person variables (i.e., marriage, overall mean level of older adult

playfulness, and the interaction between overall mean level of older adult playfulness and marriage), and a between-person error (u_{0i}). The within-person slope, β_{1i} , is a function of the mean between-person slope (γ_{20}), the effects of the between-person variables (i.e., marriage and the overall mean level of older adult playfulness), and a between-person error (u_{2i}).

Multilevel Models

I first calculated the intraclass correlation (ICC) for the outcome variable, resilience, to indicate the percentage of the variance in the outcome variable that in between-person variance, which is an important indicator for future analyses (Hoffman & Stawski, 2009). Next, three models were conducted to examine Research Question 1 and the other three models were for Research Question 2. In order to control social support from RHS friends and RHS identity, two additional models were examined.

The Intraclass Correlation

To compute the intraclass correlation (ICC), I used the unconditional means model, a type of random intercept model, as the null model in this thesis. The ICC is a mixed modeling test that calculates the proportion of between-persons variance using the following equation:

$$ICC = \frac{\textit{Between Variance}}{\textit{Between Variance} + \textit{Within Vairance}}$$

The ICC in this study was used to estimate the relative number of between- and within-person variations in the repeated measures of resilience. Although the between-person variance is contained in the calculation of ICC, the ICC is the correlation between outcome variable (i.e., resilience) and time variable (month). In other words, a large ICC denotes a large correlation over time, while a small ICC denotes a small correlation. The ICC of resilience for the between-person

variance was 65.02% ($0.08756 / [0.08756 + 0.04710]$) and the within-person variance was 34.98% ($1 - 0.6502$) (Table 5-3). To perform within-person analysis, the ICC needs to be greater or equal to 10% of the variance in the outcome variable. The ICC is 34.98% of the within-person variance, which suggests that adequate variation exists in the resilience at each level (between- and within-person) for further multilevel modeling (MLM) analyses (Mroczek & Griffin, 2007; Raudenbush & Bryk, 2002).

Although both fixed-effect coefficients and random-effect variances were present in the MLM analyses, I focused on the significant fixed effects of time because one goal of this study was to investigate how monthly older adult playfulness affected resilience. The goal of the fixed effects is to compare specific levels of an independent variable; thus, the purpose of the MLM models was to compare the means of each independent variable level, rather than the variances. Eight multilevel models were used to answer the two research questions: Six models controlling for demographic variables, one model controlling for social support from RHS friends, and one model controlling for RHS identity. Along with MLM results, I also present values of -2 log-likelihood ($-2LL$) and Akaike information criteria (AIC). Note that $-2LL$ is a deviance: the difference between model log of likelihood (LL) values following a chi-squared distribution, and AIC reflects the deviance and parameters. Both $-2LL$ and AIC are the indicators used to compare models. However, because this study examines the within- and between- person difference, $-2LL$ and AIC were not primarily used to compare models.

Table 5-3: Unconditional Means Model for Outcome Variable: Resilience.

	Model for ICC	
	Parameter Estimates	Standard Error
Fixed effects		
Intercept, γ_{00}	3.300*	0.022
Random effects		
Intercept variance, σ^2_{u0}	0.088*	0.009
OAP residual, σ^2_{u1}	0.047*	0.002
Fit Statistics		
$-2LL$		177.9
AIC		181.9
ICC		
Within-person variation		34.98%
Between-person variation		65.02%

Notes: Unstandardized estimates and standard errors. Model based on 12 occasions nested within 200 participants for a total of 1756 observations. ICC = intraclass correlation; AIC = Akaike information criterion; $-2LL$ = -2 log-likelihood, relative model fit statistics. * $p < 0.05$.

Model 1 (within-person): Older Adult Playfulness, Resilience, and Personal Characteristics

To answer Research Question 1 (During months when a person experienced more older adult playfulness, did she report a higher level of resilience?), I used three models: (a) Model 1-1: age and education level; (b) Model 1-2: physical health and mental health; and (c) Model 1-3: marital status. The results are given in Table 5-4.

Model 1-1 was used to examine the within-person link of resilience and older adult playfulness with age and education level. The results of model 1-1 indicate that older adult playfulness has a significant effect on resilience ($\gamma_{01} = 3.200, p < 0.05$), and this effect was not moderated by age ($\gamma_{02} = 0.009, p > 0.05$, model 1-1) or education level ($\gamma_{03} = 0.013, p > 0.05$, model 1-1). Thus, individuals with higher levels of monthly older adult playfulness reported having higher levels of resilience over time, regardless of age or education level.

Next, model 1-2 was used to examine the effects of physical health and mental health on the association between older adult playfulness and resilience. The results indicate that older adult

playfulness has a significant effect on resilience ($\gamma_{01} = 0.003, p < 0.05$), and the effect differs significantly by physical health ($\gamma_{02} = 0.002, p < 0.05$, model 1-2) and mental health ($\gamma_{03} = 0.014, p < 0.05$, model 1-2). The findings suggest that both physical health and mental health moderated within-person associations between resilience and older adult playfulness. That is, increasing monthly older adult playfulness contributed to resilience growth over the 12 waves; this contribution was significantly stronger among individuals with higher levels of physical and mental health. More specifically, mental health contributed to resilience growth more than did physical health. Additionally, the effects of older adult playfulness on resilience are different between model 1-1 ($\gamma_{01} = 3.200, p < 0.05$) and model 1-2 ($\gamma_{01} = 0.003, p < 0.05$) because there are two moderators (physical health and mental health) sharing its effect in model 1-2.

Last, model 1-3 examines the link between resilience and older adult playfulness, controlling for marital status. The results of this model indicate that neither resilience nor older adult playfulness was affected by marital status ($\gamma_{02} = -0.003, p > 0.05$, model 1-3). Additionally, the random effects in all three models were statistically significant, indicating that these associations were different across individuals. In total, older adult playfulness contributes to resilience growth over time, controlling for age, education, and marital status.

Table 5-4: Multilevel Model Examining Covariation (and Standard Errors) Between Resilience and Older Adult Playfulness with Demographic Variables

	Model 1-1	Model 1-2	Model 1-3
Fixed effects			
Intercept, γ_{00}	2.485(0.084)*	2.169(0.149)*	3.315(0.038)*
Age, γ_{02}	0.008(0.017)		
Education, γ_{03}	0.013(0.018)		
Physical Health, γ_{02}		0.002(0.001)*	
Mental Health, γ_{03}		0.014(0.002)*	
Marital Status, γ_{02}			-0.011(0.015)
OAP residual, γ_{01}	3.200(0.114)*	0.003(0.000)*	0.003(0.000)*
Random effects			
Intercept variance, σ^2_{u0}	0.087(0.010)*	0.063(0.007)*	0.086(0.010)*
Covariance, σ^2_{et}	0.042(0.002)*	0.043(0.002)*	0.042(0.002)*
Fit Statistics			
-2LL	27.9	-6.2	22.2
AIC	31.9	-2.2	26.2

Notes: Unstandardized estimates and standard errors. Model based on 5 occasions nested within participants for a total of 1756 observations. *AIC* = Akaike information criterion; *-2LL* = -2 likelihood, relative model fit statistics. * $p < 0.05$.

Model 2 (between-person): Older Adult Playfulness, Resilience, and Personal Characteristics

To answer Research Question 2 (Do individuals with higher overall mean levels of playfulness have higher overall levels of resilience?), I used three models to examine the between-person differences in the within-person curvilinear lagging effect. That is, model 2 adds the interactions between between-person variables and within-person variables to model 1.

Model 2-1 examines the link between resilience and older adult playfulness and how it is interacted with age and education. The results of model 2-1 were the same as model 1-1: older adult playfulness has a significant effect on resilience ($\gamma_{01} = 3.200, p < 0.05$, model 2-1), and this effect was not affected by age ($\gamma_{12} = -0.051, p > 0.05$, model 2-1) or education level ($\gamma_{13} = -0.029, p > 0.05$, model 2-1).

Model 2-2 examines the link between resilience and older adult playfulness and how it differs by mental and physical health. The result indicates that older adult playfulness has a significant effect on resilience. Additionally, there is a significant interaction moderating the older adult playfulness residual by mental health, but the effect of this interaction was extremely small, close to zero ($\gamma_{15} = 0.000$, $p < 0.05$, model 2-2). Individuals with both higher levels of mental health and monthly older adult playfulness reported slightly higher levels of resilience over the 12 waves than those with lower levels of both mental health and monthly older adult playfulness. This finding was supported by model 1-2, which indicated that mental health was one of the demographic variables contributing to between-person differences.

Model 2-3 examines the link between resilience and older adult playfulness and how it is affected by marital status. The results of this model indicate that, while individuals with higher overall mean levels of older adult playfulness reported higher levels of resilience across the 12 waves, this association was not moderated by marital status ($\gamma_{12} = -0.087$, $p > 0.05$, model 2-3).

A summary of the results of these three models is presented in Table 5-5. Additionally, the random effects in these three models were all statistically significant, indicating that these associations were different across individuals. In total, the overall mean level of playfulness and the interaction between mental health and the older adult playfulness residual were the two between-person variables that affected the link between resilience growth and monthly older adult playfulness.

Table 5-5: Multilevel Model Examining Covariation (and Standard Errors) Between Resilience and Older Adult Playfulness with Demographic Variables

	Model 2-1	Model 2-2	Model 2-3
Fixed effects			
Intercept, γ_{00}	2.773(0.372)*	2.183(0.497)*	2.586(0.125)*
Age, γ_{12}	-0.051(0.056)		
Education, γ_{13}	-0.029(0.062)		
Physical Health, γ_{12}		-0.000(0.003)	
Mental Health, γ_{13}		0.005(0.006)	
Marital Status, γ_{12}			-0.087(0.050)
OAP residual, γ_{01}	3.200(0.114)*	0.002(0.002)	0.003(0.002)
OAP mean, γ_{11}	0.005(0.004)	0.006(0.006)	0.007(0.001)*
Age*OAP residual, γ_{13}	0.000(0.000)		
Age*OAP mean, γ_{14}	0.001(0.001)		
Education* OAP residual, γ_{15}	0.000(0.000)		
Education*OAP mean, γ_{16}	0.000(0.001)		
Physical Health*OAP residual, γ_{13}		0.000(0.000)	
Physical Health*OAP mean, γ_{14}		0.000(0.000)	
Mental Health* OAP residual, γ_{15}		0.000 (0.000)*	
Mental Health*OAP mean, γ_{16}		0.000(0.000)	
Marital Status*OAP residual, γ_{12}			-0.000(0.000)
Marital Status *OAP mean, γ_{13}			0.001(0.000)
Random effects			
Intercept variance, σ^2_{u0}	0.047 (0.006) *	0.044 (0.005) *	0.046 (0.006) *
Covariance, σ^2_{et}	0.042 (0.002) *	0.043 (0.002) *	0.042 (0.002) *
Fit Statistics			
-2LL	16.4	39.0	-18.2
AIC	20.4	43.0	-14.2

Notes: Unstandardized estimates and standard errors. Model based on 12 occasions nested within participants for a total of 1756 observations. AIC = Akaike information criterion; -2LL = -2 likelihood, relative model fit statistics. * $p < 0.05$.

Model 3: Older Adult Playfulness, Resilience, and Social Support from RHS Friends

The third and fourth models were used to examine if the effect of older adult playfulness on resilience was influenced by social support from RHS friends or the RHS identity. In order to do this, the predictor variables (i.e., social support from RHS friends and RHS identity) were separated into within- and between-person components. Specifically, I calculated the mean over

time for each individual as between-person variables (i.e., SUPPORT_Mean, RHSidentity_Mean) and deviations around that mean as within-person variables (i.e., SUPPORT_Residual, RHSidentity_Residual). Taking the research questions into account, I only included the within-person variables in the models to examine if they influenced the resilience growth of each individual across the 12 waves.

Model 3 includes the within-person variable (social support from RHS friends residual) to examine if resilience growth was affected by social support from RHS friends in addition to older adult playfulness. The results of model 3, as shown in Table 5-6, indicate that social support from RHS friends did not moderate the link between resilience and older adult playfulness ($\gamma_{13} = -0.068, p > 0.05$). That is, individuals' resilience increased as a result of their older adult playfulness ($\gamma_{01} = 0.003, p < 0.05$; $\gamma_{11} = 0.009, p < 0.05$) regardless of whether they received social support from their RHS friends or not. Additionally, both the means of older adult playfulness and the older adult playfulness residual were significant, with the former being slightly stronger, meaning that individuals with higher overall mean levels of older adult playfulness reported higher levels of resilience than those with lower overall mean levels of older adult playfulness.

Table 5-6: Multilevel Model Examining Covariation Between the Social Support from RHS Friends, Resilience and Older Adult Playfulness

	Model 3	
	Parameter Estimates	Standard Error
Fixed effects		
Intercept, γ_{00}	2.413*	0.072
OAP residual, γ_{01}	0.003*	0.002
OAP mean, γ_{11}	0.009*	0.001
OAP residual x OAP mean, γ_{12}	0.000	0.000
SUPPORT residual, γ_{13}	-0.068	0.106
SUPPORT residual *OAPresidual, γ_{14}	-0.001	0.004
SUPPORT residual *OAPmean, γ_{15}	0.000	0.001
SUPPORT residual *OAPresidual *OAPmean, γ_{16}	0.000	0.001
Random effects		
Intercept variance, σ^2_{u0}	0.046*	0.005
Covariance $\sigma_{u0 u1 u2}$	0.043*	0.002
Fit Statistics		
-2LL		33.4
AIC		37.4

Notes: Unstandardized estimates and standard errors. Model based on 12 occasions nested within participants for a total of 1756 observations. *AIC* = Akaike information criterion; *-2LL* = -2 log-likelihood relative model fit statistics. * $p < 0.05$.

Model 4: Older Adult Playfulness, Resilience, and the RHS Identity

The fourth model examined if the association between older adult playfulness and resilience was moderated by RHS identity. The results in Table 5-7 indicate that, while the RHS identity residual did not moderate the link by itself, it worked together with the older adult playfulness residual to moderate the link ($\gamma_{14} = 0.013, p < 0.05$). That is, there exists an interaction between RHS identity and older adult playfulness residual. Additionally, there was another interaction effect in RHS identity, i.e., the older adult playfulness residual and overall mean level of older adult playfulness ($\gamma_{16} = 0.000, p < 0.05$). Individuals with both increasing RHS identity and increasing older adult playfulness reported higher levels of resilience over the

12 waves than those with decreasing the RHS identity and decreasing older adult playfulness. In addition, this influence was stronger than the effect of the overall mean level of older adult playfulness ($\gamma_{11} = 0.009, p < 0.05$).

To demonstrate the between-person difference in the within-person curvilinear lagging effect, I plotted the within-person relationship between older adult playfulness and resilience for individuals with RHS identity one standard deviation above and below the sample mean. These results, plotted in Figure 5-1, show for two RHS identity slopes, the association between resilience (range of 1–4) and older adult playfulness (range of 15–150). In general, both low RHS identity and high RHS identity moderated the association between resilience and older adult playfulness. More specifically, individuals with higher levels of the RHS identity reported higher levels of resilience when older adult playfulness was lowest (scale = 15) and increased largely in pace with increasing older adult playfulness, while individuals with lower levels of RHS identity reported a stable and slightly increasing resilience in pace with increasing older adult playfulness. In total, a higher level of RHS identity more positively moderated the association between older adult playfulness and resilience.

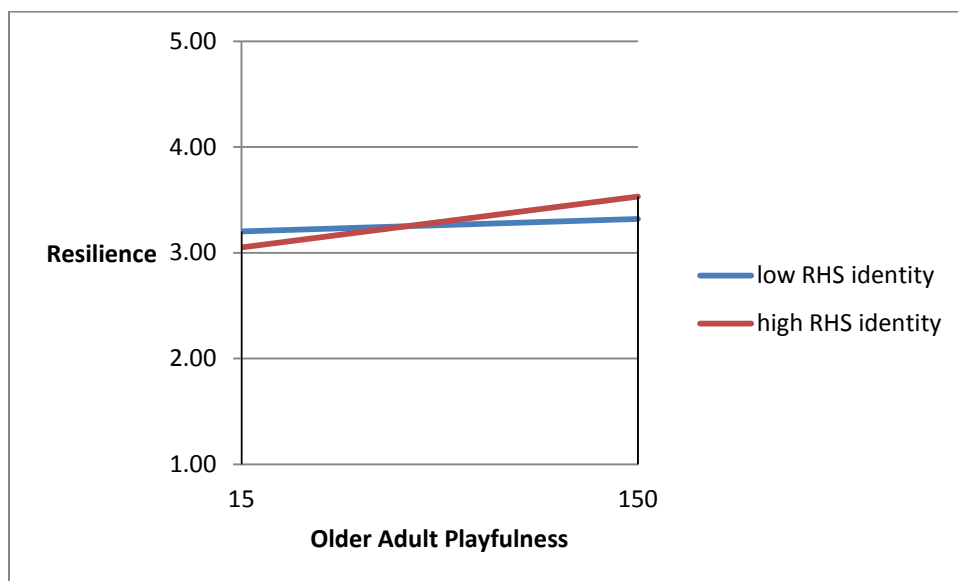


Figure 5-1: Interaction Plot of RHS Identity on Playfulness and Resilience

Table 5-7: Multilevel Model Examining Covariation Between RHS Identity, Resilience and Older Adult Playfulness

	Model 4	
	Parameter Estimates	Standard Error
Fixed effects		
Intercept, γ_{00}	2.416*	0.072
OAP residual, γ_{01}	0.003	0.002
OAP mean, γ_{11}	0.009*	0.001
OAP residual x OAP mean, γ_{12}	0.000	0.000
RHS identity residual, γ_{13}	0.012	0.073
RHS identity residual *OAPresidual, γ_{14}	0.013*	0.005
RHS identity residual *OAPmean, γ_{15}	0.000	0.000
RHS identity residual *OAPresidual *OAPmean, γ_{16}	0.000*	0.001
Random effects		
Intercept variance, σ^2_{u0}	0.047*	0.005
Covariance $\sigma_{u0 u1 u2}$	0.043*	0.002
Fit Statistics		
$-2LL$		-0.5
AIC		3.5

Notes: Unstandardized estimates and standard errors. Model based on 12 occasions nested within participants for a total of 1756 observations. AIC = Akaike information criterion; $-2LL$ = -2 log-likelihood relative model fit statistics. * $p < 0.05$.

To conclude, the results support the hypotheses, H1 and H2, that resilience and older adult playfulness are positively associated at the within-person level and the between-person level. Increasing older adult playfulness was positively associated with resilience over the 12 waves, while RHS identity, as H7 proposed, moderated this association, controlling for age, education, marital status, and social support from RHS friends. In other words, there exists a significant within-person moderation effect: the positive within-person relationship between the OAP residual and resilience is significantly stronger when RHS identity becomes stronger. Individuals with higher levels of physical health, mental health, and overall mean older adult playfulness had higher levels of resilience. Noting that the same variables (e.g., OAP_residual and OAP_mean) showed different statistically significant results across all presented models indicates that a variable may become less significant or not significant in a same sample size condition (Stockburger, 2001).

Chapter 6

Discussion

In the following sections I summarize the results from the data analyses and discuss the results based on the existing literature. Then, the research limitations are provided at the end of this chapter.

Summary of the Results

I tested the applicability of the broaden-and-build theory to the within-person effect of older adult playfulness on resilience using 12 waves of monthly data. The major finding from this analysis was that a within-person effect of older adult playfulness on resilience differed from a between-person effect. More specifically, higher levels of older adult playfulness contributed to resilience growth over the 12 months of data collection. This significant within-person effect supports the broaden-and-build theory, is similar to the results of previous studies (e.g., Cohn, Fredrickson, Brown, & Mikels, 2009; Mitas et al., 2011), and provides evidence that older adult playfulness contributes to resilience growth. Furthermore, individuals with higher levels of older adult playfulness in the current study reported higher levels of resilience than those with lower levels of older adult playfulness, which emphasizes the power of older adult playfulness in resilience by confirming a between-person difference. In addition, the variables of mental health, physical health, and RHS identity moderated the link between older adult playfulness and resilience. The effects of personal characteristics (i.e., mental health and physical health) support the literature showing that it is positively correlated with health status among older adults (Ong, 2010; Shen & Zeng, 2010; Sturgeon & Zautra, 2010).

Rationale of the Findings

The findings of this study contribute to the leisure literature in four ways. First, the current study provided additional evidence that individuals in a leisure-based context may facilitate the broaden-and-build process by building enduring positive resources. Previous studies based on the broaden-and-build theory have mainly focused on the effect of positive emotions on stress coping in lab environments via college student samples (e.g., Cohn et al., 2009; Tugade & Fredrickson, 2004). No research has examined the broaden-and-build theory in a leisure-based context using a longitudinal approach as in the current study. Further, using a lab environment as a research context may not provide reliable evidence for how the broaden-and-build processes operate in the real world. While a lab environment might be able to establish causality by reducing the number of potential impacted factors, the results cannot be replicated and generalized in the real world.

Extending Mitas et al.'s (2011) study of the broaden-and-build process in RHS participation, the current study used 12 waves of longitudinal data to document that older adult playfulness is a form of broadening that builds positive outcomes for RHS women. Moreover, the current study revealed that resilience was a building outcome in the broaden-and-build process among the RHS women reporting. This finding extends previous positive psychology literature by demonstrating that leisure could offer a context for older adults to develop resilience (Iwasaki, 2007). This finding also demonstrated that the RHS is a leisure-based context that not only provides an opportunity to prevent depression and prolong life (Mock et al., 2012; Son et al., 2007), but also provides members an opportunity to broaden themselves by perceiving older adult playfulness as a means to build the psychological outcome of resilience. Therefore, by focusing on resilience and using a longitudinal study design, the current research produced strong evidence

of the positive effect that older adult playfulness can have on the broaden-and-build process afforded by being a member of the RHS.

These findings also support the notion that resilience is a state-characteristic (Ong, Bergeman, & Boker, 2009) that can be increased by older adult playfulness in the broaden-and-build process. Although resilience is viewed as a stable personality trait in some literature (e.g., Fuller-Iglesia et al., 2008; Strurgeon & Zautra, 2010), the finding of resilience growth in a one-year period in the current study lent support to Zautra, Hall, and Murraray's (2008) finding that resilience is an outcome of successful adaptation, which can be cultivated in a social environment over time (White et al., 2010). The RHS, in fact, may be a social leisure environment that improves individuals' resilience by providing frequent positive affect, e.g., older adult playfulness, and positive social interaction (Strurgeon & Zautra, 2010). Additionally, the findings in the current study added support for leisure's contribution to resilience growth in older age, which may help researchers better understand the life-span developmental perspective (Janke et al., 2006). Regarding human development as a dynamic lifelong process (Alwin & Wray, 2005), resilience should be viewed as a state-like variable (Lavretsky, 2012; Ong et al., 2009). That is, resilience could be the outcome, which is changed by the interaction of the persons and their environment over time.

Second, the current study used Yarnal and Qian's (2011) Older Adult Playfulness Scale (OAP) with RHS participants and found support for the reliability of the instrument with this population. Previous studies showing the significance of playfulness have mainly focused on childhood and adolescence (e.g., Stewart & Stewart, 1981) and have developed scales for these populations (e.g., Kruger, 1995), but less research has examined playfulness in older populations such as among RHS women. Yarnal and Qian (2011) were the first to examine playfulness in older adults with the OAP scale. The current study not only used the scale to measure older adult playfulness, but also demonstrated how older adult playfulness contributes to healthy aging

(Lyubomirsky, King, & Diener, 2005). Furthermore, the current study found that individuals with higher average levels of older adult playfulness reported higher levels of resilience growth than those with lower average levels of older adult playfulness. This finding provides additional evidence to support recent playfulness literature indicating that playfulness is viewed as an individual difference characteristic by influencing individuals' leisure experiences (Barnett, 2011). Indeed, most leisure researchers have conducted between-person comparisons (e.g., Janke et al., 2008), but have not investigated within-person changes. By utilizing a within-person approach, the current study found the within-person effect of older adult playfulness on resilience growth over time, which contributed a more comprehensive understanding of the power of older adult playfulness.

Third, the current study is supported by the life-span developmental perspective that individuals from different social environments and with different personal histories may show various patterns of resilience growth (e.g., Pressman et al., 2009; Strurgeon & Zautra, 2010). In this case, average older adult playfulness, mental health, physical health, and RHS identity were the four factors producing different patterns of resilience growth by person. More specifically, the results found that both mental and physical health moderated the link between older adult playfulness and resilience. Individuals with higher levels of mental health perceived higher levels of older adult playfulness, resulting in higher levels of resilience. This finding supports previous research that playfulness and resilience are often linked to health outcomes (e.g., Hutchinson & Nimrod, 2012; Mitas et al., 2011; Ong & Bergeman, 2004), especially mental health (e.g., Qian & Yarnal, 2011). Furthermore, I found that an interaction between mental health and older adult playfulness moderated the link between older adult playfulness and resilience. Mental health may be a between-person indicator of the overall current condition of older adults when a decline in physical health is viewed as a part of "normal aging" during the aging process (Ong & Bergeman, 2004, p. 220).

Many psychological factors, such as major life events and stress (Ong & Bergeman, 2004), contribute to the diversity of individuals' mental health based on the life-span developmental perspective. For example, experiencing life difficulty is correlated to resilience because one of the core resilience components is positive adaptation (Ong et al., 2009). Mental health was the only demographic factor that moderated the link between older adult playfulness and resilience in the current study. Age, education, and marital status did not moderate this link, which may be explained by the homogeneity of the RHS women in the sample. As shown in Tables 4-2 and 4-3, most RHS women in this study were highly educated and married compared to older American women in general (U.S. Census Bureau, 2011). That is, age, education and marital status may not identify the between-person differences within the RHS group, but may be used to examine the differences between the RHS group and other leisure contexts in future studies.

Fourth, RHS identity also moderated the association between older adult playfulness and resilience. This association differed with mental health, as the RHS identity was included as a monthly within-person variable. Individuals with higher levels of RHS identity reported a larger effect of older adult playfulness on resilience growth than individuals with lower levels of RHS identity. This finding supported previous RHS research by confirming the effect of membership identity (e.g., Hutchinson et al., 2008; Son et al., 2010). Indeed, the RHS is a structured leisure context (Trainor et al., 2010), requiring some effort to make friends and providing positive feelings at the same time, which are needed to contribute to leisure identity development (Kleiber, 1999). This finding also agreed with Barrett, Pai, and Redmond's (2012) finding that the more a woman identified herself as an RHS member, the more positive the outcomes she perceived for herself. In addition, this finding supports previous studies that show that leisure activities contribute to women's identity development by providing them opportunities to escape traditional gender roles (Shaw & Henderson, 2005; Yarnal, Son, & Liechty, 2011). Noting that monthly

social support from RHS friends did not moderate the link between older adult playfulness and resilience, the most important thing for the RHS women may just have been “being a member of this group” rather than “perceiving getting help from other members.” Considering their rather high social status (e.g., high financial status and education), these RHS women may just have wanted to play and have fun in this organization (Mitas et al., 2011; Stalp, Radina, & Lynch, 2008) regardless of whether or not they perceived social support from other members.

Last, the current study was the first leisure study to use longitudinal data to examine the broaden-and-build theory. The majority of leisure studies have used cross-sectional data (Gibson, 2005; Qian & Yarnal, 2011). By using cross-sectional data, researchers only examined the correlations between leisure and personal characteristics, which cannot provide evidence about how leisure activities benefit individuals’ physical health or psychological well-being over time (e.g., Coleman & Iso-Ahola, 1993; Golden, Conroy, & Lawlor, 2009; Son et al., 2008). In other words, a cross-sectional data collects participants’ information at one time point, and cannot examine any change (e.g., change in health status or psychological resources) in participants. Given the power of longitudinal data (Janke et al., 2006), I extended the leisure literature by confirming the use of the broaden-and-build theory to understand resilience in a unique leisure-based context: the Red Hat Society. This study also affirms the efficacy of online data collection because it provided sufficient longitudinal data (Krant et al., 2004) and produced significant analytic findings (Troop, 2002).

Study Limitations

The present study was not without limitations. The first concerns personal influences. The RHS members in the study had similar characteristics (e.g., higher education, White, married), and were different from the general older U.S. female population. This suggests that

there may have been an issue of homogeneity in the current data set. Given that the power of personal characteristics may have influenced the association between playfulness and resilience in the current study, future research is necessary to control for or investigate personal differences in groups (e.g., race and personality), as well as appreciate how the RHS women differ from the general population in their age group.

The second limitation is the limited sample size of 101 RHS women, stemming from recruitment challenges and from having repeated the monthly data collection over 12 months. Other participants might have dropped out of the RHS longitudinal study before completing the questionnaires, compromising the data collection. Additionally, Table 4-4 indicated that some participants stopped participating in the middle of the longitudinal data collection, i.e., the 7th wave. Future research would hopefully address this important recruitment concern. In addition, further study could compare the characteristics of the RHS women who completed the entire study with those who dropped out after the 6th wave to examine if specific characteristics of the women affected the results of this study.

The third limitation was the limited time for data collection based on the characteristic of resilience. Some researchers view it as only being developed in childhood as a personality trait-characteristic and so a decade may be a more suitable unit for measuring change, whereas others believe it is a state-characteristic and changeable (Lavretsky, 2012; Ong et al., 2009; Strurgeon & Zautra, 2010; Windle, 2011; Zautra et al., 2008). Although the current study found evidence that resilience in these older adult women was slightly improved over 12 months, a longitudinal study with more waves may be helpful to observe changes over a longer time in order to determine how much resilience can increase. That is, to fully capture the longitudinal change in playfulness and resilience, future research should extend the data collection beyond one year. Additionally, the participants were asked their monthly experiences, so there may have been a memory issue or recall bias when the RHS older women were answering the monthly questionnaire (Bernard,

Killworth, Kronenfeld, & Sailer, 1984). Thus, collection of the monthly data might have been influenced by memory or immediate mood rather than actual experiences during the previous month. Future studies might consider different data collection procedures to address these issues. A seven-day diary study design, which requires respondents to reply to the same questionnaire every day could, for example, be used to collect data without as much of a memory issue or recall bias in a future study (Bernard et al., 1984).

The last limitation may have been the terminology in the questionnaire (Bernard et al., 1984). Given that the definitions of playfulness and leisure may be different for individuals from different races (e.g., White and Asian) or different geographic areas (e.g., population living in coastal areas and population living in interior areas), future research should consider these factors to see if the various definitions of playfulness and leisure influence the results.

Chapter 7

Conclusion

The purpose of this dissertation was to study the effect of older adult playfulness on resilience growth among the 101 members of the Red Hat Society over 12 months, using data from the research study *Does Leisure Promote Well-being? A Longitudinal Examination of Mature Women's Participation in Leisure-based Social Groups*, conducted by Yarnal, Son, Qian, and Chick at The Pennsylvania State University in 2009. This chapter summarizes the key findings, their implications, and potential future research directions.

Summary of the Findings

The major findings of this study answered the two main research questions: (a) the RHS woman experienced a higher level of older adult playfulness than in her previous month, which contributed to her resilience growth during the 12 study months (within-person change), and (b) the RHS women with higher levels of older adult playfulness than others reported higher levels of resilience (between-person differences). Additionally, mental health and RHS identity moderated these associations.

More specifically, four of the eight hypotheses were demonstrated by the results. H1 and H2 demonstrated the broaden-and-build theory by confirming that experiences of positive emotions (i.e., joy in older adult playfulness) among the RHS women built an enduring resource (i.e., resilience). However, the findings did not fully demonstrate the life-span developmental perspective. H3, H4, and H5 examined the effect of social status (i.e., age, education, and marital status) on the relationships between playfulness and resilience, but the results were not significant. Only H6, mental health, was confirmed in that it moderated the association between older adult

playfulness and resilience. According to the life-span developmental perspective, human development is a multidimensional and multidirectional process (Alwin & Wray, 2005), which differs by person (Spiro, 2001). In the current study, however, personal differences in age, educational level, and marital status did not influence resilience development among this sample of RHS women. The homogeneity of the sample may have been the reason for this result; the RHS women reported a similar educational level and marital status. Additionally, the results confirmed H7: if a higher level of RHS identity is moderated with a higher level of playfulness, it will contribute to more resilience over time. That is, both older adult playfulness and RHS identity may contribute to resilience growth over time. Last, social support from RHS friends did not moderate the link between playfulness and resilience, which disproved H8. The RHS women in our sample may look for self-identity from this society, rather than for social support.

In sum, the findings from this study demonstrate how longitudinal data can be beneficial to examining both between-person differences and within-person changes over time. Moreover, the findings confirmed the contribution of playfulness to resilience growth in the broaden-and-build process, while they also recognized how special the RHS women are. However, the findings may not be the same in another other leisure-based context or in the overall female older population.

Implications

The findings of this longitudinal study have important implications for various theoretical models that could explain the effect of older adult playfulness on resilience growth in the broaden-and-build process. There are also methodological implications for within-person analysis in the leisure field. Moreover, the findings offer practical implications for older adult playfulness and for understanding resilience growth in a leisure-based context.

First, the findings have multiple theoretical implications that could explain the effects of older adult playfulness in RHS women. The study may explain the broaden-and-build theory by confirming that RHS women's resilience can be built by their playfulness in this leisure-based context. More specifically, this finding implies that older adult playfulness is a positive resource that facilitates the broaden-and-build process over time for RHS women. Additionally, leisure identity may be a moderator in this broaden-and-build process. Furthermore, the study further connected the positive psychology and leisure fields by providing additional confirmation of the broaden-and-build theory in a leisure-based context from a longitudinal research design.

Second, collecting data from the same participants for multiple months enabled within-person analysis, overcoming the limitations of previous research that considered only between-person effects (Yee & Niemeier, 1996). Moreover, the majority of previous leisure studies have used cross-sectional data without considering change over time (e.g., Coleman & Iso-Ahola, 1993; Golden, Conroy, & Lawlor, 2009; Son et al., 2008). The findings also imply that a MLM model can be used to measure the psychological pattern of change based on the broaden-and-build theory and the life-span developmental perspective in a leisure-based context (e.g., Raudenbush et al., 1995; Reis & Gable, 2000).

Third, the findings from this study have implications not only for theory and research but also for practical applications, specifically that older women in the Red Hat Society can improve their psychological well-being (e.g., resilience) by engaging in older adult playfulness in the leisure-based context of this social organization. That is, intervention programmers could design a leisure program that provides older women with a sense of playfulness in order to improve their health and psychological well-being. However, this program may not need to provide a mutual sense of social support from their members. Rather a sense of belonging seems to be a more effective means for contributing to positive resource growth. That is, programmers may focus on

facilitating group identification by providing older women opportunities to have fun with each other.

Future Research Directions

The findings from this study point to at least four areas for future research. First, the process of broaden-and-build may trigger an “upward spiral” over time (Fredrickson & Joiner, 2002, p. 172): positive emotions broaden individuals’ mind-sets and build their psychological resources, and thus facilitate a habitual mode of positive thinking. A longer period of data collection that measures more and different scales relating to personal thinking, habits, and psychological well-being in the last wave of a longitudinal study may delve more deeply into the upward spiral process. Furthermore, future research could examine the causal direction based on different questionnaires and longer periods of data collection. Examining causal direction in the current model may provide more information on how playfulness contributes to resilience growth over time, and the effect of social status on this model.

Second, Fredrickson (2013) proposed that the benefits of the broaden-and-build process not only include emotional, but also biological and physical well-being, i.e., improving the cardiovascular and immune systems. She also compared the positive resources received by individuals through different contexts (i.e., texting conversations using a cellular phone and making social connection through face-to-face situations). Further, the broaden-and-build research could collect biomarker information (e.g., blood pressure, BMI, and cortisol levels) in various leisure contexts to extend the literature on the physical benefits of positive resources. For example, engaging in playfulness through an online social group may be different from experiencing playfulness in a real social group, such as the RHS. In addition, whereas individuals

may not notice an improvement in psychological well-being or self-reported physical health, researchers may be able to catch any change via biomarker information.

Third, the entire concept of resilience growth can be linked to Padesky and Mooney's (2012) four-step, strengths-based cognitive-behavioral therapy (CBT) model. This model indicates how clients seek strength from positive and sustained activities, and then turn them into strategies to identify problems and foster resilience. The concepts of CBT are well-discussed in intervention research and practice. Future research could implement the findings from the current study into their therapeutic and clinical practices. For example, the RHS or other RHS-like leisure contexts could be used as therapy contexts to improve clients' resilience by enabling them to experience older adult playfulness over time in these settings.

Last, the findings of this study were from an examination of 101 members of the Red Hat Society, a leisure-based context for older women who were similar in education and marital status. According to the life-span developmental perspective, however, individuals differ by their contextual (e.g., historical events and timing), socioeconomic (e.g., gender and financial situation), and cultural environment (e.g., race and society) (Nimrod & Janke, 2012). Thus, future research could duplicate the current broaden-and-build model in a different context, such as a male group or in Asian society in order to further crystallize findings from the current study. Another factor to consider is that the RHS women who completed the 12 waves of this study may differ in socioeconomic or cultural environment from those who dropped out. Future research may use baseline data to compare these two groups of RHS women in order to examine if social status and health status influenced their willingness to complete the longitudinal data collection.

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Appendix A

The Sign-up Sheet

1. Information about our study

The Pennsylvania State University

Title of Project: Does leisure promote well-being? A longitudinal examination of mature women's participation in leisure-based social groups

Principal Investigator: Dr. Careen Yarnal

801 Ford Building, University Park, PA 16802, (814) 863-5559; cmy122@psu.edu

Other Investigator(s): Dr. Julie Son, Xinyi (Lisa) Qian, Dr. Garry Chick

If you find the font in this survey too small to read comfortably, please set your Web browser to a larger text size.

(1) Purpose of the Study: The purpose of this research study is to examine if participation in a leisure-based social group facilitates well-being among mature women.

(2) Procedures to be followed: You will be asked to fill out ten scales measuring your general health and leisure experience. You will also be asked to provide some demographic information. In the following year, once every two months (i.e., September 2010, November 2010, January 2011, March 2011, May 2011, July 2011), You will be asked to fill out three scales measuring your DAILY experience for seven consecutive days. On the seventh day, you will also be asked to fill out six scales measuring your experience in the PAST TWO MONTHS.

(3) Duration: It will take about 30 minutes to complete this survey. The daily questionnaire will take about 10 minutes to fill out. The once-every-two-month questionnaire will take about 20 minutes to fill out.

(4) Statement of Confidentiality: Your participation in this research is confidential. Your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties. Only the principal investigator (PI) and Xinyi (Lisa) Qian will have access to the data. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

(5) Right to Ask Questions: Please contact Dr. Careen Yarnal at (814) 863-5559 or cmy122@psu.edu with questions or concerns about this study.

(6) Voluntary Participation: Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

If you agree to take part in this research study and the information outlined above, please click the "next" button below.

At the same time, you can print a copy of this web page for your own record. If you do not agree, please click "exit this survey" in the upper right corner.

2. Please indicate your age range

(1) Below 50, (2) 50-55, (3) 56-60, (4) 61-65, (5) 66-70, (6) 71-75, (7) 76-80, (8) 81-85, (9) 86-90, (10) 91 and above

3. Your membership in the Red Hat Society

(1) How long have you been a member of the Red Hat Society?

(2) How many chapters do you belong to?

4. We would like to know how often you participate in Red Hat Society activities. Please select the appropriate button.

(1) Once a week. (2) Twice a month, (3) Monthly, (4) Every other month, (5) Once every six month, (6) Once a year

5. Please let us know your FIRST name and the first letter of your LAST name (e.g., Susan A)

Name:

6. IMPORTANT – Please let us know the email address that you regularly use. This will be the ONLY way for us to contact you during the study

Email:

7. Please choose one of the following:

(1) I feel comfortable with filling out questionnaires online.

(2) I do not know how to fill out an questionnaire online.

8. Please choose one of the following:

(1) I would like to participate in Level 1 of the study.

(2) I would like to participate in Level 1 AND Level 2 of the study.

Appendix B

The Baseline Survey

1. Information about our study

The Pennsylvania State University

Title of Project: Does leisure promote well-being? A longitudinal examination of mature women's participation in leisure-based social groups

Principal Investigator: Dr. Careen Yarnal

801 Ford Building, University Park, PA 16802, (814) 863-5559; cmy122@psu.edu

Other Investigator(s): Dr. Julie Son, Xinyi (Lisa) Qian, Dr. Garry Chick

If you find the font in this survey too small to read comfortably, please set your Web browser to a larger text size.

(1) Purpose of the Study: The purpose of this research study is to examine if participation in a leisure-based social group facilitates well-being among mature women.

(2) Procedures to be followed: You will be asked to fill out ten scales measuring your general health and leisure experience. You will also be asked to provide some demographic information. In the following year, once every two months (i.e., September 2010, November 2010, January 2011, March 2011, May 2011, July 2011), You will be asked to fill out three scales measuring your DAILY experience for seven consecutive days. On the seventh day, you will also be asked to fill out six scales measuring your experience in the PAST TWO MONTHS.

(3) Duration: It will take about 30 minutes to complete this survey. The daily questionnaire will take about 10 minutes to fill out. The once-every-two-month questionnaire will take about 20 minutes to fill out.

(4) Statement of Confidentiality: Your participation in this research is confidential. Your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties. Only the principal investigator (PI) and Xinyi (Lisa) Qian will have access to the data. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

(5) Right to Ask Questions: Please contact Dr. Careen Yarnal at (814) 863-5559 or cmy122@psu.edu with questions or concerns about this study.

(6) Voluntary Participation: Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

If you agree to take part in this research study and the information outlined above, please click the "next" button below.

At the same time, you can print a copy of this web page for your own record. If you do not agree, please click "exit this survey" in the upper right corner.

2. Your ID for this research study

Please type your ID for this research study

3. Engagement in Formal Leisure

Your membership in the Red Hat Society

(1) How many YEARS have you been a member of the Red Hat Society?

(2) How many chapters do you belong to?

(3) How many social, volunteer and religion-based organizations are you CURRENTLY involved with OTHER THAN the Red Hat Society? What are the names of these organizations?

Please also include how many years you have been involved with these organizations.

Organization 1
 Name of the organization
 Years participating
 Organization 2
 Name of the organization
 Years participating
 Organization 3
 Name of the organization
 Years participating
 Organization 4
 Name of the organization
 Years participating
 Organization 5
 Name of the organization
 Years participating

(4) On average, how many hours a month TOTAL do you spend doing activities in THESE OTHER organizations?

4. Physical health

The following items are about activities you might do during a typical day. Does your health now limit your ability in the following activities? If so, how much?

(Answer: (1) Yes, limits a lot, (2) Yes, limits a little, (3) No, no limits at all).

- (1) Moderate activities, such as pushing a vacuum cleaner, bowling
- (2) Vigorous activities, such as running, lifting heavy objects
- (3) Lifting or carrying groceries
- (4) Walking one block
- (5) Walking several blocks
- (6) Walking more than a mile
- (7) Bending, kneeling, or stooping
- (8) Climbing one flight of stairs
- (9) Climbing several flights of stairs
- (10) Bathing or dressing yourself

5. Mental health

The following questions are about how you have been feeling during THE PAST MONTH.

Please choose the answer that best represents how often you have experienced or felt the following:

(Answers: (1) Never, (2) Once or twice, (3) About once a week, (4) About 2 or 3 times a week, (5) Almost every day, (6) Everyday).

- (1) That you had warm and trusting relationships with others
- (2) That our society is becoming a better place for people like you
- (3) That you belonged to a community (like a social group, or your neighborhood)
- (4) Interested in life
- (5) That you had something important to contribute to society
- (6) That you liked most parts of your personality
- (7) That the way our society works makes sense to you
- (8) Confident to think or express your own ideas and opinions

-
- (9) That your life has a sense of direction or meaning to it
 - (10) That people are basically good
 - (11) That you had experiences that challenged you to grow and become a better person
 - (12) Good at managing the responsibilities of your daily life
 - (13) Happy
 - (14) Satisfied
-

6. Stressful life events

Listed below are a number of difficult or stressful things that sometimes happen to people. For events that might fit more than one item description, choose the one that fits the best. Be sure to consider your ENTIRE LIFE (growing up, as well as adulthood) as you go through the list of events.

(Answers: (1) Happened to me personally, (2) Witnessed it happen to someone else, (3) Learned about it happening to someone close to me, (4) Not sure if it applies to me, (5) Doesn't apply to me).

- (1) Natural disaster (e.g., flood, hurricane, tornado, earthquake)
 - (2) Fire or explosion
 - (3) Transportation accident (e.g., car accident, boat accident, train wreck, plane crash)
 - (4) Serious accident at work, home, or during recreational activity
 - (5) Exposure to toxic substance (e.g., dangerous chemicals, radiation)
 - (6) Physical assault (e.g., being attacked, hit, slapped, kicked, beaten up)
 - (7) Assault with a weapon (e.g., being shot, stabbed, threatened with a knife, gun, bomb)
 - (8) Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)
 - (9) Other unwanted or uncomfortable sexual experience
 - (10) Combat or exposure to a war-zone (in the military or as a civilian)
 - (11) Captivity (e.g., being kidnapped, abducted, held hostage, prisoner of war)
 - (12) Life-threatening illness or injury
 - (13) Severe human suffering
 - (14) Sudden, violent death (e.g., homicide, suicide)
 - (15) Sudden, unexpected death of someone close to you
 - (16) Serious injury, harm, or death you caused to someone else
 - (17) Any other stressful event or experience
-

7. Leisure coping belief

These questions are designed to assess your beliefs about leisure experiences in the Red Hat Society. Please read the following statements and indicate the extent to which you agree with each statement.

(Answers: (1) Very strongly disagree, (2) Strongly disagree, (3) Disagree, (4) Neutral, (5) Agree, (6) Strongly agree, (7) Very strongly agree).

- (1) Leisure experience in the Red Hat Society provides opportunities to regain a sense of freedom
 - (2) My leisure experiences in the Red Hat Society strengthen my ability to better manage stress
 - (3) If I need extra hands for doing tasks, I can turn to my fellow Red Hatters
 - (4) Participating in Red Hat Society activities is a self-determined
 - (5) activity for me
 - (6) I gain feelings of personal control in Red Hat Society activities
 - (7) Red Hat Society activities contribute to giving me energy to better cope with stress
-

-
- (8) I feel emotionally supported by my fellow Red Hatters
 - (9) The things I do during Red Hat Society activities help me gain confidence
 - (10) I feel that I'm valued by my fellow Red Hatters
 - (11) My Red Hat Society participation allows me to feel energetic to better deal with stress
 - (12) My Red Hat Society activities are freely chosen
 - (13) My fellow Red Hatters give me advice when I am in trouble
-

8. Ego-resiliency

Please indicate to what extent you agree or disagree with each of the following statements (Answers: (1) Strongly disagree, (2) Disagree, (3) Agree, (4) Strongly agree, (5) Do not know).

- (1) I would be willing to describe myself as a pretty "strong" personality
 - (2) I usually think carefully about something before acting
 - (3) I get over my anger at someone reasonably quickly
 - (4) I usually succeed in making a favorable impression on people
 - (5) I am generous with my friends
 - (6) I am regarded as a very energetic person
 - (7) I enjoy dealing with new and unusual situations
 - (8) I enjoy trying new foods I have never tasted before
 - (9) I am more curious than most people
 - (10) My daily life is full of things that keep me interested
 - (11) Most of the people I meet are likeable
 - (12) I like to take different paths to familiar places
 - (13) I like to do new and different things
 - (14) I quickly get over and recover from being startled
-

9. Life satisfaction

Please indicate to what extent you agree or disagree with each of the following statements by choosing the most appropriate answer

(Answers: (1) Strongly disagree, (2) Disagree, (3) Slightly disagree, (4) Neutral, (5) Slightly agree, (6) Agree, (7) Strongly agree).

- (1) So far I have gotten the important things I want in life
 - (2) I am satisfied with my life
 - (3) In most ways my life is close to my ideal
 - (4) The conditions of my life are excellent
 - (5) If I could live my life over, I would change almost nothing
 - (6) Please indicate the role your family plays in your life: Positive, negative, both positive and negative, do not wish to indicate
-

10. Personal feelings

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the PAST MONTH.

(Answers: (1) Rarely or none of the time, (2) Some or a little of the time, (3) Occasionally or a moderate amount of time, (4) All of the time).

- (1) I could not "get going"
 - (2) I felt fearful
 - (3) I was bothered by things that usually don't bother me
 - (4) I felt that everything I did was an effort
 - (5) I was happy
 - (6) My sleep was restless
 - (7) I felt lonely
-

-
- (8) I had trouble keeping my mind on what I was doing
(9) I felt depressed
(10) I felt hopeful about the future
-

11. Personality

Please indicate how well each of the following items describes you.

(Answers: (1) Not at all, (2) A little, (3) Some, (4) A lot).

(1) Softhearted, (2) Helpful, (3) Warm, (4) Nervous, (5) Calm, (6) Moody, (7) Thorough, (8) Intelligent, (9) Lively, (10) Active, (11) Sophisticated, (12) Creative, (13) Curious, (14) Sympathetic, (15) Outgoing, (16) Careless, (17) Hardworking, (18) Responsible, (19) Broad-minded, (20) Friendly, (21) Talkative, (22) Imaginative, (23) Caring, (24) Organized, (25) Adventurous, (26) Worrying.

12. Chronic stressors

Please indicate how often the following situations happened in your life in the PAST YEAR.

(Answers: (1) Never, (2) A little, (3) Sometimes, (4) Very often, (5) Not applicable).

- (1) How often did your partner expect more from you than he or she was willing to give back?
 - (2) How often did your partner spend money in ways you thought unwise?
 - (3) How often did problems experienced by your partner place an extra burden on you?
 - (4) How often did you wonder if your children were trying hard enough to prepare for the life ahead of them?
 - (5) How often did you have to give attention to your children failing to get along with others?
 - (6) How often did your children seem to ignore your guidance and advice?
 - (7) How often did problems experienced by your children place an extra burden on you?
 - (8) How often was one of your parents or some other older relative complaining or critical of you?
 - (9) How often did you feel responsible for the care and well-being of a parent or any older relative?
 - (10) How often did you worry that a parent or some other older relative was declining in mental capacity?
 - (11) How often did problems experienced by a parent or another older relative place an extra burden on you?
 - (12) How often did you not have enough money to afford the kind of clothing or food you or your family should have?
 - (13) How often did you have trouble meeting the monthly payments on bills?
 - (14) How often were you confident that your source of income was secure?
 - (15) How often did financial problems place an extra burden on you?
 - (16) How often did you feel your work was too dirty, noisy, or dangerous?
 - (17) How often did you have more work than you could handle?
 - (18) How often were you treated unfairly by others on the job?
 - (19) How often did problems experienced by co-workers place an extra burden on you?
 - (20) How often did you feel crowded in your present housing situation?
 - (21) How often did you worry about crime in your neighborhood?
 - (22) How often did you worry about drugs in your neighborhood?
 - (23) How often was your neighborhood excessively noisy?
-

-
- (24) How often did problems experienced by neighbors place an extra burden on you?
 - (25) How often did you have trouble getting around?
 - (26) How often did your health prevent you from doing things you wanted to do?
 - (27) How often did any physical disabilities place an extra burden on you?
 - (28) How often did you feel that you do have enough time to fulfill multiple demands?
 - (29) How often do you feel lonely?
 - (30) How often are you bothered by the fact that your children no longer live with you?
 - (31) How often are you bothered by getting older?
 - (32) How often did problems experienced by your grandchildren place an extra burden on you?
-

13. Demographic information

- (1) Please indicate your age range: Below 50, 50-55, 56-60, 61-65, 66-70, 71-75, 76-80, 81-85, 86-90, 91 and above
 - (1) Please indicate the number of children you have
 - (2) Please indicate the number of grandchildren you have
 - (3) Please indicate your employment status. Please choose all that apply: Full-time employed, Part-time employed, Self-employed, Volunteering, Unemployed, Retired, Homemaker, (Disability), Do not wish to indicate
 - (4) Please indicate your marital status: Married, Separated, Divorced, Widowed, Single, In a relationship, Do not wish to indicate
 - (5) Please indicate the highest education level you have achieved: Elementary school, Middle school, High school, Some college, Bachelor degree, Some graduate school/graduate study, Master's degree, Doctoral degree
 - (6) Please select the category that best describes you: Caucasian/White, African American/Black, Hispanic/Latino, Asian, Multi-racial, Other, Do not wish to indicate
 - (7) Which of the following best describes your financial circumstances? (Please select the most appropriate answer)
 - A. Comfortable--I have more than enough money to meet my needs
 - B. Adequate--I have money to meet my needs
 - C. Barely adequate--Sometimes I worry about having enough to meet my needs
 - D. Inadequate--I often worry about my lack of money
 - E. Do not wish to indicate
 - (8) Please indicate your yearly Red Hat Society membership dues
 - (9) If you pay additional chapter dues, how much is it per year?
 - (10) Please indicate your motives to join the Red Hat Society
-

Appendix C

The Monthly Survey

1. Information about our study

The Pennsylvania State University

Title of Project: Does leisure promote well-being? A longitudinal examination of mature women's participation in leisure-based social groups

Principal Investigator: Dr. Careen Yarnal

801 Ford Building, University Park, PA 16802, (814) 863-5559; cmy122@psu.edu

Other Investigator(s): Dr. Julie Son, Xinyi (Lisa) Qian, Dr. Garry Chick

If you find the font in this survey too small to read comfortably, please set your Web browser to a larger text size.

Procedures to be followed: You will be asked to fill out six scales measuring your experience in the PREVIOUS MONTH.

It will take about 20 minutes to complete the scales.

Statement of Confidentiality: Your participation in this research is confidential. Your confidentiality will be kept to the degree permitted by the technology being used. No guarantees can be made regarding the interception of data sent via the Internet by any third parties. Only the principal investigator (PI) and Xinyi (Lisa) Qian will have access to the data. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.

Right to Ask Questions: Please contact Dr. Careen Yarnal at (814) 863-5559 or cmy122@psu.edu with questions or concerns about this study.

Voluntary Participation: Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

If you agree to take part in this research study and the information outlined above, please click the "next" button below. If you do not agree, please click "exit this survey" in the upper right corner.

2. Your ID for this research study

Please type your ID for this research study

3. Overall quality of life

These two questions ask how you feel about your quality of life and health in the PREVIOUS MONTH. Please choose the answer that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures, and concerns when answering the questions.

(1) How would you rate your quality of life?

- A. Very poor
 - B. Poor
 - C. Neither poor nor good
 - D. Good
 - E. Very good
-

(2) How satisfied are you with your health?

- A. Very dissatisfied
 - B. Dissatisfied
 - C. Neither dissatisfied nor satisfied
 - D. Satisfied
 - E. Very satisfied
-

4. Coping with Red Hat Society activities

The following statements assess to what extent the Red Hat Society activities you participated in the PREVIOUS MONTH help you cope with stress in your life. Please read each of the following statements and choose the most appropriate answer.

(Answers: (1) Very strongly disagree, (2) Strongly disagree, (3) Disagree, (4) Neutral, (5) Agree, (6) Strongly agree, (7) Very strongly agree).

- (1) The Red Hat Society activities in the previous month helped me feel better
 - (2) I gained a positive feeling from the Red Hat Society activities
 - (3) Socializing in the Red Hat
 - (4) Society activities was a means of managing stress
 - (5) Escape through the Red Hat
 - (6) Society activities was a way of coping with stress
 - (7) Red Hat Society activities helped me manage my negative feelings
 - (8) Spending leisure time with my Red Hat Society friends helped me better deal with stress
 - (9) Red Hat Society activities provided me an opportunity to gain renewed energy to better deal with stress.
 - (10) Engagement in Red Hat
 - (11) Society activities allowed me to gain a fresh perspective to better cope with stress
 - (12) Engaging in social leisure via Red Hat Society was a stresscoping strategy for me
-

5. Older Adult Playfulness

Please indicate how you would characterize yourself on the qualities listed below. Circle the correct number to show if you think you have very little or a lot of each quality listed.

(Answer Range from 1 to 10).

Cheerful, Happy Optimistic Joyful Clowning Positive Humorous Mischievous Teasing
Enthusiastic Funny Creative Whimsical Naughty Relaxed.

6. Active living

Social groups such as the Red Hat Society may provide opportunities for active living. For instance, you may become more physically, mentally, and/or socially active. Please indicate the extent to which you agree or disagree with the following statements.

(Answers: (1) Very strongly disagree, (2) Strongly disagree, (3) Disagree, (4) Neutral, (5) Agree, (6) Strongly agree).

- (1) I have a fuller life since joining the Red Hat Society
 - (2) I am more active than before I joined the Red Hat Society
 - (3) The Red Hat Society provides opportunities to engage with my local community
 - (4) The Red Hat Society activities often include opportunities to be active
 - (5) The Red Hat Society activities are socially engaging
 - (6) The Red Hat Society activities often include some form of physical activity (such as, dancing, walking, etc.)
 - (7) The Red Hat Society activities keep me mentally sharp
-

7. Red Hat Society Identity

Please choose the answer that best represents the extent to which you agree or disagree with each of the following statements.

(Answers: (1) Very strongly disagree, (2) Strongly disagree, (3) Disagree, (4) Neutral, (5) Agree, (6) Strongly agree).

- (1) I consider myself to be healthy when I participate in the Red Hat Society activities
 - (2) When I describe myself to others, I usually include my involvement in the Red Hat Society
 - (3) I have numerous goals related to the Red Hat Society
 - (4) Being a Red Hatter is a central factor to my self-concept
 - (5) I need to participate in the Red Hat Society to feel good about myself
 - (6) Others see me as someone who participates in the Red Hat Society regularly
 - (7) For me, being a Red Hatter means more than just participating
 - (8) I would feel a real loss if I were forced to give up participating in the Red Hat Society
 - (9) The Red Hat Society is something I think about often
-

8. Social support

The following questions ask about your interactions with your spouse/partner, other family members, friends from the Red Hat Society, and friends OUTSIDE the Red Hat Society in the PREVIOUS MONTH. Please choose the answer that best shows how you feel about each statement. (Answers: (1) Not at all, (2) A little, (3) Some, (4) A lot, (5) Not applicable).

These three questions ask about your interaction with your SPOUSE/PARTNER in the previous MONTH.

- (1) How much does he or she really understand the way you feel about things?
- (2) How much can you rely on him or her if you have a serious problem?
- (3) How much can you open up to him or her if you need to talk about your worries?

These three questions ask about your interaction with your family OTHER YOU'RE YOUR spouse/partner in the previous MONTH

- (1) How much does he or she really understand the way you feel about things?
- (2) How much can you rely on him or her if you have a serious problem?
- (3) How much can you open up to him or her if you need to talk about your worries?

These three questions ask about your interaction with your CLOSE/INTIMATE friend(s) within the Red Hat Society in the previous MONTH

- (1) How much does he or she really understand the way you feel about things?
- (2) How much can you rely on him or her if you have a serious problem?
- (3) How much can you open up to him or her if you need to talk about your worries?

These three questions ask about your interaction with your OTHER friend(s) within the Red Hat Society in the previous MONTH

- (1) How much does he or she really understand the way you feel about things?
- (2) How much can you rely on him or her if you have a serious problem?
- (3) How much can you open up to him or her if you need to talk about your worries?

These three questions ask about your interaction with your friends OUTSIDE the Red Hat Society in the previous MONTH

- (1) How much does he or she really understand the way you feel about things?
 - (2) How much can you rely on him or her if you have a serious problem?
 - (3) How much can you open up to him or her if you need to talk about your worries?
-

9. Perceived stress

The questions in this scale ask you about your feelings and thoughts during the PREVIOUS MONTH. In each case, you will be asked to indicate HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them, and please treat each one as a separate question. In the PREVIOUS MONTH:

(Answers: (1) Never, (2) Almost never, (3) Sometimes, (4) Fairly often, (5) Very often).

- (1) How often have you found that you could not cope with all the things that you had to do?
 - (2) How often have you felt difficulties were piling up so high that you could not overcome them?
 - (3) How often have you felt that you were unable to control the important things in your life?
 - (4) How often have you been able to control irritations in your life?
 - (5) How often have you felt that you were on top of things?
 - (6) How often have you felt confident about your ability to handle your personal problems?
 - (7) How often have you dealt successfully with irritating life hassles?
 - (8) How often have you felt that you were effectively coping with important changes that were occurring in your life?
 - (9) How often have you found yourself thinking about things that you have to accomplish?
 - (10) How often have you felt nervous and "stressed"?
 - (11) How often have you been able to control the way you spend your time?
 - (12) How often have you been upset because of something that happened unexpectedly?
 - (13) How often have you been angered because of things that happened that were outside of your control?
 - (14) How often have you felt that things were going your way?
-

VITA

Po-Ju Chang

Education

- Ph.D. (2013) The Pennsylvania State University
Major: Recreation, Park, and Tourism Management
- M.B.A. (2007) National Chung Hsing University, Taiwan
Major: Rural Planning
- B.L.A. (2004) Tunghai University, Taiwan
Major: Landscape Architecture

Experience

- 2010 - 2012 Graduate Research/Teaching Assistant
Department of Recreation, Park, and Tourism Management
The Pennsylvania State University
University Park, Pennsylvania
- 2008 - 2009 Research Assistant
FID-TEK International Consultant Company, Taiwan
- 2007 - 2008 Research Assistant
National Taiwan University, Taiwan
Professor Chun-Yen Chang's Office, Department of Horticulture

Selected Publications

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