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The role of personality in successful aging

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The role of personality in successful aging

by

Yousun Baek

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Human Development and Family Studies

Program of Study Committee:
Peter Martin, Major Professor
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   Jennifer Margrett
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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

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Ames, Iowa
2018
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The purpose of this dissertation is to investigate the role of personality as a predictor of successful aging. Three studies are presented and discussed using the data from the Georgia Centenarian Study (Study 1 and 3) and the data from the Midlife in the United States study (Study 3). Study 1 suggested an alternative approach for measuring the Big Five personality domains, Digman’s (1997) two higher-order personality factors (i.e., Alpha and Beta), and found a positive association between personality and each component of successful aging (i.e., cognitive functioning, physical functioning, physical health, and social engagement). Study 2 examined the longitudinal effects of personality level and personality change on successful aging and found that higher initial levels of personality traits (i.e., emotional stability, extraversion, openness to experience, conscientiousness, and agreeableness) were positively associated with successful aging and that decreases in each personality trait over time predicted worse outcomes of successful aging. Finally, based on the developmental adaptation model, Study 3 examined the effects of cumulative life events and personality on objective and subjective successful aging, along with the mediating effects of personality on the relationship between cumulative life events and successful aging. The findings of the three studies support previous studies indicating that personality would serve as an explanatory construct accounting for the developmental pathway to successful aging.
CHAPTER 1. GENERAL INTRODUCTION

With the rapid increase in life expectancy, older adults are now faced with the question of how to age well. Maintaining a healthy, high-quality life until death has become a more significant issue than merely living a longer life. There is, therefore, substantial interest in enhancing the capacity of older adults to prepare for a more positive and productive later life. In this sense, researchers have frequently used the term successful aging and used it as a criterion for evaluating older adults’ aging process (e.g., Depp & Jeste, 2006; Menec, 2003; Wilson-Genderson, Pruchno, & Heid, 2017).

There have been many efforts over the past decades to understand what contributes to successful aging. In particular, given various economic and social challenges the aging population faces (Bloom, Canning, & Fink, 2011), identifying mechanisms of successful aging became an essential area for future investigation. As Rowe and Kahn (2015) recently noted that their model of successful aging emphasized what constitutes successful aging, it is now our task to explain how it is attained. Eaton and colleagues (2012) introduced personality as one of the influential factors that may predict successful aging. In fact, recent studies have found that personality prospectively predicts longevity (Chapman, Roberts, & Duberstein, 2011; Friedman, Kern, & Reynolds, 2010), cognitive functioning (Davey, Siegler, Martin, Costa, & Poon, 2015; Williams, Suchy, & Kraybill, 2010), and self-rated health (Turiano et al., 2011). Furthermore, because personality is known to stay stable over time (Hooker & McAdams, 2003), it is expected to explain individual differences in the context of aging.

An increasing body of literature has examined the direct relationship between personality and health-related outcomes, yet little is known about the role of personality in
successful aging, especially in old and very old age. The current study is composed of three interrelated topics which, taken together, provide more information on the cross-sectional and longitudinal association between personality traits and Rowe and Kahn’s model of successful aging. In addition, according to Martin and Martin (2002), successful aging is best considered as a developmental process, rather than a simple outcome. Therefore, employing the developmental adaptation model (Martin & Martin, 2002) as a conceptual framework, this study also examined the interrelatedness of cumulative life events, personality traits, and dimensions of successful aging in order to suggest a developmental pathway for achieving successful aging.
CHAPTER 2. LITERATURE REVIEW

We all want to age successfully. Then who can be characterized as a successful ager? The concept of successful aging began to receive increasing attention following Rowe and Kahn’s model proposed in 1987 (Rowe & Kahn, 1987; Strawbridge, Wallhagen, & Cohen, 2002). They argued that the difference between successful aging and usual aging is made primarily by physiologic loss, which is often age-related (Rowe & Kahn, 1987) and introduced the refined model of successful aging in 1997, which incorporates the following principal dimensions: low probability of disease and disability, maintenance of high physical and cognitive function, and active engagement with life (Rowe & Kahn, 1997, 1998). To date, although researchers in the field of aging have suggested a variety of definitions for successful aging, Rowe and Kahn’s model has been widely used as a scaffold for further studies.

Their model, however, has been criticized for several reasons. McLaughlin and colleagues (2010) contended that no greater than 11.9% of older adults aged 65 and older in the United States met all the criteria of Rowe and Kahn’s model. Others have noted that the model fails to discuss continuity and change of function in one’s developmental trajectory (Stowe & Cooney, 2015) and excludes social factors (Martinson & Berridge, 2014). Older adults’ subjective and self-rated perspective of successful aging has also been recommended as an additional criterion (Pruchno, Wilson-Genderson, & Cartwright, 2010; Whitley, Popham, & Benzeval, 2016). These suggestions have in fact verified the significance and impact of studies on successful aging. The model will continuously be developed and modified and there will be no single or uniform definition for successful aging. What is more important to address is how people achieve successful aging.
To develop a more integrative framework for successful aging, there has been increased attention to the role of personality (Eaton et al., 2012). As personality can provide information on individual differences in coping with the world (Cloninger, 2012), linking personality to successful aging may present compelling findings on the patterns of human behaviors that might maximize well-being in late and very late adulthood. Moreover, personality makes it easier to account for developmental trajectories of successful aging by representing both genetic and environmental influences as a phenotypic marker (Chapman et al., 2011).

**Personality Dimensions**

Then, what are the basic dimensions of personality? Costa and McCrae (1985) developed scales to measure neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness. They argued that these five factors are the most universal and representative dimensions of personality. In fact, researchers have been converging toward a consensus that the Big Five taxonomy is a fundamental model in understanding personality and individual differences (Kandler, Zimmermann, & McAdams, 2014). Interestingly, however, Eysenck (1992) suggested the Big Five personality traits are not really basic dimensions and noted that there is a high correlation among five factors. His contention was supported in Digman’s (1997) study, which found evidence of two higher-order factors of the Big Five personality traits by conducting a confirmatory factor analysis across 14 studies. In all studies he tested, two factors (i.e., Alpha and Beta) were obtained; Alpha contains emotional stability, conscientiousness, and agreeableness, whereas Beta includes extraversion and openness to experience. According to Digman (1997), the use of two higher-order factors is expected to “represent constructs that not only account for the
correlations of the Big Five but also link this robust descriptive system to various theoretical systems of classical and contemporary personality” (p. 1249). His interpretation of Alpha as “socialization” and Beta as “personal growth” makes it possible to describe the specific functions of personality traits and link personality studies to well-known theoretical concepts, such as Adler’s (1939) social interest or Maslow’s (1950) self-actualization. DeYoung and colleagues (2002) later relabeled Alpha as “stability” (i.e., one’s willingness to be stable and avoid emotional, social, and motivational disruption) and Beta as “plasticity” (i.e., the ability of being flexible in engaging with a new experience) in order to “capture fundamental personality tendencies toward sustaining goal directedness and developing new goal directions” (Chang, Connelly, & Geeza, 2012, p. 409). In addition, da Rosa (2012) identified two personality profiles (i.e., resilient and non-resilient people) using the Big Five personality traits and discovered that participants classified in the resilient group reported higher scores on extraversion, openness to experience, agreeableness, and conscientiousness, and lower scores on neuroticism, compared to those in the non-resilient group. These alternative approaches, suggesting a combination of personality traits, may yield various interpretations and explanations for a causal relationship between personality and successful aging.

**Personality and Successful Aging**

Previous studies have explored the relation of the Big Five personality traits to components of Rowe and Kahn’s (1987, 1997, 1998) successful aging model, which includes cognitive functioning, physical health or disease, and social engagement. The personality-health link is well-established, especially for neuroticism and conscientiousness. There is evidence that emotionally stable and conscientious individuals tend to experience a slower
rate of cognitive decline (Chapman et al., 2012). Since higher levels of emotional stability and conscientiousness are linked to calm, organized, and responsible behaviors, these individuals are more likely to avoid risky behaviors that may cause physical symptoms or disease (Friedman et al., 2010; Roberts & Bogg, 2004). Although less studied, other personality traits (i.e., extraversion, openness to experience, and agreeableness) also have predicted health-related outcomes. Extraverted individuals are known to experience a greater amount of positive emotions, which may lower the risk of disease (Jaconelli, Stephan, Canada, & Chapman, 2013). In addition, the intellectual curiosity of open individuals resulted in better performance in cognitive tests (Sharp, Reynolds, Pedersen, Gatz, 2010), and agreeableness predicted less decline in cognitive functioning (Friedman et al., 2010).

Personality may also determine the levels of social engagement. Individuals high in extraversion and agreeableness are more likely to volunteer (Carlo, Okun, Knight, & Guzman, 2005; Okun, Pugliese, & Rook, 2007) because they tend to be socially assertive and display prosocial behaviors. However, it is notable that the active social life of extraverted individuals may also lead them to get involved in risky health behaviors (Kern & Friedman, 2011).

There has been an attempt to correlate the combined personality traits with age-related outcomes. Martin and colleagues (2006) discovered a specific combination of personality traits in exceptional survivors (e.g., low levels of neuroticism and high levels of extraversion and conscientiousness), who have been physically and mentally healthy and have maintained relatively high functioning for a very long period of their lives (Martin & Poon, 2016). They suggested a combination of personality traits, not a single trait, may provide a broader view of longevity and healthy aging. In Crowe and colleagues’ work
(2006), the combination of high neuroticism and low extraversion was positively associated with high risk of cognitive impairment in Swedish twins.

**Personality and the Subjective Nature of Successful Aging**

Pruchno and colleagues (2010) suggested successful aging consists of both objective criteria and subjective perceptions. Although the objective criteria, which include a limited number of chronic diseases, maintenance of functional ability, and avoidance of pain, can be measured with a reliable instrument, they do not necessarily require an observation of “an external agent” to be objective (Pruchno et al., 2010, p. 673). On the other hand, the subjective components (e.g., self-rated health status or life satisfaction) can be evaluated by individuals’ own perspective of their aging process and they highly depend on how individuals define successful aging and feel about their overall aging experiences.

Goodwin and Engström (2002) found that all five personality factors of the Big Five model were associated with the perceived health status, yet neuroticism seems to have the strongest impact on how individuals rate their health. Individuals high in neuroticism are more likely to have an anxious and pessimistic mindset, thus they may underestimate their health status and be less satisfied with life. Life satisfaction was best predicted by the facets of neuroticism and extraversion (Schimmack, Oishi, Furr, & Funder, 2004), but McCrae and Costa (1991) suggested the combination of agreeableness and conscientiousness may increase one’s levels of life satisfaction. It is notable that when individuals’ health status is positively perceived, it may result in increases in their life satisfaction (Mroczek & Spiro, 2005), regardless of their actual medical health status. Such perception can be influenced by personality, which may determine how individuals view the world.
Developmental Adaptation Model

Although the personality trait models, either as separate or combined models, are expected to play an important role as an explanatory construct in understanding successful aging, little is known about the link between personality and successful aging in old and very old population. Therefore, as an expansion of previous and ongoing studies on successful aging, the present study aimed to bridge the gap in the literature by exploring how older adults’ personality manifests itself in achieving successful aging.

Martin and Martin’s (2002) developmental adaptation model was applied as a theoretical framework for the present study. From a life span developmental perspective, successful aging is not merely an outcome, but a process, which is evaluated by individuals’ biological and sociocultural resources (Schulz & Heckhausen, 1996). In other words, the positive and/or negative resources individuals develop and maintain throughout their life span may determine successful development in later years.

The developmental adaptation model suggested assessing the developmental pathways of successful aging. Their model is expected to form a conceptual understanding of successful aging by describing how distal influences (i.e., experiences that happened in early life, such as educational attainment, death of parents, or marriage) determine the use of proximal resources (i.e., more recent resources or experiences that are individual, social, and economic), as well as how both distal and proximal resources shape developmental outcomes.

Personality is considered a significant individual resource. According to Martin and Martin’s (2002) assumptions, not only does personality directly influence developmental outcomes, but it also serves as a mediating construct that links distal experiences to
developmental outcomes. In this regard, applying the developmental adaptation model may answer the question of how successful aging is achieved throughout the life span, as well as provide a significant perspective of how personality accounts for individual differences in pathways to successful aging.

**Distal influences and personality.** Bishop and Martin (2007) suggested the impact of distal influences on developmental outcomes may be indirect, and the link between the two constructs may be mediated by psychosocial variables, such as personality. Researchers have acknowledged the association between past life events and personality. For example, Hensley and colleagues (2012) found that cumulative positive life events were associated with high levels of emotional stability (i.e., reversed neuroticism), trust (i.e., a facet of agreeableness), and competence (i.e., a facet of conscientiousness), whereas cumulative negative life events were associated with low levels of emotional stability, trust, and competence. Martin (2002) also concluded that individuals who have experienced adverse life events are more likely to experience anxiety (i.e., a facet of neuroticism). Bishop and Martin (2007) considered past educational attainment as a key mechanism of cumulative advantage and found a significant association between greater educational attainment and higher levels of emotional stability.

Older adults’ distal experiences in their midlife may affect their personality. In Roberts and Bogg’s work (2004), earlier divorce was found to be associated with longitudinal decreases in conscientiousness, possibly because individuals high in conscientiousness are more likely to take responsibility for their social roles. Maintaining a satisfying job predicted increases in emotional stability and extraversion over time (Scollon & Diener, 2006), whereas the transition into retirement was associated with decreases in
emotional stability and conscientiousness (Costa, Herbst, McCrae, & Siegler, 2000) and increases in agreeableness (Löckenhoff, Terracciano, & Costa, 2009).

**Distal influences and successful aging.** Elder (1994) suggested early life experiences play an important role in understanding human lives in later year, meaning that specific life events experienced in the past can be a determinant of successful aging. The link between past life events and successful aging has been investigated in previous research. Schafer and Ferraro (2012) found that adverse childhood experiences, such as parental abuse/neglect and financial strain, were associated with a lower probability of disease avoidance. In addition, low socioeconomic status in childhood negatively affected both self-rated health and cognitive functioning in later years (Luo & Waite, 2005). Distal experiences are not only limited to life events in childhood, but also include developmental changes in late adulthood (e.g., losing a spouse or getting divorced). There is evidence that levels of social participation of older adults tend to decrease before and after the death of a spouse (Utz, Carr, Nesse, & Wortman, 2002).

In sum, the dynamic integration of life events that are accumulated across the life course will conceptualize the pathways of successful aging. Martin and Martin (2002) suggested to consider cumulative past life events, not just a single event, when investigating developmental aspects of successful aging, because the accumulation of life events makes it possible to assess the lasting effects that distal experiences may have on successful aging. What is also important is examining how individuals recall specific life events, because their subjective interpretation of distal experiences will affect their choice of ultimate behavior.

Given empirical evidence for the relationships among distal experiences, personality, and objective or subjective successful aging, the present study attempted to provide a broader
developmental concept of successful aging by integrating distal events with current resources. Study 1 examined the cross-sectional relationship between personality and successful aging in a very old population, applying Digman’s (1997) Alpha and Beta factors. Study 2 tested the longitudinal effects of personality level and change on successful aging. Finally, in Study 3, cumulative life events and personality were examined as predictors of objective and subjective successful aging.

IRB approval obtained from the Iowa State Institutional Review Board can be found in the appendix.

References


CHAPTER 3. PERSONALITY TRAITS AND SUCCESSFUL AGING: FINDINGS FROM THE GEORGIA CENTENARIAN STUDY

A manuscript published in the *International Journal of Aging and Human Development*

Yousun Baek¹, Peter Martin¹, Ilene C. Siegler², Adam Davey³, and Leonard W. Poon⁴

Abstract

The current study attempted to describe how personality traits of older adults are associated with components of successful aging (cognition, volunteering, activities of daily living, and subjective health). Three-hundred and six octogenarians and centenarians who participated in the third phase of the Georgia Centenarian Study provided data for this study. Factor analysis was conducted to test the existence of two higher-order factors of the Big Five personality traits, and a two-factor model (alpha and beta) fit the data well. Also, blocked multiple regression analysis was conducted to examine the association between personality traits and four components of successful aging. Results indicated that low scores on neuroticism and high scores on extraversion, openness to experience, agreeableness, and conscientiousness are significantly related to the components of successful aging. After controlling for demographic variables (age, gender, residential type, and race/ethnicity), alpha (i.e., emotional stability, agreeableness, and conscientiousness) was associated with

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higher levels of cognition, higher likelihood of engaging in volunteer work, higher levels of activities of daily living, and higher levels of subjective health. Beta (i.e., extraversion and openness to experience) was also positively associated with cognition and engaging in volunteer work.

**Keywords**: personality traits, successful aging, older adults

**Introduction and Literature Review**

Given that people can expect to live longer than ever before (Christensen, Doblhammer, Rau, & Vaupel, 2009), the meaning of successful aging takes on greater significance. How individuals maximize the possibility of aging well becomes more important than simply living a longer life. Longevity itself or a longer life expectancy does not always imply successful aging and not every survivor into old age can be characterized as a successful ager.

The term successful aging has been used in attempting to understand how well individuals experience their later life and improve the quality of life they lead (Martin et al., 2015; Ryff, 1982). To specify this, there have been various attempts to define successful aging. Although the lack of clarity regarding the definition of successful aging continues in the literature, Rowe and Kahn’s model (1997) seems to be most widely used because it provides an assessment coming from multiple dimensions and a scientific background for understanding healthy aging across the life course (Crowther, Parker, Achenbaum, Larimore, Koenig, 2002). They described successful aging as an inclusion of a “low probability of disease and disease-related disability, high cognitive and physical functional capacity, and active engagement with life” (Rowe & Kahn, 1997, p. 433).
Personality is often used to explain consistency of individuals’ social behavior toward particular situations. As personality does not possess characteristics of physiological decline, it can compensate for other types of loss in older adults (Ryff, 1982) and serve as a useful construct to explain various aspects of the successful aging process. Previous studies have actually examined the structure and role of personality traits in the patterns of aging (Chapman, Roberts, & Duberstein, 2011; Davey, Siegler, Martin, Costa, & Poon, 2015; Martin, 2007) and reported that personality can be considered as a potential explanatory mechanism for longevity and a healthy aging process (Martin et al., 2006; Versey, Stewart, & Duncan, 2013; Wilson, de Leon, Bienias, Evans, & Bennett, 2004).

To assess the role of personality traits in aging process, the Big Five personality constructs (i.e., neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness), conceptualized by Costa and McCrae (1985, 1989), have been frequently used (Martin et al., 2006). Neuroticism denotes a general tendency to be vulnerable to negative stimuli and to experience negative affect easily; extraversion indicates a tendency to be sociable, outgoing, and energetic; openness to experience indicates willingness to try new things and having intellectual curiosity; conscientiousness denotes a preference for goal-oriented and organized work and a disposition to be responsible and diligent; and finally, agreeableness means being cooperative, trusting, and empathetic.

Although McCrae and Costa (1987) have contended that their Big Five personality constructs represent fundamental and comprehensive dimensions of personality, some researchers have noted its limitations. For example, Hough (1992) has argued that the Big Five personality constructs are too broad and are adequate for describing, but not for predicting specific criteria. In a related vein, McAdams (1992) has also noted that the five-
factor model failed to provide significant information that may be useful in predicting certain behaviors and describing personality functioning. While there is still wide acceptance of the Big Five personality constructs, Digman (1997) introduced two higher-order factors across several data sets and labeled them as alpha and beta. The alpha factor consists of low levels of neuroticism (emotional stability) and high levels of conscientiousness and agreeableness while the beta factor consists of extraversion and intellect/openness. Digman suggested that these two factors might represent individuals’ socialization and personal growth.

DeYoung, Peterson, and Higgins (2002) have also identified these higher-order factors and assessed their usefulness in personality studies. They have suggested that Digman’s interpretation of each factor does not represent basic personality traits or dispositions, but rather outcomes, thus they labeled the alpha as stability (i.e., one’s willingness to be stable and avoid emotional, social, and motivational disruption) and the beta as plasticity (i.e., the ability of being flexible in engaging with a new experience; DeYoung, 2006; DeYoung et al., 2002).

Many questions still remain regarding the use of two higher-order factors in understanding personality and some argue that correlations among the Big Five personality traits are method artifacts (Biesanz & West, 2004; McCrae et al., 2008). However, Digman (1997) suggested that the higher-order factors of the Big Five may serve as a bridge to fill the gap between standard personality theories and personality constructs and provide “theoretical accounts of the why of personality may be found” (p. 1246). For example, he related factor alpha to Adler’s (1939) concept of social interest because alpha-linked traits are socially desirable. He also related beta-linked traits, such as being active, outgoing, creative, and
imaginative to Rogers’ (1961) self-actualization. By linking personality theories with personality functioning, Digman suggested a more integrative model in personality studies.

Although the relationship between these personality traits and physical and psychological aspects of aging has been quite extensively investigated in previous research (Martin et al., 2006; Masui, Gondo, Inagaki, & Hirose, 2006; Siegler & Brummett, 2000; Wilson et al., 2005), earlier studies applying the two higher-order factors have only focused on adult or older adult participants (DeYoung, Peterson, Séguin, & Tremblay, 2008; Hirsh, DeYoung, & Peterson, 2009) but did not include those who are considered as oldest-old.

More importantly, to our knowledge, no previous studies have examined the association between the higher-order factors of the Big Five personality traits and selected components of successful aging. As personality traits have been considered as a resource for resilience that ultimately increases older adults’ level of subjective well-being (Adkins, Martin, & Poon, 1996; MacDonald, Aneja, Martin, Margrett, & Poon, 2010), in this study, we attempted to examine the configuration of the Big Five personality traits and test the existence of higher-order factors in an oldest-old population. In addition, we analyzed their association with four components of successful aging that we have selected. The current study will provide valuable information that can be used for more in-depth analysis of personality functioning for the oldest-old population.

**Personality traits and successful aging.** High cognitive functioning capacity is the first component we chose according to Rowe and Kahn’s (1997) model of successful aging. Recent studies on cognitive aging have shown interest in the relation of personality traits to cognitive ability in later life and considered personality traits as a potential predictor of variability in cognition of older adults (Curtis, Windsor, & Soubelet, 2015). Researchers have
suggested that different personality traits may cause cognitive changes in older adults. For instance, the feelings of negative emotion or depression (e.g., neuroticism) might have deleterious effects on brain functioning, whereas more positive characteristics (e.g., openness to experience or extraversion) might work as a protector against cognitive decline by encouraging older adults to engage in intellectual activities and by facilitating a positive attitude toward aging (Hertzog, Kramer, Wilson, & Lindenberger, 2009). A study examining the association between one of the personality traits, openness to experience, and longitudinal cognitive functioning (Sharp, Reynolds, Pedersen, Gatz, 2010) revealed that both men and women with higher levels of openness to experience performed better in all cognitive domains. This pattern remained the same across time.

Conscientiousness was also found to reduce the risk of Alzheimer’s disease and mild cognitive impairment in older adults because highly conscientious individuals may have been more exposed to educational experiences, and their characteristics may have lessened the adverse consequence of life events that may cause dementia in later life (Wilson, Schneider, Arnold, Bienais, & Bennett, 2007). Older adults who are not emotionally stable also showed poorer cognitive performance because high neuroticism causes chronic stress (Jorm et al., 1993). Based on these findings, we assume that these alpha-linked traits may help older adults to cognitively develop by emphasizing socialized behaviors through frequent interactions with others. However, the results on the relationship between neuroticism and cognitive functioning of older adults are not consistent. Jelicic et al. (2003) found that neuroticism was not related to cognitive performance in older adults as well as their cognitive decline over a 3-year period. Pearson (1993) even found that neuroticism was positively related to cognitive ability in older women.
Next, low probability of disease or disease-related disability and high physical functioning capacity are also significant components of successful aging. Personality traits may affect physical health of older adults directly and indirectly, and several researchers pointed out that through physical health variables, the relationship between personality traits and longevity could be understood (Martin et al., 2006).

Previous studies have consistently reported that emotional stability (low levels of neuroticism), extraversion, and conscientiousness are positively related to better physical functioning of older adults (Friedman, Kern, & Reynolds, 2010; Jaconelli, Stephan, Canada, & Chapman, 2013; Magee, Heaven, & Miller, 2013) and conscientious older adults are more likely to better take care of themselves and sustain a healthier lifestyle, which will lead them to age successfully (Martin, 2007). In addition, in both cross-sectional and longitudinal studies, researchers have consistently reported that high levels of neuroticism or negative affectivity (e.g., anxiety, anger, depression, and hostility) have an influence on heart disease, cancer, high blood pressure, and negative health behaviors such as smoking, which can subsequently increase mortality (Aldwin, Spiro, Levenson, & Cupertino, 2001; Scheier & Bridges, 1995; Smith, Glazer, Ruiz, & Gallo, 2004). People with high levels of neuroticism may tend to experience more negative life events and distress because they are particularly sensitive to their failures and hide the negative side of themselves and the world (Watson & Clark, 1984). As personality plays a significant role in the stress process (Williams, Suchy, & Kraybill, 2010), it would also indirectly affect physical health by lowering the levels of psychological well-being. It was found that older caregivers who scored high in neuroticism and low in optimism performed poorly in mental health tests and their high stress levels were
associated with overall physical health impairment (Hooker, Monahan, Bowman, Frazier, & Shifren, 1998).

Conscientiousness can also serve as a resilience factor against negative physical outcomes. Conscientiousness is related to prudent health behaviors (Bogg & Roberts, 2004) and these health-related behaviors play a mediating role in the relationship between personality traits and physical disease (Contrada, Cather, O’Leary, 1999). The characteristics of conscientious people, which include being goal-oriented, responsible, reliable, and seeking achievement, may lead to more positive health behaviors, such as having a healthy diet and activity pattern, less consumption of alcohol or drugs, and avoiding risky sexual behaviors (Bogg & Roberts, 2004; Kern & Friedman, 2008).

The last component is an active and continuous engagement with one’s life, which consists of maintenance of social relations and productive activities. Older adults’ engagement in productive activities, volunteering for instance, has been consistently found to be a predictor of positive affect because it provides them a role-identity, which is associated with better physical and mental health (Greenfield & Marks, 2004). A qualitative study exploring older adults’ perspectives on successful aging also revealed that contributing to others or society through volunteering is significant to aging successfully (Reichstadt, Sengupta, Depp, Palinkas, & Jeste, 2010). Volunteering helps older adults remain actively engaged with their life and promotes interaction with others. In the eighth stage of Erikson’s psychosocial development, Integrity versus Despair, reviewing one’s past life experiences becomes an important task (Haber, 2006) as it “brings about a sense of failure or fulfillment in life” (Bishop, Martin, Poon, & Johnson, 2011, p. 2). If older adults who are outgoing and
attentive to others recall the experience of volunteering as positive, even if long ago or once in a lifetime, they would be more likely to perceive themselves as successful agers.

Both extraversion and agreeableness seem to be the core personality traits dealing with social interactions and engagement. Extraversion mainly focuses on social impact, whereas agreeableness is mostly related to maintaining of relationships (Jensen-Campbell & Graziano, 2001). Thus, people with higher levels of extraversion and agreeableness tend to show higher scores in sociability and positive emotions (McCrae & Costa, 1999) and to be more friendly and helpful (John & Srivastava, 1999). They also display prosocial behaviors (Graziano & Eisenberg, 1997), as social activities require extensive social interactions with others (Carlo, Okun, Knight, & Guzman, 2005).

**Research Questions**

The primary purpose of this study was to explore associations among the Big Five personality traits and to examine their association with the components of successful aging. In addition, as there have been no attempts to assess the two higher-order factors with the oldest-old population, we attempted not only to test the existence of the two higher-order factors of the Big Five personality traits, but also to assess how they correspond with previous findings. Based on Digman’s (1997) work, we hypothesized that the two higher-order factors would fit our data: alpha, which consists of low levels of neuroticism, high levels of agreeableness and conscientiousness and beta, which consists of high levels of extraversion and openness to experience. We also expected that these two higher-order factors are all positively associated with each component of successful aging.
Methods

Participants

Data for this study were collected from the Georgia Centenarian Study (Poon et al., 1992) in order to understand longevity and survival of older adults. Among three phases of the Georgia Centenarian Study, we used the data collection at Phase 3 (2002-2009), which provides biomedical and psychosocial aspects of longevity (Poon et al., 2010). Information was collected from a population-based sample of octogenarians and centenarians in northern Georgia, and also through their proxy informants. In this study, the data from proxy informants were used. Some may argue that using informant-report data is not reliable because of its potential inaccuracy. However, informant-report data are important not only for providing alternative information of older adults but also for adding meaningful perspectives of older adults (MacDonald et al., 2010). Also, proxy informants can provide reliable data in circumstances where oldest-old adults have physical or cognitive difficulties in participating in studies on health (Bassett, Magaziner, & Hebel, 1990). A study that asked both individuals with early-stage Alzheimer’s disease and their informants to fill out the NEO inventory found that informant ratings were even more sensitive to group differences and better predicted early-onset dementia, when compared with self-ratings (Duchek, Balota, Storanrdt, & Larsen, 2007).

The data consist of 72 octogenarians and 234 centenarians and the majority of them were female (79%). The average age was 99.55 years, ranging from 80.53 to 108.55 years. Of the participants, 54% lived in their own home or apartment, 78% were Caucasian and 21% African American, and 71% were widowed whereas 12% were still married. The majority of the proxy informants were adult children (53.6%) and others included nieces and nephews (9.8%), grand-daughters (7.5%), and close relationships such as spouse, siblings,
friends, and neighbors (18.0%). Table 1 describes the demographic characteristics of both octogenarians and centenarians.

**Measures**

**Personality traits.** In this study, the NEO PI-R (Revised NEO Personality Inventory) assessed basic personality traits of older adults (Costa & McCrae, 1989), which were reported by proxy informants. The NEO-PI-R has five factors of personality: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. It consists of 240 items answered on a 5-point scale (-2 = strongly disagree, -1 = disagree, 0 = neutral, 1 = agree and 2 = strongly agree). In this study, the reliability for neuroticism was $\alpha = .85$, .77 for extraversion, .69 for openness to experience, .88 for agreeableness, and .90 for conscientiousness, demonstrating moderate to strong internal consistency reliability. Higher scores suggest higher levels of each personality trait. As the scores for neuroticism were reversely coded for the interpretation, higher scores suggest higher levels of emotional stability.

**Cognitive functioning.** The Mini Mental Status Examination (MMSE) assessed the cognitive functioning of older adults (Folstein, Folstein, & McHugh, 1975). It measures five aspects of cognitive functioning: orientation, registration, attention and calculation, recall, and language with 30 items. The range of scores was 0 to 30 ($0 = incorrect, 1 = correct$) and the MMSE has high internal consistency of $\alpha = .88$. Higher scores indicate better cognitive functioning in this study.

**Volunteering.** Participating in volunteering activities was measured with the following question: “Did he/she ever do volunteer work for an organization such as a hospital, church, school, or political party?” ($1 = yes, 0 = no$).
**Activities of daily living.** Both instrumental activities of daily living (IADL) and physical activities of daily living (PADL) were assessed to examine the ability of self-care of older adults (Fillenbaum, 1988). The scale consists of 14 items in total, 7 items for each, and the overall reliability in this study was strong, $\alpha = .94$. Items were measured on a 3-point scale ($0 =$ completely unable to do, $1 =$ able to do with some amount of help, and $2 =$ able to do without help) and higher scores reflect better ability of ADLs. IADL questions included the ability of telephone use, use of transportation, shopping, preparing meals, doing housework, taking medicine, and handling own money. PADL questions included the ability of eating, dressing and undressing, taking care of own appearance, walking, getting in and out of bed, bathing, and moving to the bathroom.

**Subjective health.** Subjective health was measured with the following question: “How would you rate his/her overall health at the present time?” ($1 =$ poor, $2 =$ fair, $3 =$ good, and $4 =$ excellent). Descriptive statistics (range, means, and standard deviations) for each variable are provided in Table 2.

**Analysis**

Two analyses were performed in this study. As a first step, we conducted a confirmatory factor analysis by using Mplus to compare two competing models (i.e., a single-factor model and a two-factor model). To examine the association between two personality factors and components of successful aging, blocked multiple regression analyses were conducted. Blocked multiple regression analyses were computed twice; once using the two higher-order factors and once using the original Big Five personality traits. In the first model, age, gender ($0 =$ male, $1 =$ female), race/ethnicity ($1 =$ White/Caucasian, $2 =$ Black/African American), and residential type ($1 =$ private home/apartment, $2 =$ nursing
29

home, 3 = personal care home, and 4 = other) were included as control variables. In the second model, the first factor extracted was included and in the third model, the second factor was added. When using the Big Five personality traits, the control variables were added in the first model, and all five personality traits (i.e. neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) were entered into the second model.

Results

Correlations among study variables are presented in Table 3. Factor alpha was positively correlated with levels of cognition ($r = .224, p < .01$), engagement in volunteering ($r = .243, p < .01$), and levels of ADLs ($r = .185, p < .01$). Factor beta was also positively correlated with levels of cognition ($r = .264, p < .01$), engagement in volunteering ($r = .253, p < .05$), and levels of ADLs ($r = .184, p < .01$). It should be noted that most of these correlations were small or moderate in size and the correlations with subjective health were not significant.

Table 4 displays fit indices of each model discovered in this study. As hypothesized, the $\chi^2$ difference test indicated that a two-factor model provided a better fit to our data than a single-factor model, $\chi^2 = 34.821, p < .001$. Based on these results, we determined that in the data set of the oldest-old population, the Big Five personality traits also formed the two higher-order factors as Digman (1997) had suggested. We adopted his labels for our study, alpha (i.e., neuroticism, agreeableness, and conscientiousness) and beta (i.e., extraversion and openness to experience). To improve the model fit, we permitted several correlated errors based on the model modification indices. We allowed correlated errors between neuroticism and agreeableness as well as between neuroticism and conscientiousness. In addition,
although neuroticism and openness to experience did not load on the same latent variable, we also allowed correlated errors between these two because the results suggested that there is a moderate correlation between alpha and beta ($r = .455, p < .001$).

According to Hu and Bentler (1999), a model fits the data best if the comparative fit index (CFI) is near or above .95, the standardized root mean squared residual (SRMR) is near or below .10 and the root mean square error of approximation (RMSEA) is near or below .06. The fit of the final model to the data was acceptable, $\chi^2 (1, N = 250) = 2.714, p = .10$, CFI = .995, SRMR = .019, and RMSEA = .083.

The major objective of the current study was to explore whether personality traits were related to successful aging of older adults. We predicted that the two higher-order factors of the Big Five personality traits of oldest-old adults would be associated with higher levels of each component of successful aging. Table 5 summarizes the results of the blocked multiple regression analyses. After controlling for demographic variables (i.e., age, gender, residential type, and race/ethnicity), we found that each personality factor was associated with several components of successful aging. Model 2 shows that alpha was associated with higher levels of cognition ($\beta = .229, p < .001$) and adding alpha into the model resulted in a 5.2% increase in the explained variance. In Model 3, beta was also found to be positively associated with levels of cognition ($\beta = .170, p < .05$), increasing the explained variance by a significant amount (i.e., 2.3%) to a total of 32.7%. Alpha was still positively related to levels of cognition ($\beta = .151, p < .05$) after the addition of beta. Next, alpha was related to higher likelihood of having been engaged in volunteering ($\beta = .243, p < .01$). Beta was positively associated with being involved in volunteering ($\beta = .177, p < .05$), which increased the total amount of variance accounted for to 9.6%. Again, with the addition of beta, alpha was still
positively correlated with volunteering ($\beta = .162$, $p < .05$). Alpha was also positively associated with ADLs ($\beta = .196$, $p < .01$), which increased the explained variance by 3.8% to a total of 38.4%. With the addition of beta, alpha still showed a positive relationship with ADLs ($\beta = .164$, $p < .05$), but beta was not significantly related to ADLs. Last, alpha was related to higher levels of subjective health ($\beta = .191$, $p < .05$) in Model 2, increasing the variance explained by 3.7%, but it becomes nonsignificant with the addition of beta in Model 3.

We also compared the amount of variance explained by the original Big Five personality traits (i.e., the five-factor model) to the variance explained by the two-factor model. The five-factor model explained 34.5% of cognition, 12.1% of volunteering, 44.7% of ADLs, and 11.5% of subjective health. The amount of variance explained by the five-factor model is slightly higher in each case.

Taken together, the results demonstrated that two higher-order factors of the Big Five personality traits are significant factors related to successful aging in later life.

**Discussion**

The purpose of this study was to assess Digman’s (1997) two higher-order factors of the Big Five personality traits among oldest-old adults and to examine the association between extracted factors and successful aging. Several findings emerged from this study. Our results suggested that the two higher-order factors of the Big Five personality traits were evident in the data obtained from the oldest-old population. Our results are consistent with Digman and DeYoung et al.’s (2002) findings; extraversion and openness to experience formed one factor and reversed neuroticism (emotional stability), agreeableness, and
conscientiousness formed another. As mentioned earlier, Digman labeled them as alpha and beta and made an effort to relate classic personality theories to each factor.

It is important to recognize that the application of the two higher-order factors of the Big Five personality traits is still a subject of debate. Along with McCrae and Costa (1999), Biesanz and West (2004) argued that correlations among the Big Five personality traits do not always exist but highly depend on types of informants and are affected by their biases. On the other hand, DeYoung (2006) demonstrated in his article that the two higher-order factors are caused neither by method artifacts nor informants’ biases. We believe that the two higher-order factors would provide unique information regarding successful aging. Rather than broadly describing people’s lives, Digman (1997) and DeYoung et al.’s (2002) interpretations of the two higher-order factors appear to enable psychologists to effectively account for personality functions and causal relationships between personality traits and human behaviors.

Next, we found that personality traits were positively related to the components of successful aging although the cross-sectional nature of the data limits our ability to conclude causality between these two variables. Alpha was associated with higher levels of cognition, volunteering, ADLs, and subjective health, and beta was also related to higher levels of cognition and volunteering. However, it should be noted that the effect size of these results is relatively small. When entered together, alpha and beta showed no relations with subjective health, but overall the results of this study support previous research examining the relationship between personality traits and each component of successful aging.

More specifically, older adults with higher scores in factor alpha and beta were more likely to report better cognitive functioning ability and higher levels of ADLs. Neuroticism,
which is one of the alpha-linked traits, may negatively affect older adults by leading them to consider their life events and people around them as stressful and threatening (Bromberger & Matthews, 1996). Being emotionally stable and less sensitive may help older adults to reduce the risk of stress-related illness that can cause cognitive impairments. Schaie, Willis, and Caskie (2004) also found that openness to experience was most related to higher levels of cognitive abilities of older adults aged over 60. The results are consistent with Digman’s (1997) idea that self-actualization involves active engagement with creating new experiences, which in turn increases individuals’ levels of cognitive functioning. DeYoung and his colleagues’ (2002) interpretation of the shared variance of extraversion and openness to experience, labeled as plasticity, also adds a good explanation. Older adults who are flexible in their thinking and experience new knowledge may tend to more actively participate in cognitively stimulating activities. In addition, the maintenance of high cognitive functioning ability of older adults could have worked as a protective factor for disability in ADLs. Dodge, Hayakawa, and Sekikawa (2005) found both cross-sectionally and longitudinally that cognitive impairment of older adults was related to higher risks of losing functional abilities.

Next, as expected, both alpha and beta may motivate older adults to be involved in volunteering. As discussed earlier, these two personality traits, extraversion and agreeableness, reflect prosocial behaviors, altruism, and a positive perspective toward other individuals. This may enhance social interactions that are required for volunteering. More social interactions found in other-oriented volunteers, meaning those who choose to volunteer to help others, not for their own satisfaction, also had powerful effects on reducing mortality risks (Konrath, Fuhrel-Forbis, Lou, & Brown, 2012). These results are closely related to Digman’s identification of the two higher-order factors. Older adults who have
socially desirable personality traits may tend to accept themselves and others more easily, rather than experiencing self-denial or isolation, thus having more opportunities to build and maintain various types of relationships. Further, serving communities and neighborhoods through volunteering might be the best way of achieving personal growth and self-actualization.

We also found that alpha-linked traits were positively associated with subjective health, but its significance disappeared when beta was also included. A substantial body of the personality-health literature has shown that personality traits not only directly affect physical health but also serve as both mediator and moderator on the relationship between environmental stress and physical disease (Heck, 1997). As noted earlier, findings have consistently related conscientiousness to healthy behaviors (Bogg & Roberts, 2004), which promote positive health outcomes and reduce the risks of disease progression. Low neuroticism and high extraversion are also useful predictors of longevity and better health outcomes (Smith & Williams, 1992) as they are associated with stress-reducing benefits for different reasons. However, contrary to our expectation, the association between the two higher-order factors and subjective health was not significant in this study when entered into the same model. Interestingly, however, Heck (1997) suggested that the original Big Five personality model is not specific enough to explain the complexity of physical health. The model also does not provide information needed to explain how personality traits might be connected to physical health but rather describes personality itself (Smith & Williams, 1992). In this study, the two higher-order factors of the Big Five personality traits did not suggest a solution to this problem. We assume that the association between the two higher-order factors and subjective health may have weakened because of the inclusion of oldest-old
adults who were at least 80 years old. At this age, subjective health can be less important than other factors in determining successful aging. No matter of their personality traits, very old adults are aware of the fact that their health may have been declining over time and take it as a common process of aging. Compared with younger adults in their 50s or 60s, octogenarians and centenarians might be more ready to face and accept their physical decline and are less interested in maintaining a physically healthy lifestyle as self-acceptance tends to be achieved with increasing age (Ryff, 1995).

We have suggested that Digman’s (1997) two higher-order factors may fulfill the limitations of the Big Five personality traits by providing more integrative and meaningful information of personality traits and their functioning. However, the amount of variance explained by the original Big Five personality traits and by the two higher-order factors was very similar for both models. It is difficult to say which model better explains successful aging, but we interpret these results that the two higher-order factor model can serve as an alternative model in understanding the association between personality traits and successful aging.

The current study is not without limitations. First, as in other studies using the data of the Georgia Centenarian Study, octogenarians and centenarians who participated in this study were all from one state of the southeastern United States, therefore the results may not be generalized to the entire population. Second, in this study, the difference between octogenarians and centenarians was not examined. If personality traits do not remain stable across the life span and can change, it may be necessary to separately assess personality traits of two different cohorts. A study comparing younger and older adults in identifying personality traits as predictors of intelligence found that openness to experience and
extraversion were significant predictors of cognitive ability in young adults, while these two traits showed no effects in older age groups (Baker & Bichsel, 2006). We analyzed the data for octogenarians and centenarians separately, but perhaps due to the relatively small sample size, we did not find any significant results. In a related vein, because our participants’ personality traits and their components of successful aging were measured at one-time point, the results may be different in a longitudinal study. Age at the first measurement (i.e., starting age) and a length of retest interval may be related to instability of personality traits (Ardelt, 2000). Therefore, future studies need to specify and compare different age groups. Another limitation is that because we used proxy data for our analysis, it is necessary to be careful in interpreting our findings. Although the majority of proxies were participants’ family members or relatives they directly nominated, we did not obtain information about how close their relationships were or how knowledgeable the proxies were about the participants. It should also be noted that although the MMSE is known as the most widely accepted cognitive screening test, future studies may need to consider using other measures for detecting cognitive impairment because of its low sensitivity for participants with high educational attainment (Carnero-Pardo, 2014). Finally, the utilization of single-item measures of subjective health and volunteering is sometimes discouraged because it may not convey meaningful information. Future studies may want to include more inclusive and comprehensive measurements assessing each study variable used in this study.

In conclusion, the current findings suggest that two higher-order factors of the Big Five personality traits were found in the data set of an oldest-old population and that these two factors may play an important role in aging successfully in later life. Based on the previous literature and our current findings, we believe that Digman’s (1997) two higher-
order factors effectively explain how personality traits predict successful aging by describing specific functions of personality traits. As there have been no attempts to correlate the two higher-order factors with all components of successful aging, the identification of the two higher-order factors of the Big Five personality traits in the Georgia Centenarian Study and their relations to successful aging is useful because it provides an alternative way to incorporate personality traits into positive development of older and oldest-old adults. Moreover, this study will serve as a basis for understanding the role of personality traits and their causal relationships with successful aging.

References


### Table 1

**Summary of Demographic Characteristics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Octogenarians (n = 72)</th>
<th>Centenarians (n = 234)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Age (Mean, Range)</td>
<td>84.58 (80.53-90.06)</td>
<td>100.23 (98.00-108.55)</td>
</tr>
<tr>
<td>Gender</td>
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<td></td>
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<tr>
<td>Male</td>
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<tr>
<td>Female</td>
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<td>69.40</td>
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<td>84.70</td>
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<td>Black/African American</td>
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<td>Personal care home</td>
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<td>1.40</td>
</tr>
<tr>
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<tr>
<td>Currently Married</td>
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<tr>
<td>Divorced</td>
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<tr>
<td>Widowed</td>
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<tr>
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<tr>
<td>Never Married</td>
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<tr>
<td>Education</td>
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<td>High school</td>
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<tr>
<td>Business/trade school</td>
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<td>11.10</td>
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Table 2
Descriptive Information for Study Variables

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<th>Range</th>
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<th>SD</th>
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<tr>
<td>Personality</td>
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<tr>
<td>Neuroticism (Reversed)</td>
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<td>-46 – 83</td>
<td>23.67</td>
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<td>Extraversion</td>
<td>225</td>
<td>-52 – 55</td>
<td>10.01</td>
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<td>Openness to Experience</td>
<td>219</td>
<td>-52 – 46</td>
<td>-4.11</td>
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<tr>
<td>Agreeableness</td>
<td>237</td>
<td>-32 – 81</td>
<td>27.12</td>
<td>23.42</td>
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<td>Conscientiousness</td>
<td>227</td>
<td>-46 – 83</td>
<td>29.57</td>
<td>23.24</td>
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<tr>
<td>Cognitive Functioning</td>
<td>304</td>
<td>0 – 30</td>
<td>18.96</td>
<td>9.00</td>
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<td>Volunteering</td>
<td>283</td>
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<td>.72</td>
<td>.45</td>
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<tr>
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<td>0 – 28</td>
<td>17.04</td>
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<td>Subjective Health</td>
<td>306</td>
<td>1 – 4</td>
<td>2.45</td>
<td>.81</td>
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Table 3  
*Correlations Between the Variables Used in Analyses*

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<th>Study Constructs</th>
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<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>1. Alpha</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Beta</td>
<td>.455**</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>3. Cognition</td>
<td>.224**</td>
<td>.264**</td>
<td>-</td>
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<td>4. Volunteering</td>
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<td>.253*</td>
<td>.285**</td>
<td>-</td>
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<td>5. ADL</td>
<td>.185**</td>
<td>.184*</td>
<td>.779**</td>
<td>.209**</td>
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<td>6. Physical Health</td>
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<td>-.066</td>
<td>.033</td>
<td>.086</td>
<td>.026</td>
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### Table 4

**Comparison of Fit Indices**

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<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
<th>$\Delta\chi^2$</th>
<th>$\Delta$df</th>
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<tbody>
<tr>
<td>One-factor model</td>
<td>66.763</td>
<td>5</td>
<td>.812</td>
<td>.222</td>
<td>.085</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Two-factor model</td>
<td>31.942</td>
<td>4</td>
<td>.915</td>
<td>.167</td>
<td>.058</td>
<td>34.821***</td>
<td>1</td>
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<tr>
<td>Fully recursive model</td>
<td>2.714</td>
<td>1</td>
<td>.995</td>
<td>.083</td>
<td>.019</td>
<td>29.228***</td>
<td>3</td>
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Table 5
Personality Traits as Predictors of Successful Aging in Octogenarians and Centenarians

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Cognition</th>
<th>Volunteering</th>
<th>Activities of Daily Living</th>
<th>Physical Health</th>
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<tr>
<td></td>
<td>β</td>
<td>R² Change</td>
<td>β</td>
<td>R² Change</td>
</tr>
<tr>
<td>Age</td>
<td>-.336**</td>
<td>.253</td>
<td>-.049</td>
<td>.012</td>
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<td>Gender</td>
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<td>.005</td>
<td>-.015</td>
<td>-.155*</td>
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*p < .05. **p < .01. ***p < .001.
CHAPTER 4. PERSONALITY AND ITS CONTRIBUTION TO SUCCESSFUL

A manuscript to be submitted to *Psychology and Aging*

Yousun Baek¹, Peter Martin¹, and Megan Gilligan¹

Abstract

Although personality is known to predict physical and mental health of older adults, relatively few studies have investigated the effects of personality change on health-related outcomes. Using the data from the Midlife in the United States (MIDUS) study, the present study attempted to examine and describe the relationship between personality level and change and four different components of successful aging: 1) cognitive functioning, 2) physical functioning, 3) physical health, and 4) social engagement. The findings of the study revealed a significant relationship between personality and successful aging. Higher levels of extraversion, openness to experience, conscientiousness, and agreeableness were positively associated with at least one component of successful aging, whereas higher levels of neuroticism were associated with worse cognitive functioning, physical functioning, and physical health. Moreover, in this study, it was found that the Big Five personality traits tended to change over 20 years of the period. Decreases in extraversion, openness to experience, conscientiousness, and agreeableness predicted worse outcomes of successful aging, whereas decreases in neuroticism predicted the opposite. The present study provides evidence that, not only does personality continue to change in middle and late adulthood, but also that personality change to some degree is significant in promoting successful aging.

*Keywords:* personality, personality change, successful aging

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Introduction and Literature Review

Personality has been considered a core factor that reveals the causal structure of successful aging (Eaton et al., 2012). As individual differences in thinking, coping, and behaving are often determined by personality, exploring one’s personality may provide an answer to the question of why and how some individuals and not others fit the criteria of successful aging.

According to Rowe and Kahn (1987, 1997, 1998), the standard criteria used for assessing successful aging consist of low probability of disease and disease-related disability, high levels of cognitive and physical functioning, and active engagement with life. Based on these criteria, previous studies have identified a significant association between personality and each dimension of successful aging. For example, Weston and colleagues (2014) discovered that individuals high in extraversion, openness to experience, conscientiousness, and agreeableness and low in neuroticism are more likely to report better health status or absence of disease. Higher levels of conscientiousness were associated with a slower rate of cognitive decline of older adults (Chapman et al., 2012), and higher levels of neuroticism and lower levels of conscientiousness were associated with self-reported difficulties in instrumental activities of daily living (Suchy, Williams, Kraybill, Franchow, & Butner, 2010). Active social engagement, such as volunteering, was more common in extraverted individuals (Okun, Pugliese, & Rook, 2007) due to their greater social resources and social contact.

Costa, Metter, and McCrae (1994) attempted to describe individual differences in terms of personality traits, examined whether personality traits change in adulthood, and linked them to successful aging. They concluded that, after the age of 30, personality remains
stable at either the group or the individual level, in both younger and older participants, although in old age, personality change can occur in some individuals being interrupted by cognitive decline. The stability of personality may be useful in predicting the likelihood of successful aging because it will represent a consistent pattern of behaviors in which individuals engage as they age. More specifically, it helps individuals more easily adapt to a new environment based on their enduring personality traits, decide how to react and interact in critical situations, and develop self-identity, which are essentials needed to age successfully (Costa et al., 1994). However, their view was challenged by more recent studies demonstrating that changes in personality may continue to occur in middle and late adulthood (e.g., Caspi, Roberts, & Shiner, 2005; Lucas & Donnellan, 2011; Roberts & Mroczek, 2008). In a meta-analysis examining the patterns of mean-level personality change assessed longitudinally across the life course, it was found that young adulthood (i.e., age between 20 to 40) is the period in which most personality change occurs, suggesting there is the possibility of personality development past the age of 30 (Roberts, Walton, & Viechtbauer, 2006). For example, Roberts and colleagues (2006) proposed that in old age, particularly in the age between 50 and 70 years, the standardized mean-level in social vitality (i.e., a facet of extraversion) and openness to experience tends to decrease while the standardized mean-level in emotional stability, conscientiousness, and agreeableness tends to increase.

Roberts and Mroczek (2008) argued whether personality change in adulthood can be determined by the definition of “relatively enduring” (p.31). Further, notable changes in social roles or responsibilities in middle and old age may result in continuous personality change. Recent studies have suggested that personality change is in response to specific life
events or experiences, such as retirement, divorce, or death of a spouse. For example, while having a satisfying job was found to be associated with increases in extraversion and decreases in neuroticism (Scollon & Diener, 2007), retirement predicted increases in agreeableness and decreases in activity, which is a facet of extraversion (Löckenhoff, Terracciano, & Costa, 2009). Specht and colleagues (2011) also found that after the death of a spouse, conscientiousness in women decreased, whereas conscientiousness in men increased.

Then, like personality at baseline, does personality change predict successful aging? To date, although there have been no attempts to link personality change to Rowe and Kahn’s (1987, 1997, 1998) model of successful aging, several studies have highlighted the significance of considering personality change, or both personality level and change as a predictor of health-related outcomes. Given that personality is associated with various positive and negative health-related behaviors, such as exercise, excessive alcohol use, or drug use (Bogg & Roberts, 2004), it is plausible that personality change may also affect these behaviors, which lead individuals either to age successfully or to put themselves at risk. Turiano and colleagues (2011) found that individuals who had experienced increases in extraversion and conscientiousness reported better self-rated physical health, whereas those who had experienced increases in agreeableness reported worse self-rated physical health. Individuals who had experienced increases in conscientiousness were less likely to be limited in their work or housework. Mroczek and Spiro (2007) also addressed that initial level and increases in neuroticism predicted the risk of mortality in aging men; those who had experienced the combination of high levels of neuroticism and increases in neuroticism over time reported lower survival probability. In addition, Human and colleagues (2013) reported
that decreases in conscientiousness and increases in neuroticism over a 10-year period negatively affected individuals’ self-reported health and psychological well-being.

There is some evidence that personality change is related to cognition or cognitive functioning. Graham and Lachman (2012) found that individuals whose levels of neuroticism had remained stable or decreased showed faster reaction times (i.e., one of the cognitive domains), compared to those who had experienced increases in neuroticism. Similarly, Roberts and colleagues (2006) suggested that cognitively healthy adults may experience decreases in neuroticism over time. Change in openness to experience would be an important predictor of cognition as well, as the facets of openness to experiences (i.e., curiosity, imagination, or creativity) may be directly related to cognitive-relevant behaviors. Jackson and colleagues (2012) had older adults participate in a 16-week inductive reasoning training program and examined the effectiveness of the intervention. Not only did they discover that individuals in the intervention group experienced increases in openness to experience, but also that changes in openness to experience were positively associated with inductive reasoning.

With respect to active engagement with life, to our knowledge, there have been no attempts to use personality change as a predictor of individuals’ social engagement. However, Lodi-Smith and Roberts (2012) discussed a positive relationship between initial level of personality traits (i.e., conscientiousness and agreeableness) and overall levels of social engagement and suggested personality change in adulthood can be inferred from changes in social roles. They found that changes in social relationships (i.e., engagement with children and romantic relationship engagement) were negatively associated with changes in both conscientiousness and agreeableness. Hudson and colleagues (2012)
provided supporting evidence that changes in social investment in work were positively associated with changes in conscientiousness.

**Research Questions**

Although personality change has been emerging in recent years as a significant predictor of well-being, there is still lack of evidence supporting the notion that personality change continues to occur in old population, and little is known about whether both personality level and change would predict Rowe and Kahn’s (1987, 1997, 1998) criteria of successful aging. Therefore, the present study investigated the longitudinal effects of personality level and change on cognitive functioning, physical functioning, physical health, and social engagement. We hypothesized that higher levels of emotional stability (i.e., reversed neuroticism), extraversion, openness to experience, conscientiousness, and agreeableness would be associated with higher levels of each component of successful aging. We also expected linear change in personality and hypothesized that increases in emotional stability, extraversion, openness to experience, conscientiousness, and agreeableness would predict higher levels of each component of successful aging.

**Methods**

**Participants**

The participants for this study were drawn from the Midlife in the United States (MIDUS) study. The primary purpose of MIDUS was to examine the role of behavioral, psychological, social, biological, and neurological factors in understanding age-related differences in Americans’ health and well-being. A total of 7,108 non-institutionalized and English-speaking adults, who were between the ages of 25 and 74 years, completed the first wave of the MIDUS study in 1995-1996 (Time 1). In 2004-2006, a follow-up study was
conducted, and of the original participants, 4,963 participants were re-contacted and completed the MIDUS II (Time 2), with a response rate of 70%. The MIDUS III, which was conducted in 2013-2014 (Time 3), consisted of 3,294 participants aged from 43 to 94.

The present study included only those who participated in all three studies. To focus on later life, the analytic sample of this study was also restricted to participants who were 65 and older at Time 3. Participants who did not respond to at least 13 of the 25 items measuring the Big Five at each time point were excluded because all participants must have more available data than missing data (Zimprich, Allemand, & Lachman, 2012). These restrictions yielded a total sample size of 1,221 participants.

At Time 3, participants’ age ranged from at 65 to 93 years ($M = 74.02, SD = 6.71$) and 56% of them were female. 89% of the participants were non-Hispanic White and more than half of the participants had some college education or an advanced degree (65.5%). Compared to non-participants, participants in this study displayed a similar male to female ratio [i.e., 44.30% to 55.70% for the present study vs. 45.50% to 54.50% for non-participants; $\chi^2(1) = .43, p = .514$] and racial ratio [89% of non-Hispanic White vs. 88% of non-Hispanic White; $\chi^2(5) = 8.67, p = .123$]. At T1, participants were 16.57 years older than non-participants ($M = 56.04$ vs. $M = 39.47$; $t = -56.49, p < .001$), and the percentage of the college (or above) educated individuals was lower among the study participants (65.40% vs. 71.30%; $\chi^2(11) = 41.53, p < .001$). There was no significant difference in participants’ and non-participants’ perceived cognitive functioning ($M = 3.36$ vs. $M = 3.40$; $t = 1.73, p = .111$) and physical symptoms ($M = 42.92$ vs. $M = 43.26$; $t = .94, p = .695$), but participants reported lower levels of physical functioning ($M = 29.13$ vs. $M = 33.54$; $t = 13.42, p < .001$) and greater numbers of hours for volunteering ($M = 9.12$ vs. $M = 7.33$; $t = -2.50, p < .001$).
Personality scores of the selected and non-selected participants at T1 were also compared. The selected participants reported higher levels of extraversion ($M = 16.21$ vs. $M = 15.95$, $t = -2.90$, $p < .01$) and conscientiousness ($M = 14.00$ vs. $M = 13.61$, $t = -6.95$, $p < .001$), and lower levels of neuroticism ($M = 8.44$ vs. $M = 9.08$, $t = 7.63$, $p < .001$) and agreeableness ($M = 17.65$ vs. $M = 18.39$, $t = -3.28$, $p < .01$). They did not differ on openness to experience.

Table 1 provides descriptive statistics for demographic variables.

**Measures**

**Personality.** The Big Five personality traits were measured using 25 adjectives selected from existing trait lists and inventories (e.g., Goldberg, 1992; John, 1990; Trapnell & Wiggins, 1990). Each personality trait was assessed with between four and seven adjectives which include “moody,” “worrying,” “nervous,” and “calm (reverse-coded)” (neuroticism); “outgoing,” “friendly,” “lively,” “active,” and “talkative” (extraversion); “creative,” “imaginative,” “intelligent,” “curious,” “broad-minded,” “sophisticated,” and “adventurous” (openness to experience); “organized,” “responsible,” “hard-working,” and “careless (reverse-coded)” (conscientiousness); and “helpful,” “warm,” “caring,” “softhearted,” and “sympathetic” (agreeableness). Participants rated how well each of 25 adjectives described themselves ($1 = a lot$, $2 = a little$, $3 = some$, and $4 = not at all$). Items were reverse-coded and summed together such that higher scores reflected higher scores on each personality trait. Cronbach’s alphas obtained in this study were .77, .75, and .74 for extraversion, .78, .77, and .78 for openness to experience, .74, .72, and .69 for neuroticism, .56, .59, and .55 for conscientiousness, and .82, .79, and .74 for agreeableness at T1, T2, and T3, respectively.
Perceived cognitive functioning. Perceived cognitive functioning was measured with a single question at T3: “Compared to five years ago, how would you rate yourself today on memory?” on a five-point scale (1 = improved a lot, 2 = improved a little, 3 = stayed the same, 4 = gotten a little worse, and 5 = gotten a lot worse). The item was reverse-coded such that higher scores reflected higher levels of perceived cognitive functioning.

Physical functioning. A total of 10 items at T3 assessed participants’ basic and instrumental activities of daily living. Participants were asked how much their health limits them in doing the following activities: lifting or carrying groceries, bathing or dressing, climbing one flight of stairs, climbing several flights of stairs, bending, walking one block, walking more than a mile, walking several blocks, vigorous activities, and moderate activities. Each item was rated on a 4-point scale (1 = a lot, 2 = some, 3 = a little, and 4 = not at all) and higher scores indicated higher levels of ADL functioning. In forming a latent variable representing physical functioning, the present study used item parcels instead of 10 individual items. One of the advantages of item parceling is that it may yield a better model fit by reducing the number of parameters (Bandalos, 2002). To develop three parcels using 10 items, a factor analysis was conducted. Based on their magnitude of factor loadings, the ten items were rank-ordered and assigned to groups so as to combine the highest and lowest loadings across parcels, then summed together. As a result, one 4-item parcel and two 3-item parcels were created. Cronbach’s alpha of these 10 items was .95 in this study.

Physical health. Three different indicators were used to assess physical health at T3. Chronic condition was measured by 39 items (e.g., asthma, lung problems, joint/bone diseases, or high blood pressure/hypertension). Participants were asked, “In the past 12 months, have you experienced or been treated for any of the following?” and each condition
was coded 1 if present, or 0 otherwise. Responses were reverse-coded and summed together such that higher scores indicated less chronic conditions experienced by participants. The frequency of physical symptoms was measured with 10 items (e.g., headaches, backaches, sweating, or irritability) and participants rated how often they have experienced each symptom during the past 30 days on a 6-point scale (1 = almost every day, 2 = several times a week, 3 = once a week, 4 = several times a month, 5 = once a month, and 6 = not at all). The summary scores were used to define the number of physical symptoms and higher scores indicated less frequency of occurrence for physical symptoms. Self-rated health was measured with a single question, “How would you rate your health these days?” on a 10-point scale (1 = worst to 10 = best). Higher scores indicated better health status.

**Social engagement.** Social engagement was measured by asking participants how many hours per month they spend doing formal volunteer work of any of the following at T3: (a) hospital, nursing home, or other healthcare-oriented volunteer work; (b) school or other youth-related volunteer work; (c) volunteer work for political organizations or causes; (d) volunteer work for any other organization, cause, or charity?

**Covariates.** Based on previous research on predictors of successful aging (e.g., Depp & Jeste, 2006; Pruchno, Wilson-Genderson, & Cartwright, 2010; Strawbridge, Cohen, Shema, & Kaplan, 1996), the present study included four demographic variables as covariates: age (1 = younger than 50 years old, 2 = 50-59 years old, 3 = 60-69 years old, and 4 = 70 years and older), gender (1 = male, 2 = female), race/ethnicity (1 = non-Hispanic White and 0 = Other race/ethnicity), and education level (1 = some grade school to GED, 2 = graduated high school, 3 = some college, 4 = graduated college and 5 = higher than college).
Data Analyses

Latent growth curve analyses using Mplus were conducted to examine personality change over time. When describing the form of growth curve, there are two important parameters to consider: intercept and slope (Duncan & Duncan, 2009). In the present study, the intercept represented the initial status of the growth curve and the slope represented the growth curve of personality traits over time. Once the shape of change was determined, structural equation modeling analysis including covariates was employed to examine the association between personality traits and successful aging.

Model fit was evaluated using the chi-square values, comparative fit index (CFI), Tucker-Lewis Index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR), based on Hu and Bentler’s (1999) cutoff criteria. Hu and Bentler (1999) suggested a composite standard for appropriate fit, combining CFI and TLI of .95 or above with either RMSEA of .06 or below or SRMR of .10 or below.

Missing Values

No variables used in the analyses exceeded 6% of missing values. Missing values were estimated in Mplus using full information maximum likelihood (FIML). In the present study, missing data were analyzed under the assumption of missing at random (MAR), which implies that the occurrence of missingness is unrelated to the outcome variables.

Results

Descriptive statistics of continuous variables (i.e., personality, cognitive functioning, physical functioning, physical health, and social engagement) are summarized in Table 2. Table 3 displays the standardized factor loadings of various items measuring two latent variables: physical functioning and physical health. The measurement model fit the data
adequately, $\chi^2(17) = 114.36, p < .001$, CFI = .98, TLI = .96, RMSEA = .10, and SRMR = .04. All indicators significantly loaded on their prespecified latent factor and all item loadings were above .30, and therefore, none were removed from the model.

**Personality Change**

A series of unconditional latent growth curve analyses, one personality factor for each time point, was conducted to determine whether a linear growth curve model can describe change in each personality trait (i.e., neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness) over time. In each analysis, loadings of the three-time points onto the latent intercept were fixed at 1 and loadings onto the latent slope were fixed at 0, 1, and 2.

**Neuroticism.** The overall model fit was unacceptable, $\chi^2(1) = 73.97, p < .001$, CFI = .95, TLI = .84, RMSEA = .24, and SRMR = .05. This unsatisfactory model fit may be due to the means for neuroticism that do not follow a linear line as expected. Estimation of a quadratic form cannot be achieved with the current data, since the MIDUS has released three waves of data only. Regardless of the poor model fit, we decided to test the effects of change in neuroticism in a full model to see whether the neuroticism model still fits the data.

**Extraversion.** The model fit the data well, $\chi^2(1) = .28, p = .60$, CFI = 1.00, TLI = 1.00, RMSEA = .00, and SRMR = .00. The estimated mean level was 16.22 ($p < .001$) and the estimated average rate of change was -.31 ($p < .001$). The results indicated that the level of extraversion decreased over approximately 20 years. Estimated variances of the intercept (5.22, $p < .001$) and the slope (.17, $p = .23$) indicated that there was significant individual difference only in the initial level of extraversion.
Openness to Experience. The model fit the data well, $\chi^2(1) = .95, p = .33$, CFI = 1.00, TLI = 1.00, RMSEA = .00, and SRMR = .01. The estimated mean level was 21.18 ($p < .001$) and the estimated average rate of change was -.48 ($p < .001$). The results indicated that the level of openness to experience decreased over time. Estimated variances of the intercept (10.05, $p < .001$) and the slope (.42, $p = .10$) indicated that there was significant individual difference only in the initial level of openness to experience.

Conscientiousness. The model fit was marginally acceptable, $\chi^2(1) = 14.13, p < .001$, CFI = .99, TLI = .97, RMSEA = .10, and SRMR = .03, probably because that the means for conscientiousness also did not display a linear trajectory. The estimated mean level was 14.03 ($p < .001$) and the estimated average rate of change was -.09 ($p < .001$). The results indicated that the level of conscientiousness decreased over time. Estimated variances of the intercept (1.92, $p < .001$) and the slope (.14, $p < .05$) were both significant, indicating that there were significant individual differences in level of, and rate of change over time in conscientiousness.

Agreeableness. The model fit the data well, $\chi^2(1) = 1.88, p = .17$, CFI = 1.00, TLI = 1.00, RMSEA = .03, and SRMR = .01. The estimated mean level was 17.67 ($p < .001$) and the estimated average rate of change was -.18 ($p < .001$). The results indicated that, like other personality traits, the level of agreeableness decreased over time. Estimated variances of the intercept (3.93, $p < .001$) and the slope (.21, $p = .07$) indicated that there was significant individual difference only in the initial level of agreeableness.
Effects of Personality Trait Level and Change on Successful Aging

As examining all five personality traits simultaneously would result in too many parameters to measure, the present study tested each personality trait separately. Table 4 displays the regression models for all four successful aging outcomes investigated.

The model fit for neuroticism was adequate, $\chi^2 (61) = 429.66, p < .001$, CFI = .95, TLI = .91, RMSEA = .07, and SRMR = .05. Neuroticism level was a significant predictor of successful aging; higher initial levels of neuroticism predicted worse perceived cognitive functioning ($\beta = -.27, p < .001$), physical functioning ($\beta = -.27, p < .001$), and physical health ($\beta = -.58, p < .001$) at T3. Decreases in neuroticism predicted better physical health ($\beta = -.36, p < .01$) at T3. This model explained 10% of the variance in perceived cognitive functioning ($p < .001$), 17% of the variance in physical functioning ($p < .001$), 32% of the variance in physical health ($p < .001$), and 2% of the variance in social engagement ($p < .05$).

For extraversion, the model fit the data well, $\chi^2 (61) = 342.70, p < .001$, CFI = .96, TLI = .94, RMSEA = .06, and SRMR = .04. The results indicated that higher initial levels of extraversion predicted better perceived cognitive functioning ($\beta = .18, p < .001$), physical functioning ($\beta = .10, p < .05$), physical health ($\beta = .24, p < .001$), and greater numbers of hours spent for volunteering ($\beta = .09, p < .05$) at T3. With respect to trait change, decreases in extraversion predicted worse perceived cognitive functioning ($\beta = .15, p < .05$), physical functioning ($\beta = .34, p < .01$), and physical health ($\beta = .32, p < .01$), as well as less numbers of hours spent for volunteering ($\beta = .30, p < .01$) at T3. This model explained 7% of the variance in perceived cognitive functioning ($p < .01$), 23% of the variance in physical functioning ($p < .001$), 22% of the variance in physical health ($p < .001$), and 11% of the variance in social engagement ($p = .06$).
For openness to experience, the model also fit the data well, \( \chi^2(61) = 416.67, p < .001 \), CFI = .95, TLI = .92, RMSEA = .07, and SRMR = .05. The results indicated that higher initial levels of openness to experience were associated with better perceived cognitive functioning (\( \beta = .19, p < .001 \)), physical functioning (\( \beta = .11, p < .01 \)), and physical health (\( \beta = .20, p < .001 \)) at T3. Decreases in openness to experience predicted worse perceived cognitive functioning (\( \beta = .13, p < .05 \)), physical functioning (\( \beta = .15, p < .05 \)), and physical health (\( \beta = .14, p < .05 \)) at T3. This model explained 8% of the variance in perceived cognitive functioning (\( p < .001 \)), 14% of the variance in physical functioning (\( p < .001 \)), 10% of the variance in physical health (\( p < .001 \)), and 2% of the variance in social engagement (\( p < .05 \)).

For conscientiousness, the model fit the data well, \( \chi^2(61) = 319.53, p < .001 \), CFI = .96, TLI = .94, RMSEA = .06, and SRMR = .04. Higher initial levels of conscientiousness predicted better perceived cognitive functioning (\( \beta = .16, p < .001 \)), physical functioning (\( \beta = .19, p < .001 \)), and physical health (\( \beta = .30, p < .001 \)) at T3. Decreases in conscientiousness were significant predictors of the four successful aging outcomes; worse perceived cognitive functioning (\( \beta = .17, p < .01 \)), physical functioning (\( \beta = .28, p < .001 \)), physical health (\( \beta = .37, p < .001 \)), and fewer numbers of hours spent for volunteering (\( \beta = .13, p < .05 \)) at T3. This model explained 7% of the variance in perceived cognitive functioning (\( p < .001 \)), 20% of the variance in physical functioning (\( p < .001 \)), 24% of the variance in physical health (\( p < .001 \)), and 4% of the variance in social engagement (\( p < .05 \)).

Finally, the model fit for agreeableness was acceptable, \( \chi^2(61) = 439.87, p < .001 \), CFI = .94, TLI = .91, RMSEA = .07, and SRMR = .06. Higher initial levels of agreeableness predicted better perceived cognitive functioning (\( \beta = .11, p < .01 \)), physical health (\( \beta = .10, p < .01 \))
< .05), and greater numbers of hours spent for volunteering (β = .08, p < .05) at T3. This model explained 4% of the variance in perceived cognitive functioning (p < .001), 13% of the variance in physical functioning (p < .001), 11% of the variance in physical health (p < .01), and 3% of the variance in social engagement (p < .05). None of the successful aging outcomes were predicted by changes in agreeableness.

**Discussion**

The present study builds on earlier work on personality and its relation to well-being of older adults by examining personality trait change in middle and late adulthood and linking it to Rowe and Kahn’s (1987, 1997, 1998) model of successful aging. Overall, in this study, participants reported personality change over 20 years, to some extent, and both personality at baseline and personality change predicted at least one component of successful aging. Higher levels of extraversion, openness to experience, conscientiousness, and agreeableness predicted better perceived cognitive functioning, whereas higher levels of neuroticism predicted poorer perceived cognitive functioning. Higher levels of extraversion, openness to experience, and conscientiousness predicted better physical functioning, whereas higher levels of neuroticism predicted poorer physical functioning. Better physical health was predicted by higher levels of extraversion, openness to experience, conscientiousness, and agreeableness, whereas poorer physical health was predicted by higher levels of neuroticism. Finally, higher levels of extraversion and agreeableness reflected greater numbers of hours of volunteering.

Moreover, this study extends previous findings that personality change, along with personality at baseline, would serve as a useful construct in predicting physical and psychological well-being (Human et al., 2013; Turiano et al., 2012). The findings revealed
that participants who had experienced decreases in extraversion, openness to experience, and conscientiousness reported worse perceived cognitive functioning, physical functioning, and physical health, whereas those who had experienced decreases in neuroticism reported better physical health. Finally, we found that participants who had experienced decreases in extraversion and agreeableness were more likely to spend less time volunteering.

It is not surprising that neuroticism negatively influences older adults’ cognitive and physical well-being or decreases in neuroticism protect them from experiencing negative cognitive and physical outcomes. Neurotic individuals are more likely to construe themselves or others in a more negative way (Lahey, 2009), and in most situations, they often respond with negative emotions or affect, such as anxiety, anger, or frustration. Neuroticism, in fact, needs to be considered as both a predictor and a consequence of health (Roberts & Mroczek, 2008). Magee and colleagues (2013) addressed that increases in neuroticism are associated with poorer mental and physical health and interestingly, this association was stronger in the older group, compared to that of the younger. Cognitive or physical decline is already common in old age, and this may increase the risk of adverse health outcomes. Their limited ability and resources may have first caused them to become emotionally unstable and neurotic, and this personality trait may have become stronger as they aged. What is notable is that neuroticism does not always cause negative health-related outcomes. When their stress is controlled, individuals who are high in neuroticism may maintain a healthy lifestyle, as they more often seek medical assistance voluntarily and are more preoccupied with keeping themselves clean (Friedman, 2000).

Our findings suggested the higher initial levels of four other personality traits can be identified as resilience resources that may be protective for older adults. On the other hand,
decreases in these personality traits may increase the likelihood of experiencing worse outcomes of successful aging. Extraversion, as opposed to neuroticism, contains the facets of positive emotions, assertiveness, and gregariousness (McCrae & Costa, 1999), leading individuals to interact with others and maintain socially desirable behaviors. Individuals high in extraversion tend to have strong social networks, which pertain to instrumental and emotional resources to withstand aging-relevant issues. In older adults, who are often at risk of loneliness, seeking and receiving social support appear to be significant predictors of health-related outcomes. Previous studies have addressed the direct or indirect links between social support and physical or cognitive functioning (Seeman, Lusignolo, Albert, & Berkman, 2001; Uchino, 2009). Greater frequency of social contact or social activity and receiving greater amount of emotional support may reduce depressive symptoms (Russell & Taylor, 2009) associated with physical and cognitive decline. Further, increases in extraversion may reflect individuals’ increasing willingness to continue displaying prosocial behaviors and intimacy (Carlo, Okun, Knight, & Guzman, 2005), which result in active engagement in volunteering activities.

It is plausible that older adults high in openness to experience are more likely to report better cognitive health and decreases in openness to experience predict the opposite, because they tend to enjoy cognitively and intellectually stimulating activities, such as reading, solving puzzles, or playing musical instruments, which may enhance their cognitive functioning (Chapman et al., 2012). Their curiosity not only challenges their cognitive abilities, but also helps them remain intellectually aware of the importance and benefits of engaging in physical activities and exercises, which will improve their physical health and functioning (Chapman, Duberstein, & Lyness, 2007). Such information may be useful for
older adults to cope better with various changes that occur with age. However, what is notable is that high levels of or increase in openness to experience do not necessarily result in better health-related outcomes. As they are highly creative and not afraid of trying new things, it is possible they may engage in potentially risky behaviors (Kern & Friedman, 2011).

The link between conscientiousness and health-related outcomes is well-described in Bogg and Roberts’ work (2004), which applied meta-analytic methods and reviewed 194 previous studies. Individuals high in conscientiousness are known for their organized, careful, and task- and goal-directed characteristics, and these are found to be associated with prudent health behaviors. Conscientious individuals avoid alcohol use (Ruiz, Pincus, & Dickinson, 2003) and smoking (Hakulinen et al., 2015), and are more likely to exercise (Rhodes & Smith, 2004), which prevent cognitive decline (Kalmijn, Boxtel, Verschuren, Jolles, & Launer, 2002) and physical impairment (Bogg & Robert, 2004). Conscientious individuals may also be better at regulating themselves and making responsible and deliberate choices. Therefore, they may have a strong desire to set goals for a healthy lifestyle and feel confident when these goals are achieved. The association between conscientiousness and volunteering has been overlooked because existing literature has focused on prosocial behaviors and positive orientation (Carlo et al., 2005) that are often found in extraverted and agreeable individuals. In this study, decreases in conscientiousness predicted fewer hours spent for volunteering. Mike and colleagues (2010) concluded that conscientious individuals are more likely to volunteer, especially after retirement, because through volunteering, they may still perceive themselves as hardworking, productive, and responsible individuals, who can successfully complete desired goals.
There is not much evidence to support our finding on the positive association between agreeableness and cognitive functioning. Curtis and colleagues (2015) addressed that there has been no conceptual framework describing this association, and Luchetti and colleagues (2016) even found that individuals high in agreeableness perceived their memory to be poorer, possibly because they tend to be less competitive and not to focus on egocentric goals. A possible explanation is that because agreeable individuals tend to be cohesive and cooperative, they may have been more likely to exude a positive and serious attitude in a learning environment, which may be helpful for improving cognitive ability. Or their effort to make themselves valuable to a group may lead them to establish various social relationships that stimulate their curiosity and interest. Their willingness to maintain positive relationships with others and avoid conflict may also lead them to comply with a treatment plan prescribed by their physicians, which increases the possibility to maintain high levels of physical health in later life. Such tendency may also be relevant to prosocial values and motives (Carlo et al., 2005), which are well-observed in a circumstance where they must respond to the needs of others, like in a volunteering environment.

It is important to note the conclusions of the present study need to be considered with caution due to the low explained variance in several dependent variables, which may reflect that there is more to explore regarding successful aging. Several other methodological issues have also emerged. The conscientiousness measures at each time point showed a reliability less than .60, which can only be considered marginal. Future studies must consider including more data or selecting certain items to make the results more reliable. Another limitation of this study is the selection of individuals who participated during all waves of the study who were more emotionally stable, extraverted, and conscientious. Given that higher levels of
these three personality traits have been positively associated with components of successful aging in previous studies (e.g., Baek et al., 2016), one may argue that the present study only includes selective survivors and therefore cannot be generalized across the entire population.

Also, we expected the trajectory of personality change to be linear and fixed loadings of the slope with the perspective of linear growth. However, the growth of neuroticism did not show a perfect linear pattern, which initially yielded a poor model fit. As one of the primary purposes of the present study was to examine the effects of personality change on successful aging, we decided to include neuroticism in the full model and the results reflected an acceptable model fit. A quadratic growth curve model may solve this issue, thus future studies will have to more precisely describe the pattern of personality change using the data available for more than three time points. The means for neuroticism in this study did not dramatically change, but they had decreased and then increased again as participants reached the age of 65. What we can assume from the results is that personality in middle and old adulthood can still be dynamic to some extent, and simply measuring the linear change of personality may underestimate the amount of actual change. We therefore suggest future studies to work toward identifying whether personality change in older adults is caused either at the trait-level or state-level (Chaplin, John, & Goldberg, 1988). That is, it is necessary to determine whether such change occurs internally and would maintain stable over time or it temporarily occurs following external situations and can be controlled. Of the facets from neuroticism, for example, anxiety or impulsiveness may not be as enduring as they may seem.

It should be noted that causal relations of personality change on successful aging may not be inferred, as the present study does not involve specific treatments that can be found in
experimental studies. It is difficult to determine whether personality change found in this study is due to actual change in participants’ personality or to their change in perception of themselves because all five personality traits were measured by self-reports. Although not examined in the present study, continuous decreases in extraversion, openness to experience, and agreeableness may be due to age-related changes or unique life events that are often experienced in middle and late adulthood. Future longitudinal studies should assess to what extent life events and age-related changes are associated with a decline in personality traits.

Next, the Big Five personality domains comprise personality facets, and these facets may differently predict successful aging outcomes, although they underlie the same personality trait. In other words, each facet does not contribute to an individual’s behavior (Mike et al., 2014) or function in the same direction. For example, dutiful individuals may actively engage in volunteering activities to follow social rules, but those who are striving to achieve goals may not, because they tend to be more self-focused. Studies assessing the specific role of personality facets are needed to investigate the causal association between personality and successful aging more conclusively. The association between these two constructs may not be straightforward, and in that case, measuring the subjective strength of each personality facet may be helpful. The main issue that remains to be addressed is how personality change is facilitated, if personality change occurs in old adulthood, and whether such change benefits older adults who may experience age-related decline. Future studies also should consider examining whether personality change precedes or follows change in cognition, physical health, or social engagement. The present study does not investigate what causes personality change in middle and old adulthood, and personality change may be due to either increases or decreases in cognitive, physical, or social functioning that appear to be
more common in older adults. Future studies will also need to expand the results to the oldest-old population or other race/ethnicity groups that might have different characteristics or attributes.

Another suggestion for future research is to assess measurement invariance or equivalence, which addresses the question of whether observed score differences are attributable to the constructs being measured in the model and whether “the relationship between the latent variable and the observed variable remains invariant across populations” (Raju, Laffitte, & Byrne, 2002, p. 517). It is possible that the structure of the variables can change over time and the meaning of the scores can also differ in other groups (e.g., age or gender) and would not be interpreted in the same way.

Finally, our finding is partially in line with Crowe and colleagues’ (2006) work, suggesting the combination of personality traits (e.g., the combination of low levels of neuroticism and high levels of extraversion) may best predict health-related outcomes. Martin and colleagues (2006) also emphasized the importance of involving the combination of personality traits because, like personality facets, it would explain some of the differences observed between studies.

In closing, the present study contributes to the literature in several ways. First, when linking personality to other constructs, it is necessary to consider the “direction of change” (Mroczek & Spiro, 2007, p. 371), and the present study highlighted this direction of personality change in middle and old adulthood and attempted to describe predictors of successful aging. The patterns of personality change may differ for other age groups, not included in the present study, but our findings build on previous studies, suggesting that personality change continues to occur in middle and later adulthood. However, our findings
raise a question about the individual, social, and cultural desirability of personality traits. Would decreases in extraversion, openness to experience, conscientiousness, and agreeableness be seen as undesirable for every individual? Or are decreases in neuroticism always socially or culturally desirable? Much remains to be investigated in terms of personality development in middle and old age, but there seems to be a consistent direction of personality change and what actually influences the process of successful aging. Continuing to investigate this association will provide researchers and practitioners with a better and more comprehensive understanding of personality development in mid- and later life.

References


Table 1
Descriptive Statistics for Demographic Variables

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Age (Mean, Range)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
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<td>64.92 (55 – 84)</td>
<td>74.02 (65 – 93)</td>
</tr>
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<td>Gender</td>
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</tr>
<tr>
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<td>541</td>
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<td>541</td>
</tr>
<tr>
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<td>680</td>
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<tr>
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<td>94.70</td>
<td>1,139</td>
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<tr>
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<td></td>
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<tr>
<td>Grade school to GED</td>
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<td>High school</td>
<td>329</td>
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<td>323</td>
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<td>Some college</td>
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<td>28.70</td>
<td>345</td>
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<td>Graduated college</td>
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<td>18.10</td>
<td>218</td>
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<tr>
<td>Higher than college</td>
<td>227</td>
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<td>245</td>
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Note. The percentages listed above may not add up 100% because of rounding issues.
Table 2
Descriptive Statistics for Continuous Variables

<table>
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<th>SD</th>
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<td>Personality (T1)</td>
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<td>Neuroticism</td>
<td>8.44</td>
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<tr>
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<td>16.21</td>
<td>2.69</td>
<td>5 – 20</td>
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<td>21.21</td>
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<td>7 – 28</td>
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<td>1.67</td>
<td>4 – 16</td>
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<tr>
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<td>17.65</td>
<td>2.37</td>
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<tr>
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<td></td>
<td></td>
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<tr>
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<td>4 – 16</td>
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<tr>
<td>Extraversion</td>
<td>15.92</td>
<td>2.69</td>
<td>5 – 20</td>
</tr>
<tr>
<td>Openness</td>
<td>20.66</td>
<td>3.67</td>
<td>7 – 28</td>
</tr>
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<td>Conscientiousness</td>
<td>14.04</td>
<td>1.72</td>
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<td>17.54</td>
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<td>5 – 20</td>
</tr>
<tr>
<td>Personality (T3)</td>
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<td></td>
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<td>4 – 16</td>
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<td>7 – 28</td>
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<td>13.80</td>
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<td>4 – 16</td>
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<td>5 – 20</td>
</tr>
<tr>
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<td>.71</td>
<td>1 – 5</td>
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<tr>
<td>Physical functioning (T3)</td>
<td>29.64</td>
<td>8.95</td>
<td>10 – 40</td>
</tr>
<tr>
<td>Physical health (T3)</td>
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<td></td>
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<tr>
<td>Chronic condition</td>
<td>35.07</td>
<td>3.39</td>
<td>0 – 39</td>
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<tr>
<td>Physical symptoms</td>
<td>45.32</td>
<td>8.52</td>
<td>10 – 60</td>
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<tr>
<td>Self-rated health</td>
<td>7.36</td>
<td>1.61</td>
<td>1 – 10</td>
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<tr>
<td>Social engagement (T3)</td>
<td>9.12</td>
<td>19.20</td>
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Table 3
Factor Loadings of Latent Variables

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<th></th>
<th>Physical functioning</th>
<th>Physical health</th>
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<tr>
<td>ADL (Parcel 1)</td>
<td>.96</td>
<td></td>
</tr>
<tr>
<td>ADL (Parcel 2)</td>
<td>.91</td>
<td></td>
</tr>
<tr>
<td>ADL (Parcel 3)</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>Chronic condition</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>Physical symptoms</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>Self-rated health</td>
<td>.70</td>
<td></td>
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Table 4
Personality Trait and Change Predicting Successful Aging

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Perceived cognitive functioning</th>
<th>Physical functioning</th>
<th>Physical health</th>
<th>Volunteering</th>
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<tr>
<td></td>
<td>B (SE)</td>
<td>β</td>
<td>B (SE)</td>
<td>β</td>
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<tr>
<td>Personality level</td>
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<td></td>
<td></td>
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<tr>
<td>Neuroticism</td>
<td>-.09 (.02)</td>
<td>-.27***</td>
<td>-.43 (.07)</td>
<td>-.27**</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.06 (.01)</td>
<td>.18***</td>
<td>.15 (.06)</td>
<td>.10*</td>
</tr>
<tr>
<td>Openness</td>
<td>.04 (.01)</td>
<td>.19***</td>
<td>.12 (.03)</td>
<td>.11**</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.08 (.02)</td>
<td>.16***</td>
<td>.45 (.08)</td>
<td>.19***</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.04 (.01)</td>
<td>.11**</td>
<td>.03 (.06)</td>
<td>.02</td>
</tr>
<tr>
<td>Personality change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-.30 (.21)</td>
<td>-.18</td>
<td>-1.04 (.78)</td>
<td>-.14</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.22 (.13)</td>
<td>.15*</td>
<td>2.32 (1.26)</td>
<td>.34**</td>
</tr>
<tr>
<td>Openness</td>
<td>.12 (.06)</td>
<td>.13*</td>
<td>.67 (.35)</td>
<td>.15*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.29 (.12)</td>
<td>.17**</td>
<td>2.30 (.79)</td>
<td>.28***</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.07 (.10)</td>
<td>.05</td>
<td>.71 (.59)</td>
<td>.10</td>
</tr>
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</table>

* p < .05. ** p < .01. *** p < .001.

Note. Personality variables were used in five separate analyses.
CHAPTER 5. CUMULATIVE LIFE EVENTS AND PERSONALITY AS A PREDICTOR OF SUCCESSFUL AGING

A manuscript to be submitted to The Journals of Gerontology Series B: Psychological Sciences

Yousun Baek¹, Peter Martin¹, and Leonard Poon²

Abstract

The present study examined the effects of cumulative life events and personality on successful aging across a sample of participants in the Georgia Centenarian Study. Participants included 208 older adults, aged 80 to 108. The developmental adaptation model was applied as a conceptual framework. In particular, this model was used to investigate how distal influences (i.e., cumulative life events) and proximal resources (i.e., Big Five personality traits) are associated with developmental outcomes (i.e., objectively and subjectively measured successful aging), as well as whether proximal influences mediate the relationship between distal influences and developmental outcomes. Results suggest that cumulative life events and five personality traits or facets were directly associated with either or both subjective successful aging and at least one component of objective successful aging. Cumulative positive life events were associated with higher levels of trust, whereas cumulative negative life events were associated with higher levels of ideas and lower levels of competence. Last, our results indicated that the ideas facet mediated the relationship between cumulative negative life events and successful aging. The present study provides new insight into how successful aging is achieved throughout the life span.

Keywords: life events, personality, successful aging

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Authors participated in conceptualizing and designing the study, and/or data acquisition and/or analysis and interpretation of data. Address correspondence to Yousun Baek, Human Development and Family Studies, Iowa State University.
Introduction and Literature Review

There have been many attempts to define and conceptualize successful aging in the literature of aging. Among them, Rowe and Kahn’s (1987, 1997, 1998) MacArthur model of successful aging seems to be the most prominent one, which encompasses three components: 1) low probability of disease and disability, 2) maintenance of high physical and cognitive function, and 3) active engagement with life. Rowe and Kahn (2015) noted that their concept of successful aging has been modified and extended in a variety of ways, implying that previous studies have criticized its lack of clarity and agreement on what it really means to age successfully. Martinson and Berridge (2014) reviewed 67 articles that included notable concerns and critiques of the successful aging model and found that approximately 45% of the studies they reviewed stated the significance of subjective criteria of successful aging. Individuals’ perception of their own aging may not be fully represented by objectively measured biological and social factors because these factors exclude the possibility of individuals being satisfied with their lives regardless of their health status or social participation. Indeed, in Montross and colleagues’ (2006) work, older adults experiencing some physical disability and chronic illness still viewed themselves as aging successfully. Such results led to the development of a more comprehensive model for successful aging that incorporates both objective and subjective components. For example, as an expansion of Rowe and Kahn’s (1987, 1997, 1998) work, Pruchno and colleagues (2010) proposed a two-factor model of successful aging. Not only does the model measure the absence of chronic diseases and pain, as well as the maintenance of functional ability, it also examines how individuals evaluate their own aging (i.e., how successfully they have aged, how well they are aging, and how they rate their life these days). Other researchers have also advocated the inclusion of additional subjective criteria, such as emotional well-being (Cho, Martin, & Poon,
2015; Lewis, 2011), self-rated physical health (Vaillant & Mukamel, 2001), self-acceptance or self-contentment (Reichstadt, Sengupta, Depp, Palinkas, & Jeste, 2010), and life satisfaction (Jopp & Smith, 2006).

Along with this concern, Martin and Martin (2002) contended that the principal components of successful aging do not describe the process but emphasize the outcome. Rowe and Kahn (2015) also recognized the importance of adopting theoretical frameworks to understand how successful aging achieved throughout the life course. With a life span approach, Pruchno and colleagues (2010) considered early influences and current characteristics as a determinant of successful aging and found that both had a great impact on successful aging. This provides evidence that aging, either successful or unsuccessful, is a lifelong process, which is shaped by the dynamic interaction between past experiences and current resources. The key theoretical model that fulfills the need for modeling past and current influences to address the process of successful aging is the developmental adaptation model developed by Martin and Martin (2002). The model indicates the importance of distal and proximal influences in predicting and determining individuals’ developmental outcomes. Distal influences are experiences or events that occurred in earlier life, such as educational attainment, death of parents, or marriage, and these experiences or events can be positive or negative or can be either single or cumulative. Proximal influences are more recent resources or experiences that can be individual (e.g., personality), social (e.g., social support), and economic. Distal and proximal influences are related and have a short- or long-term impact on developmental outcomes. Adopting the developmental adaptation model is advantageous, especially for identifying where successful aging arises from and how it is attained, because the model allows to examine the
direct and indirect pathways of distal experiences and proximal resources to developmental outcomes relevant to successful aging.

One area of interest in the field of successful aging is personality, which is considered as an individual resource that links distal experiences to developmental outcomes as a mediator in the developmental adaptation model. The role of personality in attaining successful aging has not yet been thoroughly examined, especially in older populations, but personality is expected to play a part in addressing individual differences and yield new findings that contribute to a better understanding of behavioral patterns of successful agers (Eaton et al., 2012). The Big Five personality dimensions (i.e., neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness; Costa & McCrae, 1985, 1989) have emerged as a basic taxonomy of personality and have often been studied by researchers as predictors of various outcomes relevant to objective and subjective criteria of successful aging, such as physical symptoms (Roberts & Bogg, 2004), cognitive functioning (DeYoung, 2014), social engagement (Lodi-Smith & Roberts, 2012), self-rated health (Turiano et al., 2012), and life satisfaction (Schimmack, Oishi, Furr, & Funder, 2004). More specifically, neuroticism was found to be a risk factor for cognitive performance (Luchetti, Terracciano, Stephan, & Sutin, 2016) and physical conditions and diseases (Charles, Gatz, Kato, & Pedersen, 2008), possibly because neurotic individuals tend to be easily stressed and emotionally vulnerable. Their pessimistic mindset may further hinder their ability to view the world from a positive perspective and eventually lead them to be less satisfied with their lives.

Extraverted individuals, on the other hand, are more likely to report higher levels of life satisfaction (Schimmack et al., 2004) because they tend to experience more positive emotions and social support that may help them remain physically and mentally healthy. Along with
neuroticism, conscientiousness is known to be the best predictor of health outcomes (Roberts, Walton, & Bogg, 2005). Individuals high in conscientiousness tend to think carefully before acting and make a responsible choice; therefore, they are less likely to engage in risky health behaviors that may lead to severe disease or increase disease susceptibility. It is plausible that a facet of openness to experience, intellectual curiosity, protects against cognitive decline (Sharp et al., 2010), because open individuals often seek out new learning experiences that challenge their cognitive ability. Finally, individuals high in agreeableness, who are known to be helpful, cooperative, and socially assertive, are found to be more likely to volunteer (Carlo, Okun, Knight, & Guzman, 2005), which is a part of social engagement activities. Despite of previous research efforts, additional research on the role of personality as a proximal resource that links distal influences and successful aging is still needed.

Then what impact do early experiences have on personality traits? Hensley and colleagues (2012) examined the role of life-time events and personality in predicting loneliness of oldest-old adults. They discovered that the greater number of cumulative positive life events was associated with higher levels of trust and lower levels of neuroticism; the greater number of cumulative negative life events was associated with higher levels of neuroticism and lower levels of competence; and the relationship between cumulative negative life events and loneliness was mediated by competence. In Martin’s (2002) work, cumulative negative events positively predicted anxiety. It is notable that Martin investigated the impact of life-time, or cumulative events, instead of a single event. Previous studies on life events and personality development have, in general, focused on a specific event, such as marriage, unemployment, or death of a spouse (Boyes, Wood, Daly, & Sedikides, 2015; Hutteman, Hennecke, Orth, Reitz, & Specht, 2014) and assessed how each event affects personality. However, Martin and Martin (2002)
posited that it may be the accumulation of various positive and negative life events that have a “potentially lasting effect” (p. 83) on proximal resources and developmental outcomes.

Assessing the effects of cumulative life events and how they are recalled may inform us about whether the greater or smaller number of life events determines the likelihood of aging successfully, as well as how individuals’ perception and interpretation of life events influence the aging process.

Several studies have addressed the relation of cumulative life events to the criteria of successful aging or well-being of older adults. Martin (2002) found that cumulative adverse events are negatively associated with mental health and activities of daily living. Cumulative life events also predicted the levels of negative affect of oldest-old adults; cumulative negative events were found to increase the levels of negative affect, whereas cumulative positive events were found to decrease the levels of negative affect (Martin, da Rosa, & Poon, 2011). Lee and colleagues (2018), on the other hand, revealed in their study that distal negative events, which are the negatively recalled events that the participants experienced at any time 20 years before the interview, predicted better mental operations in later life. Such inconsistent findings likely reflect that the way individuals perceive and evaluate their past life events may not generate the results as commonly expected (e.g., cumulative negative events are interpreted as cumulative disadvantages and lead individuals to a disadvantaged lifestyle).

**Research Questions**

From the review of the literature, the current study attempted to answer the following questions: 1) How do cumulative life events and personality influence objective and subjective criteria of successful aging? 2) How do cumulative life events influence personality? 3) Does personality serve as a mediator on the relationship between cumulative life events and successful
aging? We expected cumulative positive events would positively predict each component of objective and subjective successful aging, whereas cumulative negative events would display the opposite impact. Higher levels of extraversion, openness to experience, conscientiousness, and agreeableness and lower levels of neuroticism were expected to positively predict each component of objective and subjective successful aging. We then hypothesized that cumulative positive events would be associated with higher levels of extraversion, openness to experience, conscientiousness, and agreeableness and lower levels of neuroticism, whereas cumulative negative events would be associated with each personality factor in the opposite way. Finally, we expected that the effects of cumulative life events on successful aging would be through personality.

Methods

Participants

The participants for this study were drawn from Phase 3 of the Georgia Centenarian Study (GCS), which is a population-based study conducted in 44 counties in northern Georgia (Poon et al., 1992). Phase 3 of the GCS examined a wide range of biomedical and psychosocial aspects of community-dwelling, as well as skilled nursing home residents.

The current study consisted of 208 octogenarians and centenarians whose Mini Mental Status Exam scores were 17 or above. As expected, the majority of the participants were female (73.6%), and 83.2% of the participants classified themselves as White/Caucasian. In terms of education, 68% had a high school education or a college degree. Most participants (70.2%) resided in their private home or apartment.

Table 1 displays descriptive statistics of the participants and study variables.
Measures

**Cumulative life events.** Distal life events included 23 significant life events, such as death of parents, death of spouse, marriage, divorce, birth of children, having financial problems, or experiencing changes in health. The list of these events was based on the PERI Life Events Scales (Dohrenwend, Asknasy, Kranasnoff, & Dohrenwend, 1978) and the Geriatric Readjustment Rating Scale (Amster & Krauss, 1974). In case these life events had occurred, participants were asked to indicate whether the influence of each life event was positive or negative (-1 = *negative influence*, 0 = *no influence*, and 1 = *positive influence*). The summary scores were calculated to indicate the total number of life-time positive events such that higher scores indicated greater numbers of cumulative positive life events. Items coded as -1 (i.e., negative influence) were reverse-coded and summed together such that higher scores indicated greater numbers of cumulative negative life events.

**Personality traits.** Centenarians’ personality traits were measured with selected factors and facets from the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). There are five personality factors, or domains, in the NEO-PI-R, and each factor is subdivided into six facets: extraversion – warmth, gregariousness, assertiveness, activity, excitement, and positive emotions; openness to experience – fantasy, aesthetics, feelings, actions, ideas, and values; neuroticism – anxiety, hostility, depression, self-consciousness, impulsiveness, and vulnerability; conscientiousness – competence, order, dutifulness, achievement striving, self-discipline, and deliberation; and agreeableness – trust, straightforwardness, altruism, compliance, modesty, and tender mindedness. Instead of having centenarians respond to 240 items of the NEO-PI-R, the GCS used the NEO Five Factor Inventory (NEO-FFI) to assess participants’ extraversion and neuroticism and selected three facets that represent openness to experience (i.e.,
ideas), conscientiousness (i.e., competence), and agreeableness (i.e., trust) (-1 = disagree, 0 = in-between, and 1 = agree). Items were summed together such that higher scores indicated higher scores on each personality domain. Cronbach’s alphas obtained in this study were .61 for extraversion, .75 for ideas, .83 for neuroticism, .65 for competence, and .61 for trust.

**Objective successful aging.** Rowe and Kahn’s (1987, 1997, 1998) components of successful aging were considered to be objective, as they represent relatively objective measures that can be evaluated by a third person; furthermore, these objective measures quantify participants’ ability level. In this study, objective successful aging consists of cognitive functioning, physical functioning, physical problems, and social engagement. The Mini-Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975) was used to assess several dimensions of cognition with 11 sets of questions: orientation to time and place (10 points), registration (3 points), attention and calculation (5 points), recall (3 points), language (8 points), and visual construction (1 point). Participants’ scores were summed together such that higher scores reflected higher levels of cognitive functioning. Cronbach’s alpha obtained in this study was .79.

Participants’ instrumental activities of daily living (IADL) and physical activities of daily living (PADL) were assessed with 14 items (Fillenbaum, 1988). Participants’ abilities to use the telephone, get to places out of walking distance, go shopping, prepare a meal, do housework, take medicine, handle money, eat, dress and undress, take care of appearance, walk, get in and out of bed, take a bath or shower, and get to the bathroom on time were rated on a 3-point scale (0 = completely unable to do, 1 = with some help, and 2 = no problem). The current study created three item parcels using these 14 items based on their magnitude of factor loadings. The 14 items
were rank-ordered and assigned to one of the three groups and summed together. Cronbach’s alpha of 14 items was .87 in this study.

Participants’ current health problems were measured with 20 items by asking participants if they had the following problems at the present time: visual problems, hearing problems, chest discomfort at rest, shortness of breath or wheezing, arthritis, swelling of feet, weakness, dizziness, unsteadiness, fear of falling, numbness, poor sleep, urinary incontinence, bowel incontinence, constipation, headache, poor posture, poor taste, poor smell, and pain (0 = No and 1 = Yes). Items were summed together such that higher scores reflected more current physical problems. Participants were also asked to indicate their current disease as well (0 = No and 1 = Yes), such as congestive heart failure, high blood pressure, peripheral vascular disease, or anemia. Items were summed together such that higher scores reflected current diseases.

Participants’ active engagement with life was measured by eight dichotomized cognitive engagement tasks (Hultsch, Hertzog, Small, & Dixon, 1999). Activities included learning a foreign language, going back to school for more education, doing volunteer work for an organization, traveling within the country, traveling to a foreign country, preparing taxes, giving a public talk or lecture, and balancing checkbook. Participants were coded 1 if they participated in the activity, or 0 otherwise. The items were summed together such that higher scores reflected higher levels of social engagement.

**Subjective successful aging.** Participants’ subjective perception of successful aging was assessed in three dimensions: self-rated health, perceived life satisfaction, and self-rated mental or emotional health. Self-rated health was measured by a single item on a 4-point scale: “How would you rate your overall health at the present time?” (0 = poor, 1 = fair, 2 = good, and 3 = excellent). Higher scores reflected higher levels of self-rated physical health.
Self-rated life satisfaction was measured with a single item on a 3-point scale: “How would you describe your satisfaction with life in general at present time?” (0 = poor, 1 = fair, and 2 = good). Higher scores indicated higher levels of perceived life satisfaction.

Finally, self-rated mental health was measured by a single item on a 4-point scale: “How would you rate your overall mental or emotional health at the present time?” (0 = poor, 1 = fair, 2 = good, and 3 = excellent). Higher scores reflected higher levels of self-rated mental or emotional health.

Covariates. The current study included three demographic variables as covariates: age (in years), gender (0 = male and 1 = female), and race/ethnicity (1 = White/Caucasian and 2 = Black/African American).

Data Analyses

Confirmatory factor analysis (CFA) using Mplus was conducted to first assess the measurement model. Following the measurement model, both hypothesized and modified models were tested using the structural equation modeling (SEM) procedure. The indirect effects of personality on the relationship between cumulative life events and successful aging were tested 1000 times with the bootstrap method.

Model fit was evaluated using the $\chi^2$ values, comparative fit index (CFI), Tucker-Lewis Index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR), based on Hu and Bentler’s (1999) cutoff criteria. Hu and Bentler (1999) suggested a composite standard for appropriate fit, combining CFI and TLI of .95 or above with either RMSEA of .06 or below or SRMR of .10 or below.
**Missing Values**

Missing values were estimated in Mplus using full information maximum likelihood (FIML) in the CFA analysis and the SEM analysis, assuming that missing data were analyzed under the assumption of missing at random (MAR). Most variables used in this study had no missing data or less than 7% of missing data, except for two personality variables (i.e., competence and ideas; 18.80% and 21.20%) and the two indicators of physical health (i.e., current problems and current diseases; 18.80% and 18.80%).

**Results**

The bivariate correlations of study variables are summarized in Table 2. Cumulative positive life events were correlated with self-rated health \( r = .19, p < .01 \), self-rated life satisfaction \( r = .17, p < .05 \), self-rated mental health \( r = .14, p < .05 \), cognitive functioning \( r = .34, p < .01 \), three parcels of physical functioning \( r = .20, p < .01; r = .29, p < .01; r = .30, p < .01 \), current disease \( r = -.18, p < .05 \), and social engagement \( r = .18, p < .05 \). Significant correlations existed between cumulative negative life events and neuroticism \( r = .18, p < .05 \) and competence \( r = -.19, p < .05 \). Cumulative negative life events were also associated with successful aging outcomes; self-rated health \( r = -.19, p < .01 \), self-rated mental health \( r = -.18, p < .05 \), physical functioning \( r = -.14, p < .05 \) and current health problems \( r = .33, p < .01 \). All five personality traits or facets were associated with either or both objective and subjective successful aging outcomes.

Table 3 displays the standardized factor loadings of various items measuring three latent variables: physical functioning, physical problems, and subjective successful aging. The measurement model fit including all latent and manifest variables, as well as three control
variables (e.g., age, gender, and ethnicity) fit the data adequately, $\chi^2(77) = 125.77, p < .001$, CFI = .94, TLI = .87, RMSEA = .06, and SRMR = .04. All indicators of the latent variables significantly loaded on their prespecified latent factor and all item loadings were above .30.

Table 4 displays the regression models for all four successful aging outcomes investigated. The model fit was acceptable, $\chi^2(77) = 124.48, p < .001$, CFI = .95, TLI = .87, RMSEA = .05, and SRMR = .04. Cumulative positive life events were associated with higher levels of trust ($\beta = .18, p < .05$) and social engagement ($\beta = .16, p < .05$). Cumulative negative life events were positively associated with ideas ($\beta = .21, p < .01$) and cognitive functioning ($\beta = .24, p < .01$), and negatively associated with competence ($\beta = -.19, p < .05$) and subjective successful aging ($\beta = -.31, p < .001$). As expected, higher levels of neuroticism were associated with lower levels of subjective successful aging ($\beta = -.27, p < .01$), whereas higher levels of extraversion and ideas were associated with higher levels of subjective successful aging ($\beta = .25, p < .01; \beta = .22, p < .05$). Trust was positively associated with cognitive functioning ($\beta = .23, p < .001$), whereas extraversion was negatively associated with cognitive functioning ($\beta = -.24, p < .01$). Higher levels of competence were associated with lower levels of physical functioning ($\beta = -.19, p < .05$) and higher levels of ideas were associated with higher levels of social engagement ($\beta = .44, p < .001$). Subjective successful aging was also a significant predictor of cognitive functioning ($\beta = .36, p < .01$), physical functioning ($\beta = .63, p < .001$), and physical problems ($\beta = -.66, p < .05$).

This model explained 7% of the variance in neuroticism ($p < .05$), 7% of the variance in extraversion ($p = .06$), 11% of the variance in ideas ($p < .05$), 7% of the variance in competence ($p = .07$), 10% of the variance in trust ($p = .05$), 46% of the variance in cognitive functioning ($p < .001$), 61% of the variance in physical functioning ($p < .001$), 82% of the variance in physical
problems \( (p < .01) \), 26\% of the variance in social engagement \( (p < .001) \), and 49\% of the variance in subjective successful aging \( (p < .001) \). The overall model is depicted in Figure 1.

**Indirect effects.** Mediational analyses using the bootstrap methods were conducted. Results indicated that the ideas facet mediated the relationship between cumulative negative life events and social engagement \( \beta_{\text{CNLE}} \beta_1 = .09, p < .05 \) \( (B = .06, p < .05) \), 95\% confidence interval \( (\text{CI}: .03, .11) \). Cumulative negative life events positively influenced ideas, which in turn was positively associated with social engagement.

**Discussion**

The purpose of the present study was to examine the association among distal influences, proximal resources, and developmental outcomes. More specifically, the present study attempted to determine whether cumulative life events and personality predicted objective and subjective successful aging in very late life, and whether personality serves as a mediator between cumulative life events and successful aging. Previous studies have demonstrated the significance of perceiving successful aging as a lifelong developmental process and considering distal social factors that might influence older adults’ functioning to improve Rowe and Kahn’s model of successful aging (Martin & Martin, 2002; Stowe & Cooney, 2014). Using the developmental adaptation model, the present study aimed to explore the pathway to successful aging across the life span.

Several significant findings emerged from our analyses. Our first research question focused on whether cumulative life events and personality are directly associated with objective and subjective successful aging. We first found that cumulative negative life events were negatively associated with subjective successful aging. Considering Martin and colleagues’
(2011) finding that cumulative negative life events increase older adults’ negative affect, our finding seems to agree with previous research. This result is also consistent with Grob’s (1995) finding that negative life events reduce subjective well-being and the effects become stronger when individuals are faced with multiple events. Several life events were recalled negatively by all participants who experienced and remembered them: loss of children, loss of grandchildren, and worsening relationship. Of 208 participants, 59 participants reported that they had lost a child, 14 of them reported that they had also lost a grandchildren, and seven of them reported that they had experienced worsening relationship. If a single negative life event would affect individuals’ subjective well-being, it is plausible that cumulative negative life events would significantly decrease older adults’ likelihood of aging successfully.

In terms of objective successful aging, cumulative positive life events were positively associated with social engagement. The more life events older adults positively recalled, the more likely they perceived themselves as capable of successfully completing certain tasks, and therefore they may have been more involved in social activities. Cumulative negative life events were positively associated with cognitive functioning and this positive relationship between negative life events and cognitive functioning has been investigated in other studies as well (e.g., Comijs, van den Kommer, Minnaar, Penninx, & Deeg, 2011; Lee et al., 2018). In some situations, negative life events may be associated with more cognitive processing because stressful events may sometimes challenge individuals to modify their lifestyle that has been adapted to cope with their current conditions and such change may stimulate their cognitive development. That is, the more negative life events individuals experience, the higher the likelihood that they would have more opportunities to use their cognitive skills or resources to
understand and cope with difficulties, and then to retrieve what they have learned for later application.

Our second research question dealt with the relationship between cumulative life events and personality. Our results suggest that cumulative positive life events were positively associated with trust, whereas cumulative negative life events were positively associated with ideas and negatively associated with competence. These results are consistent with Hensley and colleagues’ (2012) findings. Having experienced many positive life events may help older adults interpret the world in a more positive and accepting way, which leads them to trust others, and become more altruistic and cooperative. Cumulative negative life events, on the other hand, may not be helpful for older adults in reframing or reappraising their negative experiences.

Competence, a facet from conscientiousness, indicates that individuals have the knowledge and skills needed to perform and achieve a certain task. The repetitive experience of negative events may discourage individuals from perceiving themselves as still effective and capable (Ryan & Brown, 2003). Last, the positive association between cumulative negative life events and the ideas facet was unexpected but considering the positive relationship between cumulative negative life events and cognitive functioning found in this study, we can assume that these events acted as triggers for learning and acquisition of new knowledge. The ideas facet is a significant marker of intellect (DeYoung, Quilty, & Peterson, 2007) and concerned with intellectual curiosity and interest.

What is notable is that personality may also influence the positivity of life events. Previous studies have shown that neuroticism predicted negative life events, whereas extraversion and openness predicted positive life events (Gomez et al., 2009). Neurotic individuals, for example, are more likely to lead their lives in a way that contributes to their
higher rates of anxiety and stress because not only are they sensitive to their failures, but they also tend to report a large discrepancy between their actual and ideal self (Watson & Watts, 2001). Therefore, individuals high in neuroticism may have a greater tendency to recall negative life events, even if such events are typically considered positive. Extraverted and open individuals, on the other hand, may remember more positive events than negative ones because they are more likely to use healthy coping mechanisms to respond to stressors.

Regarding the role of personality in predicting successful aging, our results indicated that higher levels of extraversion and ideas were associated with higher levels of subjective successful aging, whereas higher levels of neuroticism were associated with lower levels of subjective successful aging. In addition, several personality traits or facets were associated with objective successful aging. The ideas facet was positively associated with social engagement and the trust facet was positively associated with cognitive functioning. These findings coincide with prior evidence linking personality to subjective well-being or successful aging (e.g., Baek et al., 2016; Keyes, Shmotkin, & Ryff, 2002). Higher levels of extraversion, openness to experience, conscientiousness, and agreeableness have been considered protective or resilient factors that would enhance individuals’ capability for making improvements in their lives. Extraversion, which involves positive emotion and social behaviors (McCrae & Costa, 1999) would help older adults perceive their everyday life as comfortable, actively engaged in social activities that may maintain their physical functioning and avoid unhealthy behaviors (Jaconelli, Stephan, Canada, & Chapman, 2013). Individuals high in the ideas facet or openness to experience are known to be open-minded, thus they may assess their health status and life more favorably and continuously interact with others to seek opportunities to experience new things. It also makes intuitive sense that individuals who perceive themselves as well-prepared and organized when dealing with life
difficulties may report higher levels of subjective successful aging. The trust facet, which reflects a disposition to believe that other people are well-intentioned and to avoid conflicts, may encourage individuals to establish social groups providing strong support to reduce stress that would interfere with cognitive development (Williams, Suchy, & Kraybill, 2010). The negative association between neuroticism and subjective successful aging was expected. Compared to others, individuals high in neuroticism may evaluate their health status and life satisfaction less favorably because they in general display anxiety and negative affect and are easily affected by their current mood state.

Two unexpected results were found in this study. First, a negative association between extraversion and cognitive functioning was found. In fact, higher levels of extraversion were found to be associated with having more stress (Swickert, Rosentreter, Hittner, & Mushrush, 2002), which would impede cognitive performance. Chapman and colleagues (2012) also posited that what stimulates highly extraverted individuals for their maintenance of “physiological arousal” (p. 617) reduces cognitive performance.

In addition, we found that the competence facet was negatively associated with physical functioning. The link between conscientiousness and positive health-related behaviors has been strong (Bogg & Roberts, 2004), but it may be necessary to determine the levels of conscientiousness or competence that positively affect physical functioning. High levels of competence may not be always beneficial, especially when it is maladapted (e.g., compulsivity).

It is noteworthy that higher levels of subjective successful aging were associated with higher levels of cognitive functioning and physical functioning, as well as fewer physical health problems. As Cho and colleagues (2015) discovered a significant relationship between physical health impairment and subjective well-being, and between cognitive functioning and subjective
well-being, we also tested the reverse causal model to determine whether objective successful aging predicts subjective successful aging, but no significant path was found in our model. Pruchno and colleagues (2010) emphasized the significance of assessing subjective success because it may identify a broader range of processes in achieving successful aging. In fact, the objectivity of successful aging in our study can be vague, as some of the domains were measured by participants’ self-evaluation. However, our results may still reflect that it is individuals’ subjective perception and judgement that determine whether they are also objectively successfully aging. When older adults evaluate their own health and overall life in a positive light, they can still be considered successfully aged, regardless of their actual objectively measured aging processes. Such interpretation is in line with one of Erikson’s (1959) stages of psychosocial development, ego integrity versus despair. In this stage, accepting one’s life as it had to be is a critical task and this task can be achieved through life review, which allows individuals to reminisce unresolved problems as well as pleasant memories. The accumulated effects of negatively recalled life events, as well as the perception of successful aging may highly depend on what meanings individuals ascribe to their lives. The use of structured life review as a therapeutic or educational intervention may ultimately promote both objective and subjective successful aging.

Finally, our last research question focused on the role of personality as a mediator on the relationship between cumulative life events and successful aging. We found that cumulative negative life events were associated with higher levels of ideas, which in turn contributed to higher levels of social engagement. As Martin and Martin (2002) suggested, personality serves as an important resource for dealing with negative distal influences in our study, and this result is consistent with previous studies (Bishop & Martin, 2007; Hensley et al., 2012), assessing the
mediating effects of proximal resources (i.e., competence and neuroticism) on successful aging outcomes.

Several features of the present study limit full interpretation of its results and suggest directions for future studies. First, although the present study took a developmental approach and considers distal experiences and current adaptational resources in attempting to view successful aging a lifelong process, the present study’s cross-sectional design does not permit causal inferences. Future studies using longitudinal data and considering third variables are needed to better understand the extent to which cumulative life events and personality cause successful aging. With the current methodology, we cannot conclude whether there are long-lasting effects of cumulative life events on older adults’ successful aging process. Moreover, the positivity of life events fully relies on participants’ retrospective self-reports, which can be biased. Using retrospective responses makes it difficult to verify whether participants had experienced certain life events (Lee et al., 2018). Future studies also need to consider that the positivity of past life events can be significantly affected by participants’ personality.

Another factor that may have affected the results of the study is the participants’ levels of cognitive functioning, which were measured with MMSE scores. Although the present study included participants whose MMSE scores were 17 or above, relatively low MMSE scores may indicate mild cognitive impairment of some participants and they may not accurately report life events or comprehend questions related to successful aging. The fact that low scoring individuals were excluded in the study also may have biased the results with regard to successful aging because it could overestimate successful aging. In addition, the unique characteristics of octogenarians and centenarians may have influenced their assessment of successful aging. Reaching the very end of life, participants may have lower expectations for their physical health
compared to younger adults, and thus assess their current health more favorably than the actual status. Social comparisons, which refers to how individuals perceive themselves by comparing themselves with others (Bauer, Wrosch, & Jobin, 2008), may also play an important role in the evaluation of their current status. If octogenarians and centenarians believed that their abilities or attributes are better than those in other groups (i.e., downward social comparisons), they could have interpreted their lives more positively.

Third, assessing the positivity of multiple events is still meaningful in understanding the process of successful aging, but additional studies selecting a specific life event and investigating its positivity effects would allow researchers to retrieve more information about the association between life events and successful aging. Specific life events that are typically considered a negative experience, death of a father, for example, may be reinterpreted differently as people age. Fourth, the present study collects participants’ personality information from two personality traits and three facets. The use of one facet yielded plausible results, however, other facets of openness to experience, conscientiousness, and agreeableness may have different effects on successful aging. In order to obtain more distinctive results, future studies should assess all five personality traits, additional facets, or the combined configuration of the Big Five personality traits. The moderating effects of personality can also be addressed in future studies, meaning that the effects of cumulative positive and negative life events on both objective and subjective successful aging may differ across individuals and influenced by one’s personality. For example, it can be hypothesized that emotionally stable older adults would be protected from negative effects of cumulative negative life events on physical functioning. Finally, additional studies with more indicators of subjective successful aging would strengthen our understanding of the subjective criteria of successful aging (Pruchno et al., 2010).
Despite these limitations, the present study builds on previous theoretical and empirical work by proposing a developmental pathway to successful aging, based on the developmental adaptation model. Distal and proximal influences were significant predictors of developmental outcomes and in the ideas model, the proximal resource served as a mediator between distal influences and developmental outcomes. There must be continuous life-span approaches that integrate the effects of distal and proximal influences to better conceptualize successful aging. The positive effects of cumulative negative life events on the ideas facet found in the present study are especially intriguing because such results may indicate older adults’ capacity for controlling their emotions. It is actually known that emotional stability increases with age (Scheibe & Carstensen, 2010). As the significance of the subjective meaning of successful aging has been emphasized, future studies should continue to enrich the existing model of successful aging by adding factors that have not been highlighted.

References


Table 1
Summary of Descriptive Statistics

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<th>n (%)</th>
<th>M</th>
<th>SD</th>
<th>Min - Max</th>
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Note. CPLE = Cumulative positive life events; CNLE = Cumulative negative life events
*p < .05. **p < .01.
Table 3
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Covariates

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Note. CPLE = Cumulative positive life events; CNLE = Cumulative negative life events; SSA = Subjective successful aging. *\( p < .05 \). **\( p < .01 \). ***\( p < .001 \).
Figure 1
Distal Influences and Proximal Resources on Developmental Outcomes

[Distal Influences] [Proximal Resources] [Developmental Outcomes]

Cumulative Positive Life Events
Cumulative Negative Life Events

Neuroticism
Extraversion
Trust
Ideas
Competence

Subjective Successful Aging

Cognitive Functioning
Physical Functioning
Physical Problems
Social Engagement

Note. This figure shows significant paths only. The curved lines indicate correlations.
CHAPTER 6. GENERAL DISCUSSIONS AND CONCLUSIONS

Over the past 30 years, Rowe and Kahn’s (1987, 1997, 1998) model of successful aging (i.e., low probability of disease and disability, maintenance of high physical and cognitive function, and active engagement with life) has remained most influential and been widely studied in the field of aging. Many researchers have questioned the pathway to this success, and thus, there have been many efforts to identify predictors of successful aging, including genetic and environmental factors. Martin, Long and Poon (2002) suggested that personality is a construct that represents the strength of older adults and Eaton and colleagues (2012) also expected “individual difference in personality” (p.481) to propose a more integrative framework and explain the causality of successful aging. Therefore, this dissertation aimed to examine the role of personality in achieving successful aging, using the Georgia Centenarian Study data and the Midlife in the United States study data.

In Study 1, we tested the existence of Digman’s (1997) two higher-order factors of the Big Five personality traits through factor analysis. The findings we observed indicate that higher levels of the Alpha factor (i.e., correlations among emotional stability, conscientiousness, and agreeableness) and the Beta factor (i.e., correlations between extraversion and openness to experience) are associated with the components of successful aging. Although McCrae and colleagues (2008) argued that two higher-order factors were a methodological artifact, Digman (1997) suggested a reappraisal of the correlations among the Big Five.

The use of Alpha and Beta factors in predicting successful aging is novel and our findings provide further evidence that personality serves as a guide to our behaviors, thus making it possible to reach a more profound understanding of specific behaviors of those
successfully aged. Throughout this dissertation, we took several different approaches in measuring personality and we suggest future studies consider these alternatives. One may question the employment of the alpha and beta factors as an alternative to measure personality dimensions. What Digman (1997) emphasized is that two higher-order factors of the Big Five do not “invalidate the Big Five distinct sources of trait variation” (Blackburn, Renwick, Donnelly, & Logan, 2004, p. 967). The Big Five model makes it possible to organize individual differences into “conceptually coherent domains” (Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009, p. 352), thus it would be useful to create clear descriptions of each domain being modeled. However, as previously mentioned, a single personality trait of the Big Five may convey limited information about human behaviors. Moreover, the Alpha and Beta factors offer a broader framework that describes fundamental motives (i.e., socialization and personal growth) of human behaviors and links those motives to personality theories. Neither model, the Big Five model or the Alpha and Beta model are superior approaches, however, the Big Five model would be useful in describing distinctive patterns of specific behaviors of individuals, whereas the Alpha and Beta factors would be more appropriate when addressing the combinations of personality traits that may provide more fruitful information about individual differences.

Along with Digman’s (1997) two higher-order factors, personality profiles discovered by da Rosa (2012), which classified older adults into two groups (i.e., resilient group and non-resilient group), are a good example in this regard because her findings demonstrated that the combination of personality traits provides a broader view that accounts for a complex set of specific behaviors. It is necessary for future studies to explore other possible personality structures and investigate what benefits they can bring.
There are several limitations of Study 1 that need to be considered. Rather than obtaining two factors, Alpha and Beta, through the confirmatory factor analysis, we used the summary scores of assigned personality traits and combined them according to Digman’s (1997) proposal. We did compare the two-factor model to the one-factor model (Musek, 2007), because the initial purpose of Study 1 was to test the model that has been already proposed in the literature. Future studies confirming and methodologically supporting the two higher-order factors of the Big Five are needed. Second, future studies should compare different age groups of older and oldest-old adults to gain a better understanding of the meaning of successful aging. For oldest-old adults, maintaining high levels of physical functioning may not be as important as for younger adults.

Study 2 attempted to overcome another limitation of Study 1, the cross-sectional design. The primary purpose of Study 2 was to investigate personality change in middle and late adulthood and how personality level and change are associated with successful aging. Consistent with the findings of Study 1, higher initial levels of extraversion, openness to experience, conscientiousness, and agreeableness acted as resilient factors, whereas higher levels of neuroticism were not beneficial. We detected a slight decrease in each personality trait, and decreases in extraversion, openness to experience, conscientiousness, and agreeableness were negatively associated with successful aging, whereas decreases in neuroticism were positively associated with successful aging. Personality is known to remain stable, especially after the age of 30 (Costa, Metter, and McCrae, 1994), but recent studies have found changes in personality across the life span, including midlife and very old age (Allemand, Gomez, & Jackson, 2010; Berg & Johansson, 2014). The findings of Study 2 challenge researchers and practitioners to design future studies and develop programs that
would, to some extent, maintain or increase levels of extraversion, emotional stability, openness to experience, conscientiousness, and agreeableness to help older adults age successfully. To do so, future studies may continue to explore what causes personality change after the age of 30. Hutteman and colleagues (2014) described age-specific developmental tasks that may lead to continuous personality development in middle and late adulthood (e.g., maintaining a marriage, having children, physical decline, retirement, or loss of spouse) and suggested that how individuals cope with these tasks may reflect individual differences in personality development. The participants of Study 2 are limited to those who are 65 years and older at Time 3; We, therefore, encourage future studies to expand our results to a larger population for a longer-term personality trait development. For example, extraversion was found to decrease over time in individuals who aged between 80 and 94 (Berg & Johansson, 2014). Related to this, it is essential to consider cohort effects in explaining individual differences in personality change. The participants of Study 2 were limited to those who were 65 years and older at T3, and the patterns of personality change obtained in this study may be unique to this specific cohort. Cohort effects may also be apparent in Study 1 and Study 3, which focused on octogenarians and centenarians who had undergone unique life experiences.

Study 3 extended the findings and addressed the limitation of both Study 1 and Study 2. The importance of applying a life span developmental perspective in the study of successful aging has been repeatedly demonstrated in previous studies, thus we attempted to examine the pathway to successful aging applying Martin and Martin’s (2002) developmental adaptation model. Although we used the cross-sectional data for the analysis, we discovered that cumulative positive and negative life events along with personality are
associated with subjective and objective successful aging and that the ideas facet served as a mediator between cumulative negative life events and social engagement. It is typical to assume that cumulative negative life events would negatively affect successful aging, like most of our findings. However, it should be noted that in this study, greater numbers of cumulative negative life events were associated with higher levels of cognitive functioning. Having experienced many negative events may not be necessarily related to cognitive decline because with age, individuals tend to prioritize emotion regulation (Scheibe & Carstensen, 2010), which may be beneficial for intact cognitive functioning. For oldest-old adults who are now capable of regulating their emotions and maximizing positive affect, the impact of recalling negative events may not be strong enough to affect their cognitive functioning negatively. Or such experience could have allowed our participants to gain cognitive skills necessary to survive. However, considering our findings about the negative association between cumulative negative life events and subjective successful aging, future studies must include other factors that better explain the association between cumulative negative life events and cognitive functioning.

Older adults’ ability of gaining skills from stressors (i.e., cumulative negative life events) can be related to resilience, which is defined as one’s ability to bounce back from threats or adversity and enhance individual adaptation (Martin, MacDonald, Margrett, & Poon, 2010). As our results indicated, certain personality traits may be helpful for generating positive emotions and accepting changing situations more easily, but promoting physical, psychological, and social resilience in older adults through various activities should also be encouraged to help them age successfully. Jeste and colleagues (2014) found that greater resilience is a significant predictor of self-rated successful aging. It is necessary for older
adults to engage in cognitive reframing exercises or life review, for example, that tap into the resilience process facilitating successful aging.

Not only did we address the value of examining successful aging within a life-span developmental approach, we also attempted to build on Pruchno and colleagues’ (2010) conceptualization of successful aging, which involves both objective and subjective components. In our study, subjective successful aging was measured with self-rated health, self-rated mental health, and perceived life satisfaction, and subjective successful aging was a significant predictor of objective successful aging. This result may imply that successful aging is determined by how individuals perceive their current life status. Optimal aging, which allows individuals to choose what to optimize and promote for their better later life (Baltes, 1996), may be relevant here. Maintaining good physical health and cognitive functioning is desirable, yet if individuals are unable to maximize various facets of their lives for their own satisfaction, it would be difficult to determine that they are aging successfully. Future studies should continue to identify additional criteria of subjective successful aging (e.g., spirituality) or optimal aging through quantitative and qualitative studies. Another suggestion in terms of development of the successful aging model is to test the association among the components of successful aging and evaluate whether they must be considered outcomes, or whether they can also serve as predictors of successful aging. According to the developmental adaptation model, social support or social network are described as proximal resources that link distal influences to developmental outcomes. Testing the mediating effects of social engagement, for example, on the relationship between cumulative life events and successful aging would answer the question of whether Rowe and Kahn’s components of
successful aging can be seen as outcome variables or as part of a larger process model with predictors, mediators and outcomes.

Three interrelated studies in this dissertation contribute to the existing literature by accentuating the importance of examining the role of personality and considering distal and proximal influences in understanding developmental trajectories of successful aging. Our approach to predicting successful aging is unique because we suggested an alternative measure of the Big Five, discovered personality change in middle and late adulthood, and proposed a more integrative model that encompasses past life events, current personality, and subjective and objective components of successful aging. Taken as a whole, we hope that our study will spark continued interest in the role of personality in achieving successful aging and provide evidence that there is no one ideal way to age successfully.

References


APPENDIX: IRB APPROVAL FORM

Date: August 28, 2017

To: Yousun Baek
7997 Wade Blvd #325
Frisco, TX 75034

Dr. Peter Martin
222 Osborn Drive
Ames, IA 50011

From: David Burnett

Project Title: The Role of Personality in Successful Aging

Based on the email correspondence with our office about the project noted above, we have determined that the project:

_____ Does not meet the definition of research according to federal regulations.

XXXX Is research that does not involve human subjects according to federal regulations.

You have expressed that this project is using a publically available dataset. Accordingly, existing data that is not both private and identifiable does not need IRB approval. You may proceed at any time.

If you modify the project, we recommend communicating with the IRB staff to ensure that the modifications do not change this determination such that IRB approval is required.
INSTITUTIONAL REVIEW BOARD (IRB)
Amendment for Personnel Changes

Title of Project: Resources and Adaptation in Centenarians

Principal Investigator (PI): Peter Martin  
University ID: 680957702485262610  
Phone: 4-5186  
Email Address: pxmartin@lastate.edu

For Student Projects [Required when the principal investigator is a student]:
Name of Major Professor/Supervising Faculty: 
University ID:  
Phone:  
Email Address: @lastate.edu

Changes in Key Personnel:
Key personnel includes any individuals who will have contact with the participants or the participants’ data (e.g., interviewers, transcribers, coders, etc.). This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project. For more information, please see Human Subjects - Persons Required to Obtain IRB Training. Personnel who will have contact with human blood, specimens, or other biohazardous materials must also complete Bloodborne Pathogens Training. If the principal investigator has or will change, a complete new IRB application is required.

1. List any individuals to be removed from the study staff:

2. Complete the following table to list any new key personnel:

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<th>Involved in the consent process?</th>
<th>Contact with human blood, specimens, or other biohazardous material?</th>
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Office for Responsible Research
Revised: 8/15/13