The influence of health and psychosocial resources on retirement adjustment

by

Kyuho Lee

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Program of Study Committee:
Peter Martin, Major Professor
Jennifer Margrett
Frederick O. Lorenz
Clinton G. Gudmunson
Thomas J. Schofield

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Soli Deo gloria
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ABSTRACT

Although the researchers suggest that retirees’ physical health, finances, and social support are important resources for adjustment in retirement, little attention has been paid to their impacts on retirement adjustment in post-retirement. This study investigates the influence of initial status of and change in these resources on early retirement adjustment based on the resource-based dynamic model (Wang, Henkens, & van Solinge, 2011). Data of retirees from the Health and Retirement Study were analyzed with latent growth curve models and a cross-lagged model. Retirement adjustment was measured by depressive symptoms and a question asking about retirement satisfaction. The effects of retirees’ personality traits, marital status, and job satisfaction while employed were included to account for retirees’ individual differences in each resource. Retirees with better physical health, more financial resources, and higher levels of social support from their spouse reported fewer depressive symptoms and higher levels of retirement satisfaction. Changes in resources also predicted changes in post-retirement adjustment. Conscientiousness, extraversion, being married, and higher satisfaction with job while employed were related to better adjustment, whereas openness, agreeableness, and neuroticism predicted worse adjustment. Personality traits and job satisfaction were associated differently with social support according to who provided the support. The findings that retirees’ resources change after retirement and influence retirement adjustment show the importance of maintaining these resources after retirement.
CHAPTER 1. INTRODUCTION

As people live longer and retire early, life as a retiree is becoming increasingly important. Older adults in the United States are expected to live about 20% of their life as retirees considering the fact that the average retirement age was 62 years old in 2013 (Munnell, 2015) and life expectancy was 78.4 years old (U.S. Census Bureau, 2012). Based on how well people adjust to retirement, they experience either positive or negative change in physical and mental health as well as in their social relationships. For example, some retirees experience better physical health due to the cessation of work-related stress and an increase in leisure activities (Mojon-Azzi, Sousa-Poza, & Widmer, 2007), whereas others experience negative retirement outcomes such as increased drinking, smoking, and the risk of depression (Henkens, Solinge, & Gallo, 2008; Perreira & Sloan, 2001; Szinovacz & Davey, 2004).

The influence of life events on developmental outcomes varies according to the levels of resources individuals possess. Martin and Martin (2002) suggested that individual, social and economic resources play important roles in the relationship between life events and developmental outcomes. Specific to retirement, Wang, Henkens, and van Solinge (2011) emphasized the importance of retirees’ resources for retirement adjustment. They proposed that retirees’ physical, cognitive, motivational, financial, social, and emotional resources influence retirement adjustment through individual resources. Wang et al. noted that as the amount or level of retirees’ resources changes over time, retirement adjustment also changes accordingly.

The purpose of the present study was to test the influence of initial levels and changes in retirement resources on retirement adjustment. Physical health, financial resources, and social support can be considered important determinants of whether an individual adjusts
well after retirement. Individual differences and environmental factors which may impact
retirees’ resources included the following: personality, marital status, and job satisfaction.
Previous studies on retirement adjustment have mostly focused on the transition from
employment to retirement, so this study focused on the early years in the post-retirement
period. This study provides information to current and future retirees about how to adjust
well after retirement with available resources. Family members of retirees and educators of
retirement programs can also gain knowledge about how they can help a retired individual
adjust in retirement.
CHAPTER 2. LITERATURE REVIEW

Retirement brings people more time for leisure, family, and friends free from the stress from work. Psychological benefits such as life satisfaction, improvement in mental health (Calasanti, 1996; Mein, Martikainen, Hemingway, Stansfeld, & Marmot, 2003), increase in morale for men (Kim & Moen, 2002), and reduction in mental fatigue as well as depressive symptoms (Westerlund et al., 2010) were reported as the positive effects of retirement. Association of retirement with enhanced physical health was also reported, and retirees who worked in a poor environment and were in poor health experienced a steeper increase in health (Bound & Waidmann, 2007; Westerlund et al., 2009). However, not all retirees seem to enjoy the physical and psychological benefits of retirement. Lack of adjustment to retirement sometimes brings negative outcomes to retirees. Decline in physical and mental health (Calvo, Sarkisian, & Tamborini, 2013; Dave, Rashad, & Spasojevic, 2006), lower levels of well-being and decline of satisfaction with relationships (Alpass et al., 2007; Richardson & Kilty, 1991) were reported as effects of retirement. It seems that the impact of retirement is not monotonous. Wang (2007) and Pinquart and Schindler (2007) suggested that multiple patterns of retirement adjustment coexist in retiree populations. Wang reported from the Health and Retirement Study that there were three groups of retirees according to the change of their psychological well-being: (1) maintaining, (2) recovering, and (3) U-shaped patterns.

What makes the difference in the outcome of retirement? Before we address retirement adjustment, it is important to define retirement and retirement adjustment. Denton and Spencer (2009) noted that the contemporary retirement is more complex than the definition from the Oxford English Dictionary: withdrawal from office or an official position.
or giving up one’s business or occupation. They reviewed the retirement literature and summarized the operationalization of retirement according to the following indicators: (1) nonparticipation in the labor force, (2) reduction in hours worked and/or earnings, (3) hours worked or earnings below a minimum cutoff, (4) receipt of retirement income, (5) leaving main employer, (6) change of career or employment later in life, (7) self-assessed retirement, and (8) a combination of the other seven indicators. The current study focuses on self-assessment of retirement as practiced in previous research (e.g., Bowlby, 2007; Schellenberg & Silver, 2004; Wang, 2007).

Retirement adjustment is operationalized in the literature both directly and indirectly. Direct adjustment measures include retirees’ evaluation of the difficulties they experience in adjusting to retirement and the amount of time adjustment took (van Solinge & Henkens, 2005, 2008). Indirect assessments include happiness (Beck, 1982; Dulin, Stephens, & Kostick, 2012), well-being (Burr, Santo, & Pushkar, 2011; Kubicek, Korunka, & Raymo, 2011), retirement satisfaction (Gall et al., 1997; Quick & Moen, 1998), life satisfaction (Calasanti, 1996; Pinquart and Schindler, 2007), attitude toward retirement (Reitzes & Mutran, 2004), physical health (Gall, Evans, & Howard, 1997) and mental health or depression (e.g., Midanik, Soghikian, Ransom, & Tekawa, 1995). In this study, retirement adjustment is operationalized as the change in psychological well-being measured by depressive symptoms and retirement satisfaction.

Predictors of Retirement Adjustment

Barbosa, Monteiro, and Murta (2016) conducted content analyses to summarize the predictors of retirement adjustment from previous studies published between 1995 and 2014. A total of 3,225 studies were identified, which shows how much attention has been paid to
this topic. Barbosa et al. (2016) classified the predictors into 26 categories and found the factors of better adjustment were: physical health, finances, psychological health and personality-related attributes, leisure, voluntary retirement, and social integration. Some of these related to the current study are listed below:

**Health.** There is a general agreement that physical health is positively associated with retirement adjustment. Barbosa et al. (2016) reported from their review of retirement adjustment that about 82% of the 94 studies showed a significant effect of physical health on retirement adjustment. Older adults who experience difficulty adjusting to retirement are more likely to experience a decrease in physical and mental health than those who are well-adjusted (Wang, 2007). Poorly adjusted retirees are also more likely to show unhealthy behaviors such as increased drinking (Perreira & Sloan, 2001) and smoking (Henkens, Solinge, & Gallo, 2008), which may influence health decline and premature mortality. In this study, health is measured by functional limitations, the number of chronic diseases, and self-rated subjective health.

**Finances.** Better financial status is a strong predictor of better retirement adjustment (Gall et al., 1997; Pinquart & Schindler, 2007; Rohwedder, 2006; van Solinge & Henkens, 2008). For example, Gall et al., in a study on 117 male retirees, reported retirees’ income significantly predicted retirement adjustment both in the short and long-term. In German studies, Pinquart and Schindler (2007) used a global socio-economic status measure integrating income in the year before retirement with education and social class to predict retirement adjustment patterns. van Solinge and Henkens (2008) measured income before and after retirement and found that higher income before retirement and a smaller decrease in income after retirement predicted higher retirement satisfaction. However, Wang (2007)
reported that financial decline after retirement did not significantly predict retirees’ adjustment pattern. Wang provided two explanations: first, retirees expect to experience financial changes and are perhaps more adaptive to these financial changes; second, retirees might have already accumulated enough financial resources for their retirement life. The HRS studies suggest that financial status after retirement, not the financial decline before and after retirement, is an important predictor of retirement satisfaction (Rohwedder; Wang).

However, previous studies have provided limited information about the changing association between income and retirement adjustment after retirement over time because they focused only on the income difference before and after retirement. It is still not clear whether the effect of household income on adjustment is stable over time within the post-retirement period. In addition, the effect of the change in retirees’ assets (i.e., measurements of wealth) on retirement adjustment is not well studied. Retirees’ perception of their financial resources also should be tested. Although the effects of income adequacy (Kim & Moen, 2002; Smith & Moen, 2004) and income compared with an expectation (Barrett & Kezmanovic, 2013) were evaluated, these studies focused only on income and not on assets. Perceived financial resources should be tested with a more inclusive measure. Furthermore, antecedents of retirees’ financial changes need to be added as suggested by Wang et al. (2011) to capture a more comprehensive relationship between retirees’ financial resources and retirement adjustment. In this study, we assessed the association between the change of financial resources and the change in retirement adjustment using assets, income, and subjective financial resources. We also investigated the influences of antecedents of retirement on retirement adjustment.
Social support. Research has found that more social support is associated with a high level of life satisfaction after retirement (Taylor & Doverspike, 2003; Wells & Kendig, 1999). Social support is important because retirement usually brings about changes in social interactions. There are two main sources of social support—presence or quality of valued relationship (e.g., spouse, family, and friends) (Levitt, Antonucci, Clark, Rotten, & Finley, 1985) and activities (e.g., leisure engagement, group affiliations, and bridge employment) (Kim & Moen, 2001, 2002; Taylor & Doverspike, 2003). Kubicek et al. (2011) found that both a better relationship (closeness to spouse and social contacts) and the amount of activities (social group involvement) predicted either better psychological functioning or mental health (less depression). Kim and Feldman (2000) also reported that volunteering and leisure activities predicted retirees’ higher life satisfaction. Olsen and Berry (2011) reported from their research with Australian participants that retired people had more frequent contacts with their family, friends, and neighbors as well as more activities related to their religious organization, community, and voluntary opportunities than employees. They noted that the positive influence of social support from friends and neighbors on mental health was stronger for retired older adults than the employed, which suggests that studies on social support should include the social influence coming from outside family as well.

Although the quality of social support is more important than quantity or availability (Pinquart & Sörensen, 2000; Porritt, 1979), many studies on the effect of social support used measures for quantity such as availabilities of support from (Platts, Webb, Zins, Goldberg, & Netuveli, 2015) and frequency of contact or activities with social support providers (Bossé, Aldwin, Levenson, Spiro, & Mroczek, 1993; Szinovacz & Davey, 2001). Because the quantity of social support could fail to detect the influence of social support on retirement
adjustment, quality of social support should also be measured in studies on the effect of
social support. Studies employing quality of social support have typically investigated the
relational closeness (Kubicek et al., 2011) and retirees’ emotional needs (Grove, Lavallee, &
Gorden, 1997; Price & Balaswamy, 2009).

Very few studies have noted the dynamic aspect of social relations. The fact that
social relationships and activities can change over time should be taken into account. There
are mixed findings on whether individuals experience change of social support received after
retirement. Some studies have suggested that retirees maintain their social support network
(Chappell & Havens, 1985) or even increase after retirement because they can spend more
time on the interaction with others (Palmore, Cleveland, Nowlin, Ramm, & Siegler, 1979).
Other studies, however, have reported that retirement results in the loss of the number of
supports because retirees lose former worker confidants, friends, and associates (Bossé et al.,
1993). For example, Bossé et al. reported from a longitudinal study that the quantity of older
adults’ social support measured by the frequency of contacts decreased after retirement.

**Personality.** Personality, one of the individual resources of retirees, is associated with
retirement adjustment. Robinson, Demetre, and Corney (2010) linked the Five-Factor model
of personality to the reason to retire and to retirement outcomes. They found that neuroticism
was related to negative perceptions of the circumstances leading to retirement, and
conscientiousness was related to aspirational reasons for retirement. Personality was also a
predictor of retirement adjustment. For example, Robinson et al. (2010) reported that
agreeableness, conscientiousness, and low neuroticism were predictors of life satisfaction and
positive experiences for those who had already retired. Especially, individuals high on
conscientiousness coped better with retirement than those who were less conscientious
(MacLean, 1983; Robinson et al., 2010). Just as people high on conscientiousness enjoyed work, they also reported that they enjoyed retirement (MacLean, 1983). Likewise, they were more likely to participate in volunteering (Mike, Jackson, & Oltmanns, 2014), which promotes good mental and physical health (Musick, Herzog, & House, 1999; Wang & Shi, 2013). Consequently, people high on conscientiousness reported having greater overall life satisfaction after retirement (Robinson et al., 2010). Although Robinson et al. (2010) found an association between retirees’ life satisfaction and personality, because of the limitation of cross-sectional studies, the causal effect of personality is not confirmed yet. Therefore, it is necessary to conduct longitudinal research.

**Marital status.** Researchers have also focused on family-related factors that influence retirement adjustment. As Atchley (1992) pointed out, marriage is the context in which both decisions and adjustment of retirement take place. Previous studies have provided evidence of the effect of retirees’ marital status (Pinquart & Schindler, 2007; Price & Joo, 2005). Additionally, marital quality (Szinovacz & Davey, 2004; Wang, 2007) and bereavement (van Solinge & Henkens, 2008) influence retirement adjustment supporting the notion that marital life is an important factor for retirement adjustment. A recent study conducted in the Netherlands (Damman, Henkens, & Kalmijn, 2015) found that divorced retirees without a partner are most likely to experience difficulties adjusting to the social changes accompanied with the loss of the work role. Divorced retirees missed their social contacts and status from work compared with married or never-married retirees.

However, other studies have shown that there were no direct effects of marital status on retirement adjustment. Kim and Feldman (2000) reported the results on life satisfaction of retirees who were retired professors who took advantage of an early retirement program.
They found retirees’ retirement satisfaction was not predicted by the participants’ marital status, but by their spouses’ working status. Having a working spouse predicted retirees’ lower retirement satisfaction. Austrom, Perkins, Damush, and Hendrie (2003), similar to Kim and Feldman’s (2000) study, reported that life satisfaction of the participants did not differ according to their marital status itself, but was significantly predicted by retirees’ improved marital relationship.

The mixed results of marital status may be explained by the context of retirement. There seems to be a temporal effect of marital status on retirement satisfaction. Reitzes and Mutran (2004) found in their longitudinal study that retirees’ positive attitude toward retirement was higher in married when compared to unmarried individuals two years after retirement. The same study also demonstrated gender differences. Among married couples, only women’s married status was associated with positive retirement attitudes. Likewise, the working status of the spouse was found to be a significant predictor of retirement adjustment; couples who retired within a relatively close time to each other reported greater retirement satisfaction compared to couples who retired with a large time gap (Moen, Kim, & Hofmeister, 2001; Smith & Moen, 2004).

**Job satisfaction.** Researchers have been investigating whether the characteristics of a job before retirement were associated with retirement adjustment. Inconclusive findings were reported. Schmitt, White, Coyle and Rauschenberger (1979) presented the result that a high degree of satisfaction with previous work was associated with the satisfaction with retired life, implying that individuals who have the tendency to enjoy current life keep the pattern both in employment and in retirement.
However, other studies reported that high pre-retirement job satisfaction predicted men’s poor psychological functioning. Kubicek, Korunka, Raymo, and Hoonakker (2011) interpreted this as a loss of resources; people who were satisfied with their job lost their resource of satisfaction. Similarly, low level of job satisfaction was associated with better adjustment. Higher work stress (Wang, 2007), high levels of job demand (Quick & Moen, 1998; Wang, 2007), a higher level of challenge (van Solinge & Henkens, 2008), and job dissatisfaction (Wang, 2007) all predicted better adjustment. It seems that as much as work can be a source of satisfaction, it also can be a source of stress.

Aforementioned sporadic findings of the predictors of retirement adjustment can be better understood in the context of theories of retirement. Therefore, we introduce several theories frequently used in retirement adjustment in the following section.

**Theories of Retirement Adjustment**

There are three theories that are most frequently used to explain retirement adjustment. First, the life course perspective (Elder & Johnson, 2003) suggests that individual life can be understood only in social and cultural context. van Solinge (2013) proposed five concepts from a life course perspective that are crucial to understanding retirement: contextual embeddedness which emphasizes the need to look at the specific circumstances under which the transition occurs; interdependence between life spheres such as work life and family life; timing of retirement in terms of personal expectation and cultural age norms; trajectories and pathways which underscore the personal history and development over time; and human agency during the retirement process which implies that individuals are not only influenced by the circumstances, but also can plan, make choices, and undertake actions. In the current study, specific circumstances where people experience
retirement such as their personality, job satisfaction before retirement, marital status, physical health, financial status, and social support given by spouse, family, and children are considered.

Second, continuity theory (Atchley, 1976) originated from the observation that a large proportion of older adults actually show stability in their activities and relationships and proposes that life events are not always defined as stressful and that individuals try to maintain a continuous lifestyle by adopting strategies that are connected to their past experiences (Maddox, 1968). Not only does continuity theory describe the ability of retirees to maintain their activities, but this theory also stresses the value of continuing the activities in retirement. The concept of “bridging” is often employed in this theory to explain the attempt to connect two different worlds—before and after retirement. In fact, research has found that bridge employment is effective in maintaining the well-being of retirees (Shultz & Wang, 2011; Wang, 2007). This theory is applied in the current study by including the bridging status of the retirees.

Lastly, Wang, Henkens, and van Solinge’s (2011) suggested a resource-based dynamic theory of retirement adjustment (Figure 1). They suggested that retirees’ retirement adjustment changes over time as retirement resources change. Individuals’ physical, cognitive, financial, emotional, motivational, and social resources are included as important resources. Furthermore, they added antecedents of retirement (e.g., individual, household, job, organization, and macro levels) in the model to explain intra-individual change and inter-individual differences in resources. Wang et al.’s theory, therefore, suggests that one’s retirement antecedents influence the resources which in turn influence retirement adjustment.
Although this resource approach provided a perspective with which researchers can systematically categorize the resources and assess the change of resources, empirical research has not evaluated this model. Therefore, the proposed study tests the resource-based dynamic model proposed by Wang et al. (2011) to assess the effect of retirees’ physical, social, and financial resources on their retirement adjustment. Not only the levels of but also the changes in resources for adjustment were taken into consideration. Figure 2 depicts the hypothesized model of the current study. Three research questions address the level and change of retirement adjustment over time as influenced by three types of resources (i.e., physical health, financial resources, and social support).

*Figure 1. Theoretical model (Wang, Henkens, & van Solinge, 2011).*
Study 1 tests the influence of physical health resources on retirees’ retirement adjustment after retirement. We hypothesize that better health status at the beginning of retirement as well as an increase (less decrease) of health predicts better and increase in retirement adjustment over time.

In Study 2, the influence of financial resources on retirement adjustment after retirement will be assessed. We hypothesize that more financial resources (assets, income, and subjective financial resources) and less decline over time predict better retirement adjustment over time.

Finally, Study 3 tests the influence of social resources (e.g., social support from spouse, children, and friends) on retirement adjustment. More supports individuals receive from the spouse, children, and friends before retirement were hypothesized to predicts better adjustment after retirement.

Note. *Resources include physical health, financial status, and social support.

Figure 2. Hypothesized model.
The following chapters will report on three studies addressing the effects of physical, financial, and social resources on retirement adjustment. IRB approval was obtained from the Iowa State Institutional Review Board in order to conduct this research study and can be found in the appendix.
References


Health and Retirement Study, RAND (Version O) public use dataset. (2015). Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009740). Ann Arbor, MI.


CHAPTER 3. THE EFFECTS OF PHYSICAL HEALTH, PERSONALITY, MARITAL STATUS, AND JOB SATISFACTION ON RETIREMENT ADJUSTMENT

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Kyuho Lee

Peter Martin

Jennifer Margrett

Human Development and Family Studies, Iowa State University

All the authors made substantial contributions to conception, design, analysis, and interpretation of the results. Address correspondence to Kyuho Lee, Human Development and Family Studies, Iowa State University, 0078 LeBaron Hall, Ames, Iowa 50011. E-mail: Kyuholee@iastate.edu.
Abstract

**Objectives.** With a focus on the period after retirement, this study aimed to assess the influence of physical health resources (functional health, fewer chronic diseases, and subjective health) and their change over time on retirement adjustment measured by depressive symptoms and retirement satisfaction.

**Methods.** This study included data of 500 new retirees from five waves (2004-2012) of the Health and Retirement Study. Multivariate growth curve modeling was employed.

**Results.** The results showed that participants’ initial health status and health changes predicted retirement adjustment. Self-reported subjective health status best predicted retirement adjustment. Retirees’ conscientiousness, extraversion, being married, and higher job satisfaction were associated with better adjustment, whereas openness, agreeableness, and neuroticism with poor adjustment.

**Discussion.** Findings of the results highlight the importance of maintaining good health in the post-retirement period is an important resource for retirement adjustment.

*Keywords:* retirement, depressive symptoms, social support, personality, job satisfaction
The Effects of Physical Health, Personality, Marital Status, and Job Satisfaction on Retirement Adjustment

The World Health Organization (WHO, 1997) stipulated physical health as one of the essential components of an individual’s quality of life. Previous findings that physical health influenced individuals’ well-being (Martinez, Martin, Liem, & Colmar, 2012; Rodino, Byrne, & Sanders, 2016) also show the importance of physical health for well-being. Retirement often brings about changes in physical health behaviors and outcomes. Some people experience positive changes such as increased exercise and sleep (Van den Bogaard, Henkens, & Kalmijn, 2016), but others experience negative changes in health outcomes such as cardiovascular diseases (Moon, Glymour, & Subramanian, 2012), sleep problems (Marquié, Folkard, Ansiau, & Tucker, 2012), as well as health behaviors such as alcohol use (Wang, Steier, & Gallo, 2014) and tobacco use (Ayyagari, 2014).

Retirees’ physical health, the main predictor of the current study, is one of the most frequently used predictors of retirement adjustment (e.g., Gall, Evans, & Howard, 1997; Kim & Feldman, 2000; van Solinge & Henkens, 2008). There is a general agreement that physical health is positively associated with retirement adjustment. Barbosa, Monteiro, and Murta (2016) reported from their review study on predictors of retirement adjustment that about 82% of the 94 studies on the association between physical health and retirement adjustment showed a significant effect of physical health.

There are some research gaps in the literature about the relationship between health and retirement adjustment. First, changes in physical health are considered in studies in which health was measured only once before or after retirement (e.g., Donaldson, Earl, & Muratore, 2010; Kim and Felderman, 2000). Considering that health changes is a part of
usual aging (Haynes et al., 1977; Martin & Doran, 1966), neglecting health changes after retirement could be a substantial limitation. Although several studies took health change into account (e.g., Calvo, Haverstick, & Sass, 2009; Dingemans & Henkens, 2014), they measured health only at two time points: before and after retirement.

Second, previous studies have tested only one of several aspects of physical health. We can categorize the concepts of health into three major groups: functional health (Asebedo & Seay, 2014; Potočnik, Tordera, & Peiro, 2010), chronic disease (Ballew, Hannum, Gaines, Marx, & Parrish, 2012), and subjective health (Muratore, Earl, & Collins, 2014; Hershey & Henkens, 2014). Although subjective health is based on individuals’ judgment based on functional and physical health, they cannot be regarded as equivalent. For example, because older adults have the tendency to rate their health based on the comparison with others their age (e.g., Fienberg, Loftus, & Tanur, 1985), older adults with several physical functioning problems or diseases may report that they are in a relatively good health.

Third, the ambiguous conceptualization of retirement adjustment can lead to inconsistent results concerning the health effect. Some studies use retirement adjustment, and others use retirement satisfaction, quality of life, life satisfaction, or well-being. van Solinge and Henkens (2008) raised questions on whether retirement adjustment and satisfaction are the same concepts. They differentiated the two concepts by defining adjustment as a process of getting used to the changed circumstances of retired life, and by defining satisfaction as contentment with one’s life in retirement. Solinge and Henkens argued that just as we can get adjusted to chronic illness without being satisfied, retirement adjustment does not always come with retirement satisfaction. In fact, in the same paper, they reported that physical health influenced retirement satisfaction but did not influence retirement adjustment.
Muratore, Earl, and Collins’s (2014) finding that self-rated health predicted life satisfaction but did not predict adjustment also suggests that these two concepts are different and that caution is needed for choosing the measure of retirement adjustment.

Finally, the effects of other antecedents on retirement adjustment through health or health change have not been explored well. Predictors of retirement adjustment such as retirement age (e.g., Asebedo & Seay, 2014; Bender, 2012), job satisfaction, and marital status (e.g., Becchetti et al., 2012) may have effects on retirement outcomes through health. Therefore, how antecedents influence retirement adjustment needs to be tested to better understand the role of physical health in the retirement adjustment process.

Personality, one of the antecedents, is known to be associated with physical health. Murray and Booth (2015) reported in their review study of five personality traits and health outcomes that higher levels of conscientiousness were associated with better health outcomes; higher neuroticism was associated with worse health outcomes; higher extraversion and openness sometimes showed better and sometimes worse outcomes. Previous research explained why and how personality traits predict physical health. For example, people high on conscientiousness were found to have better health behaviors such as participating in health screening (Siegler, Brummett, Martin, Helms, 2013), physical activities (Hill, Nickel, Roberts, 2014), diet (Möttus, McNeill, Jia, Craig, Starr, & Deary, 2013), and substance use (Atherton, Robins, Rentfrow, & Lamb, 2014).

Marital status is an important predictor of health outcomes (Robards, Evandrou, Falkingham, & Vlachantoni, 2012). Pienta, Hayward, and Jenkins (2000) studied the effect of the marital status of older adults using the Health and Retirement Study (HRS) data and reported that unmarried older adults are more likely than married older adults to get fatal and
nonfatal chronic diseases. Furthermore, retirees’ job satisfaction before retirement was reported as a predictor of health (Abramson, Gofin, Habib, Noam, & Kark, 1994; Fischer & Sousa-Poza, 2008). Fischer and Sousa-Poza summarized their study from two European panel studies that job satisfaction was positively associated with better subjective health. However, objective health outcomes were not predicted by job satisfaction.

Without addressing the aforementioned limitations of previous studies, a few studies using the HRS data have reported the association of the health measures utilized in this study with retirement adjustment: self-rated health (Asebedo & Seay, 2014; Bender, 2012), the number of health problems (Clarke, Marshall, & Weir, 2012), and the number of daily activities limitations (Elder, 1999) negatively predicted retirement satisfaction. Wang (2007) used the reversed score of depressive symptoms (CES-D) as a measure of retirement adjustment and reported both self-rated health and number of diseases (e.g., high blood pressure, diabetes, cancer, lung disease, etc.) predicted retirees’ retirement adjustment.

Wang, Henkens, and van Solinge’s (2011) resource-based dynamic theory was employed in this study as a theoretical framework. They suggested that retirement adjustment depends on how many resources retirees have. Resources refer to means or assets that can be used to cope with a difficult situation or to accomplish a goal (van Solinge, 2013), thus retirement experience can be re-shaped by the resources for retirement. They maintained that physical resources are important for retirees and added several antecedents of retirement (i.e., individual, household, job, organization, and macro levels) as predictors of intraindividual change and interindividual differences in resources.

Although the current study follows this resource-based dynamic model by evaluating the health effect on retirement adjustment, we add several contributions to it. First, regarding
the antecedents, this study includes personality traits as individual level antecedents, marital status as household level antecedents, and job satisfaction before retirement. We measured physical health both in subjective and objective ways. Finally, retirement outcomes are defined as retirement satisfaction and retirement adjustment. Figure 1 depicts the hypothesized model.

Therefore, the research questions of the current study are:

1. Do level and change in retirees’ functional limitations, the number of chronic diseases, and subjective physical health status predict depressive symptoms and retirement satisfaction?

2. Do retirees’ health resources mediate the association between antecedents of retirement (i.e., personality, marital status, and job satisfaction) and retirement outcomes?

**Method**

**Participants**

The HRS RAND dataset includes a nationally representative sample of 37,319 participants, and data were collected from 1992 to 2012 at every second year. The sample of this study included 500 newly retired individuals who were not retired in 2002 but were fully/partly retired between 2004 and 2012. People who were already retired or came back to work and were fully employed were excluded. Participants’ age ranged from 49 to 80 years ($M = 62.69, SD = 5.19$) in 2004. The average education was approximately 13 years ($SD = 2.7$) years. The sample was mostly White (79%) followed by African American (16%), with a small number of other races (5%). There were more female (72.4%) and married (72%)
than male and unmarried participants. Compared with the total sample of the HRS, the sample of this study showed a similar female ratio (56% for this study vs. 59% for the HRS), but participants were 1.9 years older, more likely to be married (71.7% vs. 66.4%), and had fewer depressive symptoms ($M = 1.12$ vs. $M = 1.50$), lower retirement satisfaction ($M = 1.42$ vs. $M = 1.54$) in the first wave, and were more educated (12.96 years vs. 12.05 years).

**Measures**

**Retirement adjustment.** Retirement adjustment was measured by depressive symptoms and retirement satisfaction. The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was used to indicate retiree’s depressive symptoms. The eight items include six negative questions (e.g., depressed, effort, restless, lonely, sad, and could not go on) and two positive items (e.g., happy, enjoyed life). All the items were dichotomous questions ($1 = \text{yes}, 0 = \text{no}$). Positive items were reversely coded. Higher values indicated more depressive symptoms. Cronbach’s alpha coefficients for depressive symptoms from time 1 through time 5 were .80, .78, .80, .76, and .83, respectively.

Retirement satisfaction was measured with a single question, “All in all, would you say that your retirement has turned out to be very satisfying, moderately satisfying, or not at all satisfying? (1 = not at all satisfying to 3 = very satisfying)”

**Health.** Retirees’ health was measured by functional limitations, the number of chronic diseases, and self-rated subjective health. Functional limitations were measured by the number of difficulties of activities of daily living (e.g., walking across a room, getting in and out of bed, dressing, bathing, and eating) and instrumental activities of daily living (e.g., using a telephone, taking medication, and handling money). Cronbach’s alpha coefficients for functional limitations from time 1 through time 5 were .61, .52, .64, .70, and .82,
respectively. Chronic diseases were measured with how many among six chronic health conditions they had (e.g., high blood pressure, diabetes, cancer, lung disease, heart disease, and arthritis). For the subjective measurement, self-rated health (1 = poor to 5 = excellent) was used.

**Antecedents of retirement.** Three antecedents of retirement included retirees’ personality, marital status, and job satisfaction. A total of 26 items from The Midlife Development Inventory (Lachman & Weaver, 1997) with a 4-point scale (1 = not at all to 4 = a lot) were used. Examples of the items are “creative,” “imaginative,” and “intelligent” for openness; “organized,” “responsible,” and “hardworking” for conscientiousness; “outgoing,” “friendly,” and “active” for extraversion; “helpful,” “warm,” “caring,” and “softhearted” for agreeableness; “moody,” “worrying,” “nervous,” and “calm” for neuroticism. Some items were reversely coded so that high scores indicate strong personal traits. Cronbach’s alpha coefficients for openness, conscientiousness, extraversion, agreeableness, neuroticism were .78, .64, .73, .79, .70, respectively.

Marital status was measured with a dichotomous variable indicating whether participants were married or not in 2004 (1 = married/partnered, 0 = not married). Married, married but spouse absent, and partnered were recoded as 1. Separated, divorced, widowed, and never married were coded as 0.

Participants’ job satisfaction before retirement was measured in 2006 and 2008 according to the year participants retired with a single question: “I really enjoy going to work” (1 = strongly disagree to 4 = strongly agree).

**Covariates.** Participants’ age, gender, and education level were included as covariates in the model. Age was originally measured by their birth year and subtracted from
2002 so that it shows the age in the first wave after retirement. A dichotomous variable was used for gender (0 = male, 1 = female). Retirees’ education level was measured with years of education.

**Data Analyses**

All variables were examined for outliers defined as three standard deviations above or below the mean. Three retirees were identified as outliers in age and removed from the sample. Descriptive statistics were examined for all study variables. Means and standard deviations for behavioral symptoms and cognitive functioning at the initial assessment, as well as the number of assessments at each occasion were computed.

Latent growth curve modeling (LGM) allows the study of multiple outcomes over time in a multivariate framework. The overall levels (intercept) and the amount of change (slope) of physical health and depressive symptoms represented the key parameter estimates. The association between the intercept growth factors represents the relationship between individual differences at baseline (initial assessment time) in physical health and depressive symptoms. The association between the slope factors (slope-slope) represents the association among the individual differences in the trajectories of physical health and depressive symptoms. LGM models also give us the information on occasion-specific residuals variance which represents a mix of random error and systematic within-person, time-specific fluctuations around the model-implied trajectory (Hofer et al., 2009; Robitaille, Garcia, & McIntosh, 2015).

The analysis was conducted based on a two-step analysis of latent growth curve models. First, a measurement model was specified. Second, the full model controlling for the effects of covariates on the intercept and the linear slope factors was specified. Model fit was
tested using chi-square values and associated $p$ values, comparative fit index (CFI), the
Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). CFI
values greater than 0.95 indicate an acceptable fit, RMSEA values less than .08 represent a
reasonable fit (Hu & Bentler, 1999).

Mplus (Muthén & Muthén, 2012) uses full information maximum likelihood (FIML)
estimation to include missing data on the endogenous (dependent) variables under the
missing at random (MAR) assumption. MAR makes the assumption that missing data can be
predicted from available data and that missingness is unrelated to the dependent variable.
Parameter estimates and standard errors were estimated using a robust version of FIML
(maximum likelihood - robust, MLR; Muthén & Muthén, 1998–2011; Yuan & Bentler,
2000).

Results

Descriptive Characteristics

Table 1 presents the means and standard deviations of functional limitations, chronic
diseases, subjective health, depressive symptoms, and retirement satisfaction over time. All
the health measurements including functional limitations, chronic diseases, and subjective
health status showed that retirees experienced health decline over eight years. As a group,
participants’ depressive symptoms and satisfaction did not significantly change over time.
Participants showed relatively high levels of agreeableness and conscientiousness and low
levels of neuroticism. Most retirees agreed before retirement that they were satisfied with
their current job. Figure 2 depicts the changes in the resources of physical health (i.e.,
functional limitations, chronic diseases, and self-rated health) and retirement outcomes (i.e.,
depressive symptoms and retirement satisfaction). Retirees reported an increase in functional limitations and chronic diseases and a decrease in self-rated health.

Table 2 shows the bivariate correlations between latent variables. The intercept of depressive symptoms was associated with the intercepts of retirement satisfaction ($r = - .69, p < .001$), functional limitations ($r = .41, p < .001$), number of chronic diseases ($r = .22, p < .001$), subjective health ($r = - .62, p < .001$), and the slope of subjective health ($r = .26, p = .005$). The slope of depressive symptoms was associated with the intercepts of subjective health ($r = .29, p = .047$) as well as the slopes of subjective health ($r = - .70, p = .003$). The intercept of retirement satisfaction was associated with the intercepts of functional limitations ($r = - .42, p < .001$), subjective health ($r = .42, p < .001$), and the slope of retirement satisfaction ($r = - .33, p = .005$). The slope of retirement satisfaction was associated with the intercept of functional limitations ($r = .20, p = .037$) and the slope of subjective health ($r = .31, p = .049$).

**Single-Construct LGMs**

Prior to fitting a parallel process model, we first fit LGMs independently for physical health resources and retirement outcomes.

**Depressive symptoms.** The LGM for depressive symptoms fit the data well, $\chi^2 (10) = 7.88, p = .641$, CFI = 1.00, TLI = 1.00, RMSEA=.00, SRMR=.02. This model showed that the intercept for depressive symptoms differed significantly from zero, $Mi = 1.10, p < .001$. However, the slope for depressive symptoms did not differ from zero, $Ms = 0.00, p = .889$. These findings indicate that retirees had very few depressive symptoms and experienced no changes in depressive symptoms over time. There was significant variance in the intercept of depressive symptoms, $Di = 1.54, p < .001$, and marginally significant variance in the slope
\( D_s = 0.03, p = .055 \), indicating that there were significant individual differences in initial levels and marginally significant individual differences in the variance of slopes of depressive symptoms across time.

**Retirement satisfaction.** The LGM for retirement satisfaction fit the data well, \( \chi^2 (10) = 17.66, p = .061, CFI = .98, TLI = .98, RMSEA = .04, \) SRMR = .07. This model showed that the intercept for retirement satisfaction differed significantly from zero, \( M_i = 2.55, p < .001 \). However, the slope for retirement satisfaction did not differ from zero, \( M_s = -0.02, p = .081 \). These findings indicate that participants were initially moderately to very satisfied with their retirement, and there was no change in retirement satisfaction over time. There was significant variance in the intercept of retirement satisfaction, \( D_i = 0.19, p < .001 \) as well as the slope of the change in retirement satisfaction \( D_s = 0.01, p = .001 \), indicating that there were individual differences in initial levels and the slopes of retirement satisfaction across time.

**Functional limitations.** The LGM with for functional limitations fit the data well, \( \chi^2 (9) = 30.20, p < .001, CFI = .99, TLI = .98, RMSEA = .07, \) SRMR = .03. This model showed that the intercept and slope for functional limitations differed significantly from zero, \( M_i = 0.20, p < .001 \), and \( M_s = 0.03, p = .003 \), respectively. These findings indicate that participants initially showed very low functional limitations (0.20 out of 8), and there was an increase in functional limitations over time. There was significant variance in the intercept \( D_i = .36, p < .001 \), and the slope \( D_s = 0.01, p = .036 \), indicating that there were individual differences in initial levels and the change in functional limitations across time.

**Chronic diseases.** The LGM for chronic diseases fit the data well with quadratic term, \( \chi^2 (9) = 22.60, p = .007, CFI = .99, TLI = .99, RMSEA = .06, \) SRMR = .03. This model
showed that the intercept and the slope for chronic diseases differed significantly from zero, $M_i = 1.81, p < .001$, and $M_s = 0.21, p < .001$, respectively. These findings indicate that participants initially had less than two diseases (out of six), and there was a significant increase. There was significant variance in the intercept of chronic diseases, $D_i = 1.07, p < .001$, and the slope $D_s = 0.05, p < .001$ indicating that there were individual differences both in the initial number of diseases and in the change of the number of diseases across time.

**Subjective health status.** The LGM for subjective health fit the data well, $\chi^2(10) = 23.17, p = .010$, CFI = .99, TLI = .99, RMSEA = .05, SRMR = .05. This model showed that the intercept and slope for objective health both differed significantly from zero, $M_i = 3.38, p < .001$ and $M_s = -0.04, p < .001$, respectively. These findings indicate that participants initially showed high levels of subjective health, and there was a decrease in subjective health over time. There was significant variance both in the intercept and slope for subjective health, $D_i = .73, p < .001$, $D_s = 0.02, p < .001$, indicating that there were individual differences in the initial level of and change in subjective health across time.

**Parallel Process Latent Growth Model**

Based on the acceptable model fits for the individual constructs, we proceeded to fit the entire model including all constructs. However, including ten latent variables (i.e., the intercepts and slopes of three health latent variables and two retirement outcome variables) would require too many parameters to be estimated. Therefore, we tested the three models with only one health variables at a time: Model 1 with functional limitations; Model 2 with chronic diseases; and Model 3 with subjective health status. We modeled paths from intercepts to slopes; that is, we included direct paths from objective health problems...
(functional limitations, chronic diseases) and subjective health to depressive symptoms and retirement satisfaction. The intercept of each health-related latent variable predicted both the intercepts and slopes of the retirement outcomes. The slopes of the health variables also predicted slope of the depressive symptoms and retirement satisfaction but did not predict the intercept of depressive symptoms and retirement satisfaction. We also modeled correlations between (a) the intercepts of retirement outcome variables and slopes of health variables, (b) intercepts and slopes of health variables, and (c) intercepts and slopes of retirement outcome variables.

The three models analyzed separately are shown in Table 3. The model for the functional limitations (Model 1) fit the data well, $\chi^2 (188) = 308.71, p < .001$, CFI = .95, TLI = .94, RMSEA = .04, SRMR = .04. The intercept of depressive symptoms was predicted by the intercept of functional limitations, $\beta = .30, p < .001$. The intercept of retirement satisfaction was predicted by the intercept of functional limitations, $\beta = -.40, p < .001$. These results indicate that retirees with more functional limitations experienced more depressive symptoms and lower satisfaction with retirement. This model explained 40.1% of the variance ($p < .001$) in the intercept of depressive symptoms, 24.2% of the variance ($p = .188$) in the slope of depressive symptoms, 30.4% of the variance ($p < .001$) in the intercept of retirement satisfaction, and 23.7% of the variance ($p = .093$) in the slope of retirement satisfaction.

The model for the number of chronic diseases (Model 2) fit the data well, $\chi^2 (188) = 245.31, p = .003$, CFI = .98, TLI=.97, RMSEA=.03, SRMR=.04. The intercept of depressive symptoms was predicted by the intercept of the number of chronic diseases, $\beta = .14, p = .022$, indicating that retirees with more chronic diseases experienced more depressive symptoms.
This model explained 33.2% of the variance \((p < .001)\) in the intercept of depressive symptoms, 8.2% of the variance \((p = .304)\) in the slope of depressive symptoms, 16.8% of the variance \((p = .002)\) in the intercept of retirement satisfaction, and 17.9% of the variance \((p = .061)\) in the slope of retirement satisfaction.

The model for subjective health (Model 3) fit the data well, \(\chi^2 (189) = 280.89, p < .001\), CFI = .97, TLI = .96, RMSEA = .03, SRMR = .05. The intercept of subjective health status predicted the intercepts of depressive symptoms, \(\beta = -.49, p < .001\), retirement satisfaction \(\beta = .30, p = .001\), and the slope of retirement satisfaction, \(\beta = .28, p = .047\). These results indicate that retirees initially with better subjective health status experienced fewer depressive symptoms and higher satisfaction with retirement; they experienced less decrease of retirement satisfaction over time. In terms of slopes, the slope of subjective health predicted the slope of depressive symptoms, \(\beta = -.45, p = .038\), and the slope of retirement satisfaction \(\beta = .44, p = .021\), indicating that retirees who experienced decline of subjective health over time experienced increase in depressive symptoms and decline of retirement satisfaction across time.

Table 4 shows the effects of antecedents of retirement and covariates on physical health and retirement outcomes. Regarding the intercepts of physical health, the intercept of functional health was associated with conscientiousness; the intercept of subjective health with openness, conscientiousness, neuroticism, being married, and job satisfaction. The intercept of depressive symptoms was associated with conscientiousness, extraversion, agreeableness, neuroticism, being married, and job satisfaction. The intercept of retirement satisfaction was associated with conscientiousness and openness. The slopes of physical
health and retirement adjustment were not predicted by the antecedents of retirement. Only openness was associated with a decrease in subjective health.

In order to test whether retirees’ health status or problems are mediators in the association between the antecedents of retirement and retirement outcomes, indirect effects with bootstrap sampling were tested. However, there were no significant indirect effects.

**Discussion**

This study aimed to assess the influence of health resources as measured by functional limitations, the number of chronic diseases, and subjective health status and their change over time on retirement adjustment measured by depressive symptoms and retirement satisfaction. The findings of this study revealed that baseline levels and change of health status were related to the initial levels and changes in retirement outcomes. There was a difference in the effects of the functional limitations, chronic diseases, and subjective health status: functional limitations and the number of chronic diseases predicted initial levels of retirement outcomes whereas subjective health status predicted both the initial levels and change of retirement outcomes. Notably, changes in subjective health status predicted change in retirement outcomes: retirees who experienced a decrease in subjective health status over time also experienced an increase in depressive symptoms and a decrease in retirement satisfaction over time. Personality was associated with subjective health. Retirees high on conscientiousness or low on neuroticism reported better subjective health, whereas retirees high on openness reported higher self-rated health but experienced a decrease in self-rated health. Personality traits were also associated with retirement outcomes. Retirees with higher conscientiousness or extraversion and lower agreeableness or neuroticism experienced better
retirement adjustment. Being married and having higher job satisfaction were associated with better subjective health and depressive symptoms.

The findings confirm some of the results found in prior work on the relationship between retirees’ health and retirement adjustment (Donaldson, Earl, & Muratore, 2010; Kim & Felderman, 2000), but also yield valuable new insights. For example, the results of the current study revealed that objective (functional limitations and chronic diseases) and subjective health measures have different associations with retirement outcomes. Although both measurements predicted the initial level of retirement outcomes, only subjective health change predicted the change of retirement outcomes. Depressive symptoms and retirement satisfaction may, therefore, be more dependent on retirees’ perception on their health rather than objective indicators. For example, a retiree might not be worried or affected by a chronic disease if receiving proper treatment assuming that the disease is well under control.

Van Solinge and Henkens’ (2008) suggestion that we should be careful when selecting retirement outcomes because similar measurements (e.g., retirement adjustment and retirement satisfaction) may show different results is supported by our findings. The correlation coefficients between the intercepts of depressive symptoms and retirement satisfaction were high, but the coefficients between the slopes were not associated with each other. Furthermore, the paths from antecedents of retirement to these two retirement outcomes were different. For example, Model 1 showed that the intercept of depressive symptoms was predicted by extraversion, agreeableness, and neuroticism, whereas the intercept of retirement satisfaction was predicted by none of these.

Although there was no indirect effect, antecedents of retirement and covariates give us additional information about retirement outcomes. The result that retirees’ higher
extraversion, conscientiousness and lower neuroticism in the objective health measure model were related to fewer initial depressive symptoms was congruent with prior findings on depressive symptoms, life satisfaction or retirement satisfaction (Klein, Kotov, & Bufferd, 2011; Löckenhoff, Terracciano, & Costa, 2009; Robinson, Demetre, & Corney, 2010). However, Robinson et al. reported that agreeableness was positively associated with satisfaction with retired life, which contradicts the findings of the current study. The different results may reflect the difference between life satisfaction and depressive symptoms, but more research is needed to understand the role of agreeableness in retirement adjustment.

The positive influence of marital status was congruent with previous research (Pinquart & Schindler, 2007). The negative association of job satisfaction when employed with depressive symptoms was inconsistent with previous findings that low job satisfaction was related to positive change in psychological well-being after retirement (Wang, 2007). Employees less satisfied with their past job experienced positive changes in mental health. However, considering that job satisfaction was associated with the intercept of depressive symptoms, not change, this result may show the lasting effect of work stress on mental health.

There are several limitations in this study. First, changes of the covariates were not included in the study. Personality, for example, may change over time (Almlund, Duckworth, Heckman, & Kautz, 2011). However, because individuals participating in the HRS were asked about their personality every four years since 2006 after being divided into two groups, there were not enough data points for measuring the change of personality. Second, the HRS includes only a single question measuring retirement satisfaction. Single-item measures cannot reliably measure complex constructs such as retirement satisfaction and job
satisfaction: multi-dimensionality should be considered with multiple items. The HRS should consider employing multi-item measures for retirement satisfaction (e.g., Floyd et al., 1992). Third, the health resources and retirement outcomes were measured during the same time period, so caution is advised when interpreting findings as a causal relationship. Depressive symptoms or retirement satisfaction might influence retirees’ physical health. Fourth, the measurements were all self-reports. Employing observational ratings, spousal reports, and performance-based measures for health and retirement adaptation will be beneficial in future research. Lastly, although we tried to follow Wang et al.’s (2011) resource model which included household and job levels of antecedents, we included only marital status for household level and job satisfaction for job level. There are other concepts such as marital satisfaction, the length of marriage, salary, work types, and physical demand that we could have used as antecedents.

Notwithstanding the limitations described above, the present study contributes to the literature in important ways. First, we included the changes of both health resources and retirement outcomes. Studies on retirement are now commonly employing longitudinal models to assess causal relationships between retirement outcomes and health. However, it is not well considered that health changes during the post-retirement period. The finding of the present study that changes in subjective health predicted changes in depressive symptoms and retirement satisfaction support Wang et al.’s (2011) resource-based model. We suggest that not only the levels but the change of health status should be considered in related studies. Second, we focused on the period after retirement whereas most previous studies predicted post-retirement outcomes with pre-retirement health. We interpret this as retirement preparation research. This also can be midlife-centered thinking, implying that the health
after retirement is a fixed outcome rather than a flexible resource for utilization in later life. Third, we used previously mixed concepts (i.e., objective and subjective health, depressive symptoms and retirement satisfaction) to compare health resources and retirement outcomes.

The present study found that the initial levels of and changes in objective and subjective health status are associated, but not equally, with retirement outcomes. Higher levels of and increase (or less decrease) in health resources after retirement are important factors of better retirement adjustment.
References


### Table 1

**Summary Statistics for Health, Antecedent Variables, Depressive Symptoms, and Retirement Satisfaction**

<table>
<thead>
<tr>
<th></th>
<th>Range (%)</th>
<th>2004 (t1) M (SD)</th>
<th>2006 (t2) M (SD)</th>
<th>2008 (t3) M (SD)</th>
<th>2008 (t4) M (SD)</th>
<th>2010 (t5) M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional limitations</strong></td>
<td>0 – 8</td>
<td>0.21 (0.74)</td>
<td>0.23 (0.74)</td>
<td>0.22 (0.75)</td>
<td>0.33 (0.98)</td>
<td>0.37 (1.15)</td>
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<tr>
<td><strong>Chronic diseases</strong></td>
<td>0 – 6</td>
<td>1.83 (1.28)</td>
<td>1.98 (1.26)</td>
<td>2.24 (1.47)</td>
<td>2.43 (1.42)</td>
<td>2.65 (1.55)</td>
</tr>
<tr>
<td><strong>Subjective health status</strong></td>
<td>1 – 5</td>
<td>3.36 (1.03)</td>
<td>3.36 (0.99)</td>
<td>3.27 (1.01)</td>
<td>3.31 (0.91)</td>
<td>3.20 (1.00)</td>
</tr>
<tr>
<td><strong>Depressive symptoms</strong></td>
<td>0 – 8</td>
<td>1.13 (1.73)</td>
<td>1.08 (1.68)</td>
<td>1.08 (1.72)</td>
<td>1.04 (1.59)</td>
<td>1.14 (1.80)</td>
</tr>
<tr>
<td><strong>Retirement satisfaction</strong></td>
<td>1 – 3</td>
<td>2.59 (0.57)</td>
<td>2.53 (0.58)</td>
<td>2.49 (0.58)</td>
<td>2.54 (0.57)</td>
<td>2.49 (0.60)</td>
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<tr>
<td><strong>Personality</strong></td>
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<tr>
<td>Openness</td>
<td>1 – 4</td>
<td>2.96 (0.53)</td>
<td></td>
<td></td>
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<tr>
<td>Conscientiousness</td>
<td>1 – 4</td>
<td>3.38 (0.45)</td>
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<td></td>
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<tr>
<td>Extraversion</td>
<td>1 – 4</td>
<td>3.22 (0.52)</td>
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<tr>
<td>Agreeableness</td>
<td>1 – 4</td>
<td>3.53 (0.46)</td>
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<tr>
<td>Neuroticism</td>
<td>1 – 4</td>
<td>1.98 (0.58)</td>
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<tr>
<td><strong>Job Satisfaction</strong></td>
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<tr>
<td>Strongly disagree</td>
<td></td>
<td>(3.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
<td>(12.1)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Agree</td>
<td></td>
<td>(62.9)</td>
<td></td>
<td></td>
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<tr>
<td>Strongly agree</td>
<td></td>
<td>(21.9)</td>
<td></td>
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Table 2

Bivariate Correlations Between the Latent Variables Used in the Analyses

<table>
<thead>
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<tr>
<td>1. I_Depress</td>
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<td>2. S_Depress</td>
<td>-.18</td>
<td>–</td>
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<tr>
<td>3. I_RetSat</td>
<td>-.69***</td>
<td>.29</td>
<td>–</td>
<td></td>
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<tr>
<td>4. S_RetSat</td>
<td>.18</td>
<td>-.26</td>
<td>-.33**</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I_FunctL</td>
<td>.41***</td>
<td>.19</td>
<td>-.42***</td>
<td>.20*</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. S_FunctL</td>
<td>.17</td>
<td>.40</td>
<td>.02</td>
<td>.02</td>
<td>.07</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I_Disease</td>
<td>.22***</td>
<td>-.14</td>
<td>-.13</td>
<td>-.05</td>
<td>.15*</td>
<td>-.01</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. S_Disease</td>
<td>.16</td>
<td>.04</td>
<td>-.04</td>
<td>-.09</td>
<td>.07</td>
<td>.17</td>
<td>-.22**</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>9. I_SubjH</td>
<td>-.62***</td>
<td>.29*</td>
<td>.42***</td>
<td>.04</td>
<td>-.46***</td>
<td>.02</td>
<td>-.45***</td>
<td>.05</td>
<td>–</td>
</tr>
<tr>
<td>10. S_SubjH</td>
<td>.26**</td>
<td>-.70**</td>
<td>-.19</td>
<td>.31*</td>
<td>.25**</td>
<td>-.47***</td>
<td>.28**</td>
<td>-.24</td>
<td>-.38***</td>
</tr>
</tbody>
</table>

Note. N = 500. I = intercept; S = slope; Depress = depressive symptoms; RetSat = retirement satisfaction; FunctL = functional limitations; Disease = chronic diseases; SubjH = subjective health. *p < .05. **p < .01. ***p < .001.
Table 3
Regression Paths in the Multivariate Growth Curve Model

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Functional Limitations</th>
<th>Intercepts</th>
<th>Slopes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Depressive Symptoms</td>
<td>Retirement Satisfaction</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.63</td>
<td>0.14</td>
<td>.30***</td>
</tr>
<tr>
<td>Slope</td>
<td>0.62</td>
<td>0.43</td>
<td>.41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2</th>
<th>Chronic Diseases</th>
<th>Intercepts</th>
<th>Slopes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Depressive Symptoms</td>
<td>Retirement Satisfaction</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.16</td>
<td>0.07</td>
<td>.14*</td>
</tr>
<tr>
<td>Slope</td>
<td>0.06</td>
<td>0.13</td>
<td>.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 3</th>
<th>Subjective Health</th>
<th>Intercepts</th>
<th>Slopes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Depressive Symptoms</td>
<td>Retirement Satisfaction</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.66</td>
<td>0.09</td>
<td>-.49***</td>
</tr>
<tr>
<td>Slope</td>
<td>-0.51</td>
<td>0.23</td>
<td>-.45*</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.
Table 4
Effects of Retirement Antecedents on Health, Depressive Symptoms, and Retirement Satisfaction

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Intercepts</th>
<th>Slopes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Limitations</td>
<td>Depressive Symptoms</td>
</tr>
<tr>
<td>Antecedents</td>
<td>B (β)</td>
<td>B (β)</td>
</tr>
<tr>
<td>Openness</td>
<td>0.02 (.02)</td>
<td>0.10 (.04)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.21 (-.17)</td>
<td>-0.20 (-.08)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.11 (-.11)</td>
<td>-0.41 (-.19)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.03 (.03)</td>
<td>0.38 (.16)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.03 (.03)</td>
<td>0.70 (.35)</td>
</tr>
<tr>
<td>Married</td>
<td>-0.06 (-.05)</td>
<td>-0.38 (-.15)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.01 (.02)</td>
<td>-0.22 (-.13)</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>0.01 (.06)</td>
</tr>
<tr>
<td>Gender(female)</td>
<td>-</td>
<td>0.16 (.07)</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-0.08 (-.19)</td>
</tr>
<tr>
<td>Model 2</td>
<td>Chronic Diseases</td>
<td>Depressive Symptoms</td>
</tr>
<tr>
<td>Antecedents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>-0.09 (-.04)</td>
<td>0.13 (.06)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.05 (.02)</td>
<td>-0.34 (-.13)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.01 (.01)</td>
<td>-0.49 (-.22)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.08 (.04)</td>
<td>0.39 (.16)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.03 (.02)</td>
<td>0.71 (.35)</td>
</tr>
<tr>
<td>Married</td>
<td>-0.17 (-.07)</td>
<td>-0.39 (-.15)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.03 (.02)</td>
<td>-0.21 (-.12)</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>0.01 (.04)</td>
</tr>
<tr>
<td>Gender(female)</td>
<td>-</td>
<td>0.17 (.08)</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-0.09 (-.21)</td>
</tr>
<tr>
<td>Model 3</td>
<td>Subjective Health</td>
<td>Depressive Symptoms</td>
</tr>
<tr>
<td>Antecedents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>0.32 (.20)</td>
<td>0.27 (.12)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.42 (.22)</td>
<td>-0.07 (-.03)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.07 (.05)</td>
<td>-0.40 (-.18)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.18 (-.10)</td>
<td>0.25 (.10)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.17 (-.12)</td>
<td>0.59 (.29)</td>
</tr>
<tr>
<td>Married</td>
<td>0.24 (.12)</td>
<td>-0.26 (.10)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.13 (.10)</td>
<td>-0.15 (-.09)</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>0.01 (.05)</td>
</tr>
<tr>
<td>Gender(female)</td>
<td>-</td>
<td>0.27 (.12)</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-0.05 (-.11)</td>
</tr>
</tbody>
</table>

Note. Bold numbers are statistically significant (p < .05).
Figure 1. Hypothesized model. * Functional limitations, the number of chronic diseases, and subjective health were modeled in separate models.
Figure 2. Change trajectories for retirement adjustment and physical health. Dashed lines correspond to mean raw scores at each time-point. Solid lines represent trajectories estimated by the unconditional model. Functional limitations, chronic diseases, and self-rated health showed significant change, whereas depressive symptoms and retirement satisfaction did not.
CHAPTER 4. THE EFFECTS OF RETIREES’ FINANCIAL RESOURCES, PERSONALITY, MARITAL STATUS, AND JOB SATISFACTION ON RETIREMENT ADJUSTMENT

A paper to be submitted to Research on Aging

Kyuho Lee
Peter Martin
Clinton Gudmunson
Jennifer Margrett

Human Development and Family Studies, Iowa State University

All the authors made a substantial contribution to conception, design, analysis, and interpretation of the results. Address correspondence to Kyuho Lee, Human Development and Family Studies, Iowa State University, 0078 LeBaron Hall, Ames, Iowa 50011. E-mail: Kyuholee@iastate.edu.
Abstract

Financial resources are an important predictor of new retirees’ well-being. This study aimed to assess the influence of retirees’ financial resources on retirement adjustment measured by depressive symptoms and retirement satisfaction. Data of 500 new retirees from the Health and Retirement Study from 2004 to 2012 were included in the study. The results showed that retirees with more initial financial resources experienced better retirement adjustment. However, more assets were associated with a decline of retirement adjustment over time. The association of income with retirement adjustment disappeared with the inclusion of assets into the model. A decrease in subjective financial resources was associated with an increase in depressive symptoms. Retirees’ extraversion, being married, and higher job satisfaction were associated with better adjustment, whereas openness, agreeableness, and neuroticism with poor adjustment. Findings of the study highlight the importance of maintaining good financial resources in the post-retirement period.

*Keywords:* retirement adjustment, assets, income, subjective financial resources, personality
The Effects of Retirees’ Financial Resources, Personality, Marital Status, and Job Satisfaction on Retirement Adjustment

Financial resources, needless to say, are an essential factor of well-being. For instance, better financial status is related to better physical (Benzeval, Judge, & Shouls, 2001) and mental health (McInerney, Mellor, & Nicholas, 2013). Financial resources affect individuals’ housing, neighborhood environments, diet, and access to facilities for exercise and health care (Link & Phelan, 1995), which may subsequently influence the levels of well-being outcomes.

Retirement often brings about the change of these financial resources, mostly a decrease due to discontinuity of salary income. Retired households, therefore, are dependent on annuitized income streams (e.g., Social Security benefits, defined benefit pension plans) and other forms of assets (e.g., equity in an owner-occupied home, bonds, stocks, personal retirement account, Poterba, Venti, & Wise, 2011). Financial assets and income are the most common metrics for measuring economic well-being in economics (Bender, 2012). On average, assets decrease after retirement. For example, Love, Palumbo, and Smith (2009) analyzed the mean value of the comprehensive household wealth of the retiree cohort aged 70 to 75 in 1998 and reported a 20.3% decrease in eight years. Regarding income, most research has focused on the income decrease during the transition from employment to retirement. According to Munnell and Soto’s (2005) estimation using the Health and Retirement Study (HRS) data, the average income replacement ratio of the U.S. retirees was 79 percent for couples and 89 percent for single persons.

There is a general agreement that the effects of financial assets are associated with better retirement adjustment (Elder & Rudolph, 1999; Rohwedder, 2006). Elder and Rudolph
using the HRS data reported that household total net worth predicted retirement satisfaction. The influence of income is measured by household or family income (Marshall, Clarke, & Ballantyne, 2001; Szinovacz & Davey, 2005). The effect of income levels on retirement is associated with better retirement adjustment (Becchetti, Ricca, & Pelloni, 2012; Bender, 2012; Elder & Rudolph, 1999). Literature suggests that the study unit of the association between financial resources and retirement adjustment should be a household level, not an individual level. In fact, it is reported that a wife’s income increase predicts an increase of the husband’s marital happiness and well-being (Rogers & DeBoer, 2001).

There are some limitations in previous studies concerning the effects of assets and income on retirement adjustment. Most previous studies have measured these financial resources only once with a cross-sectional design, which is not the best practice of assessing causal relationships. Longitudinal designs are needed to confirm the effects of assets and income on retirement adjustment. Although some studies have employed a longitudinal model, they still focus on the transition from employment to retirement (e.g., Gall, Evans, & Howard, 1997; Szinovacz & Davey, 2004). For example, Gall et al. measured income at 2-4 months before retirement as well as short-term (1 year) and long-term (6-7 years) after retirement. They reported that income change predicted retirement satisfaction both at short-term and long-term. However, they did not measure the change in assets and income over longer time spans after retirement. Wang (2007) reported the results from the earlier waves of the HRS (1992 - 2000) that financial decline after retirement did not significantly predict retirees’ adjustment pattern. He provided two explanations: first, retirees expect to experience financial changes and are perhaps more adaptive to these financial changes; second, retirees might have already accumulated enough financial resources for their
retirement life. This study suggests that financial status after retirement, not the financial
decline before and after retirement, is an important predictor of retirement satisfaction.
Wang’s study, however, did not exclude the participants who might have been fully
employed again after retirement. Moreover, he used a depression scale to measure retirees’
psychological well-being, which may show retirees’ general well-being, not the outcome
solely related to retirement.

There is not much research regarding the effect of the change in retirees’ perception
of financial status on retirement outcomes. From a phenomenological perspective,
perceptions are more influential than the reality on human reactions and behaviors (Clarkson,
Hirt, Jia, & Alexander, 2010). Consequently, the perception of one’s financial status might
predict retirement outcomes better than the actual amount of assets or income. In fact, the
absolute amount of financial resources cannot be an absolute criterion for retirees’ financial
situation considering their different lifestyles, life expectancies, and living costs that vary by
geographic area. Therefore, including a measure that shows the retirees’ subjective financial
security with consideration of all other related factors would be beneficial for studying the
effects of financial resources on retirement outcomes.

Regarding the perception of financial resources, income adequacy (Kim & Moen,
2002; Smith & Moen, 2004) and income compared with expectations (Barrett &
Kecmanovic, 2013) are typically used. Although the sample included non-retirees, Kim and
Moen (2002) also reported that income adequacy and its change predicted middle and older
age participants’ psychological well-being. Smith and Moen’s later finding that retiree
couples’ income adequacy predicted their retirement satisfaction revealed subjective
financial resource as a significant predictor of retirement outcomes. Similarly, Barrett and
Kecmanovic reported that actual income compared with expectations had a positive association with happiness in retirement. These studies, however, focused only on income excluding assets and were conducted with a cross-sectional design. These make it difficult to assess the influence of subjective financial resources, whereas subjective judgment on financial status or satisfaction could vary over time.

The typical measurements of subjective financial resources were not included in the Health and Retirement Study, so we used the question whether retirees thought that they would have sufficient resources to transfer to their heirs after they die. Although this question is used for measuring motives of leaving a bequest (Kim, Hanna, Chatterjee, & Lindamood, 2012), Fink and Redaelli (2005) noted that the question also could ask about the subjective probability of dying before consuming one’s wealth. In fact, Banks, Crawford, Crossley, and Emmerson (2013) used the same question to assess how people changed their behavior of leaving a bequest after the global financial crisis, which showed that leaving a bequest is related to bequest-givers’ financial status. Findings from other studies (Fink & Redaelli, 2005; Hurd and Smith, 2001) that the probability of leaving a bequest was highly correlated with the levels of individuals’ assets also supports the notion that this measure shows the subjective perception of sufficient financial resources.

Another limitation in previous literature includes the ambiguous conceptualization of retirement adjustment that can lead to inconsistent results concerning the effect of financial resources on adjustment. Although studies in this field used different measurements of retirement adjustment (e.g., retirement satisfaction, well-being, quality of life, life satisfaction, and well-being), the results about the associations between financial resources and one of the retirement adjustment measurements were accepted as the relation between
financial resources and retirement adjustment. Therefore, a comparison between the results from different adjustment measurements can contribute to research emphasizing the need of utilizing multiple measures of retirement adjustment.

Finally, although it was suggested that antecedents of retirement can play an important role in retirement adjustment through financial resources (Wang, 2011), this is not explored well. If predictors of retirement adjustment such as retirement age (e.g., Bender, 2012), job satisfaction, and marital status (e.g., Becchetti et al., 2012) have effects through financial resources, we can have a better understanding of the relationship between retirement adjustment and financial resources. Regarding personality, one of the antecedents in the present study, research has reported that lower extraversion (Brown & Taylor, 2014) and higher conscientiousness (Letkiewicz & Fox, 2014) were associated with more assets. Personality is associated with financial behaviors and career outcomes such as spending and credit card debt (Brown & Taylor, 2014), investment and savings (Pak & Mahmood, 2015), as well as career success (Spengler, Lüdtke, Martin, & Brunner, 2014), so personality can play a significant role in the association between financial resources and retirement adjustment. Marital status is an important predictor of wealth (Zagorsky, 2005; Zissimopoulos, Karney, & Rauer, 2015). Zissimopoulos et al. explained the marital effect on wealth with the interpretation that married couples consume less per person than single individuals. They also pointed out unexpected expenses and lost income during divorce or widowhood, as well as indirect effects of better health and lower mortality rate of married couples which is linked to more chances of accumulating wealth. Finally, regarding the relation between retirees’ financial resources and job satisfaction before retirement, most findings from previous research suggest that employees’ salary income level influences
employees’ job satisfaction (Bender & Heywood, 2004). However, some research has revealed that job satisfaction increases the work motivation of employees and lowers the risk of turnover and increases the chance of promotion, which leads to an increase of income (Kaliski, 2007).

This study focused on the effects of resources on retirement adjustment based on Wang, Henkens, and van Solinge’s (2011) resource-based dynamic model. They suggested that retirement adjustment changes together with the change in the levels of resources. Resources refer to means or assets used to cope with difficult situations or to accomplish a goal (van Solinge, 2013) retirees’ experiences of retirement may vary according to retirees’ resources. Wang et al. argued that financial resources are important for retirees and added several antecedents of retirement (i.e., individual, household, job, organization, and macro levels) to explain intraindividual change and interindividual differences in resources.

Although this study follows Wang et al.’s model, this study adds new approaches in order to address aforementioned limitations of previous studies. First, regarding the antecedents, this study includes personality as individual level antecedents, marital status as household level antecedents, and job satisfaction before retirement. Second, we measure financial resources both in subjective and objective ways. Finally, retirement outcomes are measured both by depressive symptoms and retirement satisfaction. Figure 1 depicts the hypothesized model.

Therefore, the research questions of the current study are as follows:

1. Do retirees’ objective and subjective financial resources change after retirement?
2. Do baseline levels of assets, income, and subjective financial resources predict baseline levels of and changes in retirement adjustment?
3. Do changes in assets, income, and subjective financial resources after retirement predict changes in retirement adjustment?

4. Are there indirect effects of the antecedents (personality, marital status, and job satisfaction) on retirement adjustment?

**Method**

**Participants**

We sampled from the nationally representative HRS RAND dataset collected at every second year from 2004 to 2012. The sample \( n = 500 \) in this study includes individuals who were not retired in 2002 but were fully/partly retired between 2004 and 2012. Participants’ age ranged from 49 to 80 years \( M = 62.69, \ SD = 5.19 \). The average education was approximately 12.97 years \( SD = 2.69 \) years. The sample was mostly White (79%) followed by African American (16%), with a small number of other races (5%). There were more female (72.4%) and married (72%) than male and unmarried participants. Compared with the total sample of the HRS, the sample of this study showed a similar female ratio (56% for this study vs. 59% for the HRS), but participants were 1.9 years older, more likely to be married (71.7% vs. 66.4%), and had fewer depressive symptoms \( M = 1.12 \) vs. \( M = 1.50 \), lower retirement satisfaction \( M = 1.42 \) vs. \( M = 1.54 \) in the first wave, and were more educated (12.96 years vs. 12.05 years).

**Measures**

**Retirement adjustment.** Retirement adjustment was measured by depressive symptoms and retirement satisfaction. The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was used to indicate retiree’s depressive symptoms. The eight
items include six negative questions (i.e., depressed, effort, restless, lonely, sad, and could not go on) and two positive items (i.e., happy, enjoyed life). All the items were dichotomous questions (1 = yes, 0 = no). Positive items were reversely coded. Higher values indicated more depressive symptoms. Cronbach’s alpha coefficients for depressive symptoms from time 1 through time 5 were .80, .78, .80, .76, and .83, respectively.

Retirement satisfaction was measured with a single question, “All in all, would you say that your retirement has turned out to be very satisfying, moderately satisfying, or not at all satisfying? (1 = not at all satisfying to 3 = very satisfying).”

**Household assets.** For participants’ assets, we used imputed data provided in the RAND (version N, October 2014) of the HRS data. Household assets include primary and secondary residence, real estate, vehicles, businesses, and stocks excluding total debt (e.g., mortgages and other debt). Retirees’ assets were converted to the 2012 dollars using the Consumer Price Index (CPI, 2016). Each wave’s dollar assets were divided by the corresponding year’s CPI value and multiplied by the CPI value in 2012. Extremely high values were winsorized to three standard deviations. Lastly, the inverse hyperbolic sine (IHS) transformation is applied to resolve skewness of assets instead of using common practice, a log transformation. The IHS transformation is computed as follows:

\[
Y = \log(y_i + (y_i^2 + 1)^{1/2})
\]

Y is the transformed assets or income value, and \(y_i\) is the original value. The IHS transformation allows researchers to maintain 0 and negative values without restricting the sample or distorting standard errors (Pence, 2006). This transformation is proper for growth curve modeling which considers the change of assets or income. For example, Rauscher and
Elliott (2016) applied this transformation for household income and assets in their growth curve model to assess the changes in assets and income during the recession in 2008.

**Household income.** The total household income consisted of Social Security benefits, Supplemental Security Income, and unemployment compensation. After winsorizing extreme values with three standard deviations, we converted income dollar amount for each wave into 2012 dollars in the same way as the household assets.

**Subjective financial resources.** Retirees’ subjective financial resources were measured with the probability of leaving an inheritance. It was assumed that the belief that one can leave an inheritance implies the judgment that the respondent has enough financial resources to live until death. A single question was given to the respondents: “Think about an inheritance you (and your husband/wife/partner) might leave (but not including any inheritance you might leave to each other). Including property and other valuables that you might own, what are the chances that you (and your [husband/wife/partner]) will leave an inheritance totaling $10,000 or more?” Response to this question was measured from 0 (absolutely no chance) to 100 (absolutely certain).

**Antecedents of retirement.** Three antecedents of retirement included retirees’ personality, marital status, and job satisfaction. A total of 26 items from The Midlife Development Inventory (Lachman & Weaver, 1997) with a 4-point scale (1 = not at all to 4 = a lot) were used. The examples of the items are “creative,” “imaginative,” and “intelligent” for openness; “organized,” “responsible,” and “hardworking” for conscientiousness; “outgoing,” “friendly,” and “active” for extraversion; “helpful,” “warm,” “caring,” and “softhearted” for agreeableness; “moody,” “worrying,” “nervous,” and “calm” for neuroticism. Some items were reversely coded so that high scores indicate strong personal
traits. Cronbach’s alpha coefficients for openness, conscientiousness, extraversion, agreeableness, neuroticism were .78, .64, .73, .79, .70, respectively.

Marital status was measured with a dichotomous variable indicating whether participants were married or not in 2004 (1 = married/partnered, 0 = not married). Married, married but spouse absent, and partnered were recoded as 1. Separated, divorced, widowed, and never married were coded as 0.

Job satisfaction before retirement was measured in one wave before participants’ retirement with a single question: I really enjoy going to work (1 = strongly disagree and 4 = strongly agree).

**Covariates.** Participants’ age, gender, and education level were included as covariates in the model. Age was originally measured by their birth year and subtracted from 2002 so that it shows the age in the first wave after retirement. A dichotomous variable was used for gender (0 = male, 1 = female). Retirees’ education was measured with years of education.

**Data Analyses**

Descriptive statistics were examined for all study variables. Information about participants’ age, gender, and education years, as well as the covariates, were included. All variables were examined for outliers with three standard deviations. Means and standard deviations for assets, income, depressive symptoms and retirement satisfaction at initial assessment were computed.

Latent growth curve modeling (LGM) allows the study of multiple outcomes over time in a multivariate framework. The overall levels (intercept) and the amount of change (slope) of income/assets and retirement adjustment represented the key parameter estimates.
The association between the intercept growth factors represents the relationship between individual differences at baseline (initial assessment time) in financial resources and retirement adjustment. The association between the slope factors (slope-slope) represents the association among the individual differences in the trajectories of financial resources and retirement adjustment. LGM models also give us the information on occasion-specific residuals variance which represents a mix of random error and systematic within-person, time-specific fluctuations around the model-implied trajectory (Robitaille, Garcia, & McIntosh, 2015).

The analysis was conducted based on a two-step analysis of latent growth curve modeling. First, the fit of the measurement model for each construct of dependent and independent latent variables was assessed. Second, the conditional model with causal paths from predictors to dependent variables controlling for the effects of covariates on the intercept and the linear slope factors was specified. Model fit was tested using chi-square values and associated $p$ values, comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). CFI values greater than 0.95 indicate an acceptable fit, RMSEA values less than .08 represent a reasonable fit (Hu & Bentler, 1999).

Mplus uses full information maximum likelihood (FIML) estimation to include missing data on the endogenous (dependent) variables under the missing at random (MAR) assumption. MAR makes the assumption that missing data can be predicted from available data and that missingness is unrelated to the dependent variable. Parameter estimates and standard errors were estimated using a robust version of FIML (maximum likelihood - robust, MLR; Muthén & Muthén, 2012).
Results

Descriptive Characteristics

Table 1 presents the means and standard deviations of the objective and subjective financial resources and retirement outcomes. All the measurements on financial resources including assets, income, and subjective financial resources showed retirees experienced a decrease of financial resources over eight years. When comparing the first and last waves, assets decreased by 20.1%; income by 44.0%; subjective financial resources by 7.3%. As a group, participants’ depressive symptoms and satisfaction did not significantly change over time. Participants showed relatively high agreeableness and conscientiousness and low neuroticism. Most retirees agreed before retirement that they were satisfied with their current job. Figure 2 depicts the changes in the financial resources (i.e., household assets, income, and subjective financial resources) and retirement outcomes (i.e., depressive symptoms and retirement satisfaction). Retirees’ financial resources decreased across time, whereas group level retirement outcomes did not change.

Table 2 shows the correlations between latent variables. The intercept of depressive symptoms was associated with the intercepts of retirement satisfaction ($r = -.70, p < .001$), income ($r = -.32, p < .001$), assets ($r = -.43, p < .001$), and subjective financial resources ($r = -.47, p < .001$). The slope of depressive symptoms was associated with the intercepts of assets ($r = .57, p = .003$) and subjective financial resources ($r = .37, p = .022$). The intercept of retirement satisfaction was associated with the intercepts of assets ($r = .46, p < .001$), income ($r = .38, p < .001$), subjective financial resources ($r = .48, p < .001$), and the slope of retirement satisfaction ($r = -.31, p = .010$). The slope of retirement satisfaction was associated with the intercept of assets ($r = -.29, p = .011$) and the slope of income ($r = .32, p
The intercept of subjective financial resources was associated with intercepts of assets \( r = .70, p < .001 \) and income \( r = .44, p < .001 \). The slope of subjective financial resources was associated with the slope of assets \( r = .49, p = .001 \).

**Single-Construct LGMs**

Before fitting a parallel process model, we first fit LGMs independently for household retirement adjustment, retirement satisfaction, assets, and household income, and subjective financial resources.

**Depressive symptoms.** The LGM for depressive symptoms fit the data well, \( \chi^2 (10) = 7.88, p = .641 \), CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .02. This model showed that the intercept for depressive symptoms differed significantly from zero, \( M_i = 1.10, p < .001 \). However, the slope for depressive symptoms did not differ from zero, \( M_s = 0.00, p = .889 \). These findings indicate that retirees had very few depressive symptoms and experienced no changes in depressive symptoms over time. There was significant variance in the intercept of depressive symptoms, \( D_i = 1.54, p < .001 \) and marginally significant variance in the slope \( D_s = 0.03, p = .055 \), indicating that there were significant individual differences in initial levels and marginally significant individual differences in the variance of slopes of depressive symptoms across time.

**Retirement satisfaction.** The LGM for retirement satisfaction fit the data well, \( \chi^2 (10) = 17.66, p = .06 \), CFI = .98, TLI = .98, RMSEA = .04, SRMR = .07. This model showed that the intercept for retirement satisfaction differed significantly from zero, \( M_i = 2.55, p < .001 \). However, the slope for retirement satisfaction did not differ from zero, \( M_s = -0.02, p = .081 \). These findings indicate that participants were moderately to very satisfied with their retirement at the beginning, and there was no change in retirement satisfaction over time.
There was significant variance in the intercept of retirement satisfaction, $Di = .019, p < .001$ as well as the slope of the change in retirement satisfaction $Ds = 0.01, p = .001$, indicating that there were individual differences in initial levels and the slope of retirement satisfaction across time.

**Household assets.** The LGM for household assets fit the data well, $\chi^2 (8) = 18.96, p = .015, CFI = .99, TLI=.99, RMSEA=.05, SRMR=.05$. This model showed that the intercept and slope for retirees’ assets differed significantly from zero, $Mi = 12.11, p < .001$, and $Ms = -0.24, p < .001$, respectively, which indicated that there was a significant decrease in assets over time. There was significant variance in the intercept of assets, $Di = 10.39, p < .001$ as well as the slope of the change in assets $Ds = 0.97, p < .001$, indicating that there were individual differences in initial levels and the slope of assets across time.

**Household income.** The LGM for behavioral skills fit the data well, $\chi^2 (8) = 24.64, p = .001, CFI = .98, TLI=.97, RMSEA=.07, SRMR=.09$. This model showed that the intercept and slope for retirees’ income differed significantly from zero, $Mi = 11.27, p < .001$, and $Ms = -0.12, p < .001$, respectively, which showed there was a significant decrease in income over time. There was significant variance in the intercept of income, $Di = 1.36, p < .001$ as well as the slope of the change in income $Ds = 0.10, p < .001$, indicating that there were individual differences in initial levels and the slope of income across time.

**Subjective financial resources.** The LGM for subjective financial resources fit the data well, $\chi^2 (9) = 20.31, p =.016, CFI = .99, TLI = .99, RMSEA = .05, SRMR = .03$. This model showed that the intercept and slope for subjective financial resources differed from zero, $Mi = 0.75, p < .001$, and $Ms = -0.02, p < .001$, respectively, indicating that retirees reported that the probability of leaving an inheritance was about 75% in the first wave after
retirement and decreased by 2% every second year. There was significant variance in the intercept \( D_i = 0.08, p < .001 \) and the slope of the change in subjective financial resources \( D_s = 0.001, p = .047 \), indicating that there were individual differences in initial levels and the slopes of subjective financial resources.

**Parallel Process Latent Growth Model**

Based on the acceptable model fits for the individual constructs, we proceeded to fit two models with all constructs including antecedents of retirement (Figure 1). We modeled paths from the antecedents to the intercepts and slopes of financial resources. We also included direct paths from the intercepts and slopes of financial resources to the intercepts and slopes of retirement outcomes. We modeled correlations between (a) the intercepts and slopes of financial resources, (b) the slopes of financial resources and intercepts of retirement outcomes, and (c) the intercepts and slopes of retirement outcomes.

The two models analyzed separately are shown in Table 3. The model for assets and income (Model 1) fit the data well, \( \chi^2 (298) = 469.24, p < .001, \text{CFI} = .95, \text{TLI} = .94, \text{RMSEA} = .04, \text{SRMR} = .05. \) The intercept of assets predicted the intercepts of depressive symptoms, \( \beta = -.37, p < .001 \) and retirement satisfaction \( \beta = .36, p = .003 \) as well as the slopes of depressive symptoms \( \beta = .74, p = .007 \) and retirement satisfaction \( \beta = -.52, p = .014. \) These results indicate that retirees with more assets had fewer depressive symptoms, higher levels of retirement satisfaction, an increase in depressive symptoms, and a decline in retirement satisfaction. The significant or marginally significant association of income with retirement outcomes found in the bivariate correlation analysis disappeared in the model.

The model for subjective financial resources (Model 2) fit the data well, \( \chi^2 (189) = 305.49, p < .001, \text{CFI} = .96, \text{TLI} = .94, \text{RMSEA} = .04, \text{SRMR} = .05. \) The intercept of
subjective financial resources predicted the intercepts of depressive symptoms, $\beta = -.36, p < .001$ and retirement satisfaction, $\beta = .45, p < .001$, indicating that retirees with better subjective financial resources had fewer depressive symptoms and were more satisfied with retirement. The intercept of subjective financial resources marginally predicted the slope of depressive symptoms, $\beta = .29, p = .076$, indicating that retirees with more initial subjective finances may experience an increase in depressive symptoms. The slope of subjective financial resources also marginally predicted slopes of depressive symptoms, $\beta = -.46, p = .087$, indicating that retirees who experienced a decrease of subjective financial resources experienced an increase in depressive symptoms.

Table 4 presents the coefficients of the paths from the antecedents and covariates of retirement and control variables to financial resources, depressive symptoms, and retirement satisfaction. The models showed that openness, conscientiousness, being married were associated with more financial resources. Regarding the antecedents’ effects on retirement outcomes, extraversion, job satisfaction, being female, and more education were associated with better retirement outcomes, whereas openness, agreeableness, and neuroticism were associated with more depressive symptoms and less retirement satisfaction.

**Discussion**

This study aimed to determine the association between financial resources and retirement outcomes after retirement. Specifically, we assessed whether 1) retirees’ objective and subjective financial resources changed after retirement, 2) the levels of assets, income, subjective financial resources predicted the levels of and changes in depressive symptoms and retirement satisfaction, 3) the changes in assets, income, and subjective financial
resources after retirement predicted the changes in depressive symptoms and satisfaction, and 4) there were influences of the antecedents (personality, marital status, and job satisfaction) on depressive symptoms and retirement satisfaction.

The objective financial resources of retirees (i.e., inflation-adjusted assets and income) decreased over time after retirement. The subjective measure also showed a decrease over time. It seems that the decrease in income was the largest among the three indicators of financial resources, whereas subjective financial resources decreased the least. Considering the rates of decrease in assets and income, there was a relatively small decrease in subjective financial resources.

As expected, financial resources played an important role in retirees’ retirement adjustment. The correlation analyses showed that retirees with more objective and subjective financial resources at the beginning of retirement reported better retirement outcomes. The results support previous findings that retirees’ financial resources are associated with psychological well-being (Szinovacz & Davey, 2005).

However, assets, income, and subjective financial resources showed differences in the effects on retirement outcomes. The changes in income and subjective financial resources from the correlation analyses were associated with the change of retirement satisfaction, but the change of assets was not. The proximity of the income effect may explain the results: income is usually related to consumption for current needs, whereas assets are related to future needs. Therefore, a decrease of income is directly linked to the quality of life: income may more likely influence expenses for food, housing, leisure, and health care. We further found that the significant association of income with retirement outcomes disappeared when assets and income were entered together into the model. The levels of and the change in
income may have no more influences on retirees’ depressive symptoms or retirement satisfaction once their levels of assets are considered. That is, if one has enough assets for retirement, one will not be influenced much by income levels or change. Similarly, retirees with few assets would still be concerned about future financial needs even with relatively high levels of income. The influence of the assets representing uncertain future financial difficulties seems to be greater than the influence of current income.

Interestingly, we also found that retirees with more initial assets experienced an increase in depressive symptoms and a decrease in retirement satisfaction over time. As seen in the current study, retirees’ assets decreased over time, which may have resulted in more loss to retirees with more assets. Alternatively, as Atchley (1976) described, retirees experience the peak of retirement satisfaction in the early phase of retirement enjoying extra activities and trips. An increase of retirement satisfaction from these activities in the early phase of retirement may subsequently bring about a decrease in satisfaction when retirees become less involved in activities. Similarly, retirees with fewer assets may not have as many opportunities to engage in activities as retirees with more assets, which may have led to the experience of less decline of retirement adjustment. The latter explanation also helps to account for the difference shown in the effects of subjective financial resources. Unlike assets, subjective financial resources did not predict the change of retirement adjustment.

Even if retirees strongly believe they can manage their life with what they have, they may not be able to afford expensive activities, which cannot boost their early retirement satisfaction.

Finally, we noted that antecedents of retirement such as marital status, and job satisfaction predicted both financial resources and retirement outcomes. Married retirees had more assets and income at the beginning of retirement and experienced less decrease of
retirement satisfaction over time compared to single retirees. Being married seems to be helpful to be in better financial status and to have better retirement outcomes. Retirees who were more satisfied with their job before retirement reported more income after retirement, which supports previous findings that job satisfaction influences income levels (Kaliski, 2007). Job satisfaction was also associated with fewer depressive symptoms after retirement, which supports Schmitt and Pulako’s (1985) suggestion that individuals’ predisposition toward satisfaction determines the levels of satisfaction in general situations including a work setting.

In terms of personality, extraversion was associated with better retirement adjustment, whereas openness, agreeableness, and neuroticism were associated with poor outcomes. Extraverted people are more likely to engage in social activities (Burger, & Caldwell, 2000) and receive social support from others (Swickert, Rosentreter, Hittner, & Mushrush, 2002). The negative association between openness and retirement satisfaction is inconsistent with previous reports that openness is associated with older adults’ life satisfaction (Stephan, 2009). Retirement may bring some loss of opportunities for new experiences that cannot be replaced by leisure and family activities. The negative association of neuroticism with retirement outcomes is well expected due to its high correlation with other well-being measures (e.g., Diener & Seligman, 2002). Agreeableness was associated with low retirement satisfaction, which was inconsistent with previous reports of a positive association between agreeableness and life satisfaction (Robinson, Demetre, & Corney, 2010). Considering the positive associations of agreeableness with well-being measures (e.g., Diener & Seligman), more research is needed to explain this negative association. It is notable that personality predicted a change in subjective financial resources: openness predicted a decrease and
agreeableness predicted an increase in subjective financial resources. It was suggested that openness is associated with fewer savings and more spending behavior (Gillen & Kim, 2014), whereas agreeableness is related to risk aversion (Borghans, Heckman, Golsteyn, & Meijers, 2009), which may explain the respective influence on the change in subjective financial resources. Whereas subjective financial resources were associated with openness and agreeableness, objective ones were not. The lifestyle of the retirees may explain the results. For example, openness may be related to more activities which increased expenditure.

Our study showed that the financial resources influenced retirement outcomes in the post-retirement period and that antecedents of retirement influence financial resources and retirement outcomes. However, some important limitations should be noted. First, macro-level economic factors were not considered in this study. The longitudinal time frame for this study includes the years from 2004 to 2012 with the global recession in 2008. The recession influenced many of U.S. citizens’ financial status including depreciation of assets and job loss (Hout, Levanon, & Cumberworth, 2011), which might have affected retirees’ life. The macro level economic environment is connected to individual and household finances. Second, there may be differences in the effects of assets and income according to the source, which we did not consider in this study. For example, owning a house can have a different effect than having stocks or a savings account in terms of liquidity. Guthrie (1960) suggested that people with low-income levels tend to have more liquid assets, and liquid assets may help low-income retirees adjust better than illiquid ones. Third, we included only marital status and job satisfaction as household and job-related variables. There are other concepts such as marital satisfaction, the length of marriage, salary, work types, and physical demands
as plausible antecedents. Retirement satisfaction is also measured by a single question which was the only item available in the HRS data. A reliability issue and low variance of the measurement may limit studies about retirement. The restricted response range of this item (ranging from 1 to 3) seems to be related to low variance and a high mean score. To address measurement issues of retirement satisfaction, HRS should consider employing a multi-item measurement (e.g., Floyd et al., 1992) with a wider response range.

Our findings on financial resources and retirement outcomes are consistent with previous work focusing on the transition from employment to retirement but expands it to the post-retirement period. Framed by Wang et al.’s (2011) resource-based dynamic model, we showed that the change in financial resources after retirement is an important factor of retirement adjustment and satisfaction. The effects of assets and income should be further studied according to their types (e.g., current vs. fixed, tangible vs. intangible, and operating vs. non-operating assets, earned vs. unearned income). The influence of antecedents of retirement such as personality, marital status, and job satisfaction on retirement resources are also important. Attention to the role of other resources and antecedents will further enhance our understanding of the mechanism of retirement adjustment.
References


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doi:10.1093/oxfordhb/9780199746521.013.0117


Table 1
Summary Statistics for Financial Resources, Antecedent Variables, Depressive Symptoms, and Retirement Satisfaction

<table>
<thead>
<tr>
<th>Range (%)</th>
<th>Time 1 M (SD)</th>
<th>Time 2 M (SD)</th>
<th>Time 3 M (SD)</th>
<th>Time 4 M (SD)</th>
<th>Time 5 M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>-505,446 – 4,893,555</td>
<td>393,468</td>
<td>380,985</td>
<td>388,695</td>
<td>336,358</td>
</tr>
<tr>
<td>Income</td>
<td>0 – 346,418</td>
<td>61,068</td>
<td>54,034</td>
<td>49,934</td>
<td>44,973</td>
</tr>
<tr>
<td>Subjective Financial resources</td>
<td>0 – 100</td>
<td>73.77 (35.00)</td>
<td>76.39 (34.73)</td>
<td>74.09 (35.90)</td>
<td>71.34 (36.50)</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>0 – 8</td>
<td>1.13 (1.73)</td>
<td>1.08 (1.68)</td>
<td>1.08 (1.72)</td>
<td>1.04 (1.59)</td>
</tr>
<tr>
<td>Retirement satisfaction</td>
<td>1 – 3</td>
<td>2.58 (0.58)</td>
<td>2.53 (0.59)</td>
<td>2.49 (0.59)</td>
<td>2.54 (0.57)</td>
</tr>
</tbody>
</table>

Personality
- Openness: 1 – 4, 2.96 (0.53)
- Conscientiousness: 1 – 4, 3.38 (0.45)
- Extraversion: 1 – 4, 3.22 (0.52)
- Agreeableness: 1 – 4, 3.53 (0.46)
- Neuroticism: 1 – 4, 1.98 (0.58)

Job Satisfaction
- Strongly disagree: (3.1)
- Disagree: (12.1)
- Agree: (62.9)
- Strongly agree: (21.9)

Note. Assets and income are adjusted based on the Consumer Price Index.
Table 2

Bivariate Correlations Between the Latent Variables Used in Analyses

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I_Depress</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. S_Depress</td>
<td>-1.17</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I_RetSat</td>
<td>-.70***</td>
<td>.31</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. S_RetSat</td>
<td>.18</td>
<td>-.32</td>
<td>-.31*</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I_Assets</td>
<td>-.43***</td>
<td>.57**</td>
<td>.46***</td>
<td>-.29*</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. S_Assets</td>
<td>-.16*</td>
<td>-.01</td>
<td>.02</td>
<td>.22</td>
<td>-.06</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I_Income</td>
<td>-.32***</td>
<td>.33</td>
<td>.38***</td>
<td>-.19</td>
<td>.46***</td>
<td>.15</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. S_Income</td>
<td>.12</td>
<td>-.40</td>
<td>-.25**</td>
<td>.32*</td>
<td>-.09</td>
<td>-.04</td>
<td>-.58***</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>9. I_SubFin</td>
<td>-.47***</td>
<td>.37*</td>
<td>.48***</td>
<td>-.18</td>
<td>.70***</td>
<td>.08</td>
<td>.44***</td>
<td>-.04</td>
<td>–</td>
</tr>
<tr>
<td>10. S_SubFin</td>
<td>.04</td>
<td>-.37</td>
<td>.06</td>
<td>.23</td>
<td>-.20</td>
<td>.49**</td>
<td>.21</td>
<td>-.01</td>
<td>-.07</td>
</tr>
</tbody>
</table>

Note. N = 500. I = intercept, S = slope, Depress = depressive symptoms, RetSat = retirement satisfaction, SubFin = subjective financial resources.

*p < .05. **p < .01. ***p < .001.
Table 3

Regression Paths in the Multivariate Growth Curve Model

<table>
<thead>
<tr>
<th></th>
<th>Depressive Symptoms</th>
<th>Retirement Satisfaction</th>
<th>Depressive Symptoms</th>
<th>Retirement Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>B</td>
</tr>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td>-0.13</td>
<td>0.03</td>
<td>-.37***</td>
<td>0.05</td>
</tr>
<tr>
<td>Income</td>
<td>-0.11</td>
<td>0.22</td>
<td>-.07</td>
<td>0.06</td>
</tr>
<tr>
<td>Slopes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td>-0.02</td>
<td>0.03</td>
<td>-.12</td>
<td>0.01</td>
</tr>
<tr>
<td>Income</td>
<td>-0.27</td>
<td>0.31</td>
<td>-.22</td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SubFin</td>
<td>-1.49</td>
<td>0.30</td>
<td>-.36***</td>
<td>0.65</td>
</tr>
<tr>
<td>Slopes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SubFin</td>
<td>-1.68</td>
<td>1.02</td>
<td>-.46†</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Note. SubFin = Subjective financial resources.
*p < .05. **p < .01. ***p < .001.
Table 4
Regression Paths in the Multivariate Growth Curve Model

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Intercepts</th>
<th>Model 2</th>
<th>Intercepts</th>
<th>Slopes</th>
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<tr>
<td></td>
<td>Assets</td>
<td>Income</td>
<td>Depressive</td>
<td>Retirement</td>
</tr>
<tr>
<td></td>
<td>B (β)</td>
<td>B (β)</td>
<td>Symptoms</td>
<td>Satisfaction</td>
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<tr>
<td>Antecedents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>0.47 (.08)</td>
<td>0.31 (.25)</td>
<td>0.14 (.07)</td>
<td>-0.13 (-.17)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>1.09 (.15)</td>
<td>0.06 (.04)</td>
<td>-0.20 (-.08)</td>
<td>0.11 (.12)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.13 (-.02)</td>
<td>-0.16 (-.12)</td>
<td>-0.48 (-.22)</td>
<td>0.12 (.16)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.26 (-.04)</td>
<td>-0.07 (-.05)</td>
<td>0.35 (.15)</td>
<td>-0.02 (.03)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.22 (-.04)</td>
<td>-0.09 (-.07)</td>
<td>0.69 (.34)</td>
<td>-0.08 (-.11)</td>
</tr>
<tr>
<td>Married</td>
<td>2.20 (.30)</td>
<td>0.91 (.61)</td>
<td>-0.04 (-.02)</td>
<td>-0.04 (-.04)</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.00 (.00)</td>
<td>0.12 (.12)</td>
<td>-0.22 (-.13)</td>
<td>-0.03 (-.06)</td>
</tr>
<tr>
<td>Demographic controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>−</td>
<td>−</td>
<td>0.02 (.09)</td>
<td>0.00 (.01)</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>−</td>
<td>−</td>
<td>0.18 (.08)</td>
<td><strong>0.15 (.18)</strong></td>
</tr>
<tr>
<td>Education</td>
<td>−</td>
<td>−</td>
<td>-0.04 (-.10)</td>
<td>0.02 (.13)</td>
</tr>
<tr>
<td></td>
<td>Subjective Financial Resources</td>
<td>Depressive Symptoms</td>
<td>Retirement Satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjective Financial Resources</td>
<td>Depressive Symptoms</td>
<td>Retirement Satisfaction</td>
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<tr>
<td>Antecedents</td>
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<td></td>
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<tr>
<td>Openness</td>
<td>0.07 (.13)</td>
<td>0.17 (.08)</td>
<td>-0.14 (-.18)</td>
<td>-0.01 (-.16)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.06 (.10)</td>
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<td>0.11 (.12)</td>
<td>-0.01 (-.06)</td>
</tr>
<tr>
<td>Extraversion</td>
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<td>-0.42 (-.20)</td>
<td>0.09 (.12)</td>
<td>0.00 (.02)</td>
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<tr>
<td>Agreeableness</td>
<td>-0.06 (-.10)</td>
<td>0.31 (.13)</td>
<td>0.00 (.00)</td>
<td>0.02 (.23)</td>
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<tr>
<td>Neuroticism</td>
<td>0.02 (.04)</td>
<td>0.75 (.37)</td>
<td>-0.11 (-.15)</td>
<td>-0.01 (-.13)</td>
</tr>
<tr>
<td>Married</td>
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<td>-0.16 (-.06)</td>
<td>0.01 (.01)</td>
<td>0.01 (.08)</td>
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<tr>
<td>Job Satisfaction</td>
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<td>-0.20 (-.12)</td>
<td>-0.04 (-.07)</td>
<td>-0.01 (-.11)</td>
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<td>Demographic controls</td>
<td></td>
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<tr>
<td>Age</td>
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<td>−</td>
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<tr>
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<td>−</td>
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</tr>
<tr>
<td>Education</td>
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<td>−</td>
<td>-0.06 (-.14)</td>
<td>0.02 (.13)</td>
</tr>
</tbody>
</table>

*Note.* Bold numbers are statistically significant (*p* < .05).
Figure 1. Schematic representation of the multivariate latent growth curve model. Paths from antecedents to the financial resources and retirement outcomes are not drawn.
Figure 2. Change trajectories for retirement adjustment and financial resources. Dashed lines correspond to mean raw scores at each time-point. Solid lines represent trajectories estimated by the unconditional model. Financial resources (i.e., assets, income, and subjective finances) showed a significant decrease, whereas depressive symptoms and retirement satisfaction did not.
CHAPTER 5. THE EFFECT OF SOCIAL SUPPORT, PERSONALITY, MARITAL STATUS, AND JOB SATISFACTION ON DEPRESSIVE SYMPTOMS DURING THE TRANSITION TO RETIREMENT

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Kyuho Lee
Peter Martin
Thomas Schofield
Jennifer Margrett

Human Development and Family Studies, Iowa State University

All the authors made a substantial contribution to conception, design, analysis, and interpretation of the results. Address correspondence to Kyuho Lee, Human Development and Family Studies, Iowa State University, 0078 LeBaron Hall, Ames, Iowa 50011. E-mail: Kyuholee@iastate.edu.
Abstract
Social support is an important predictor of retirees’ psychological well-being. This study aimed to assess the influence of social support from spouse, children, and friends on retirees’ depressive symptoms. Effects of antecedents of retirement (personality and job satisfaction before retirement) were also assessed. Data of 312 married and newly retired individuals from the Health and Retirement Study were included in the study. The findings of the study showed that participants who were less neurotic, more extraverted, and more satisfied with their job reported more social support from spouse, children, or friends before retirement. Agreeable and extraverted retirees experienced an increase in social support from children and friends, respectively during the transition to retirement. The results also showed that only social support from a spouse before retirement, among the three sources of social support, influenced retirees’ depressive symptoms after retirement.

*Keywords:* Retirement, depressive symptoms, social support, personality, job satisfaction
The Effects of Social Support, Personality, Marital Status, and Job Satisfaction on Depressive Symptoms During the Transition to Retirement

Social support is an important resource for psychological well-being in retirement (Asebedo & Seay, 2014). Retirement is one of the most important events in later life (Szinovacz, 1980), and social support serves as a resource to overcome stressful life events, sustaining retirees’ psychological well-being (Kim & Moen, 2002). However, existing literature on the effect of social support on retirees’ psychological well-being does not provide evidence based on longitudinal models, leaving questions about the direction of the influence between social support and psychological well-being. Not much attention has been paid to the different effects of social support according to who provides it. Finally, the influence of retirement antecedents on social support, which might show the dynamics between these antecedents and retirees’ psychological well-being, is not well studied.

This study aims to resolve these gaps in knowledge by exploring more deeply the longitudinal associations between social support, antecedents of retirement, and psychological well-being measured by depressive symptoms. First, we examine the direct associations between antecedents of retirement, social support before and after retirement, and depressive symptoms; second, we assess whether there is an indirect effect between antecedents of retirement and psychological well-being. Hypotheses are tested using data of retirees from the Health and Retirement Study (HRS).

**Theoretical Framework**

Wang, Henkens, and van Solinge’s (2011) resource-based dynamic model was employed in this study as a theoretical background to address the limitations described above. They suggested that retirement adjustment (here, depressive symptoms) depends on
how many resources retirees have and whether resources increase or decrease across time. Resources refer to means or assets that can be used to cope with a difficult situation or to accomplish a goal (van Solinge, 2013). Thus, retirees can have better retirement outcomes with resources for retirement. Wang et al. also argued that social resources, the main predictor of depressive symptoms in this study, are important for retirees and added several antecedents of retirement (i.e., individual, household, job, organization, and macro levels) to explain intra-individual change and inter-individual differences in resources.

**Social Support and Depressive Symptoms**

Social support is a predictor of older adults’ general well-being (Ferguson & Goodwin, 2010). Perceived social support is defined as information leading to the belief that one is cared for, loved, esteemed, and valued, and belongs to a social network of communication (Cobb, 1976). More social support is associated with lower levels of depression (Kwag, Martin, Russell, Franke, & Kohut, 2011; Liu, Gou, & Zuo, 2014), loneliness (Kwag, et al., 2011), and better cognition (Dickinson, Potter, Hybels, McQuoid, & Steffens, 2011). Similarly, lack of social support affects older adults’ physical and mental health (White, Philogene, Fine, & Sinha, 2009). Increased risk of morbidity, sleep problems, functional decline, mortality (Chalise, Saito, Takahashi, & Kai, 2007; Holt-Lunstad, Smith, & Layton, 2010; Seeman, 1996), and increased suicidal ideation (Vanderhorst & McLaren, 2005) are the outcomes when individuals receive lack of social support.

The effect of retirees’ depressive symptoms on social support, however, is not studied well. It is plausible that retirees’ depressive symptoms would determine the quality and quantity of social interaction. In fact, Stice, Ragan, and Randall (2004) reported that adolescents’ depressive symptoms predicted the decrease in peer social support. Using a
cross-lagged design, Turner (1981) found that new mothers’ social support influenced their psychological well-being, and vice versa. The current study assesses the effects of social support and psychological well-being on each other in the retirement context.

**Retirement and Social Support**

There are mixed findings on whether individuals experience a change in social support after retirement. Some studies have suggested that retirees maintain their social support network (Chappell & Havens, 1985) or even increase in support after retirement because they can spend more time on the interaction with others (Palmore, Cleveland, Nowlin, Ramm, & Siegler, 1979). Other studies, however, have reported that retirement results in the loss of the number of supports because retirees lose former worker confidants, friends, and associates (Atchley, 1976; Bossé, Aldwin, Levenson, Spiro, & Mroczek, 1993). For example, Bossé et al. using a longitudinal model reported that the quantity of older adults’ social support measured by the frequency of contacts decreased after retirement.

It is important to specify the source of the social support because the effect of support in the transition to retirement can differ according to the source of the support. In fact, previous studies have reported that there are differences in effects of support on retirement outcomes depending on the source. For example, Asebedo and Seay (2014) reported results from middle and old age retirees that family support significantly predicted retirement satisfaction, whereas support from friends did not. Among family members, support from or good relationship with a spouse is a predictor of better retirement outcomes such as life satisfaction (Austrom, Perkins, Damush, & Hendrie, 2003), psychological well-being (Kubicek, Korunka, Raymo, & Hoonakker, 2011), and retirement satisfaction (Vaillant, DiRago, & Mukamal, 2006). Regarding children, some studies reported that having children
in a household had positive effects on life satisfaction (Becchetti, Ricca, & Pelloni, 2012), whereas other research reported that there were no effects of the frequency of interaction with adult children (Mancini, 1979) or exchange of aid (Lee & Ellithorpe, 1982) on older adults’ morale. Finally, support from friends influenced retirees’ morale (Lee & Ishii-Kuntz, 1987), sometimes even stronger than that of adult children or other relatives (House & Kahn, 1985; Seeman & Berkman, 1988). Some studies provided an explanation on the effects of the support from friends that support from friends is usually given freely without a sense of expectation or obligation (Antonucci & Jackson, 1987). Wood and Robertson (1978) added that friendships are voluntarily chosen, whereas kinships are ascribed. Reitzes and Mutran (2004) used symbolic interaction theory to explain the importance of friendship: according to this theory, sharing meaning with others forms a sense of self or identity, which motivates an individual to turn his/her experience positively.

Although quality of social support is more important than quantity or availability (Pinquart, & Sörensen, 2000; Porritt, 1979), many studies on the effect of social support used measures such as an availability of supports from a spouse, children, relatives, friends, and the community (Platts, Webb, Zins, Goldberg, & Netuveli, 2015), and frequency of contact or activities with social support providers (Bossé et al., 1993; Szinovacz & Davey, 2001). The quantity of social support, however, could fail to reflect how much support retirees actually receive. For example, engaging in many activities with friends does not necessarily mean that one feels cared for, loved, esteemed, and valued, or belonged. Therefore, quality of social support should be measured in studies on the effect of social support.

Studies which assessed the quality of social support looked at the emotional support typically investigating if retirees felt close to their spouse (Kubicek et al., 2011), if retirees’
emotional needs are understood (Price & Balaswamy, 2009), and if retirees seek emotional support (Grove, Lavallee, & Gorden, 1997). These studies all reported that emotional social support helped retirees to experience better retirement adjustment.

Most studies measure retirees’ social support only at a point before or after retirement assuming no change in social support after retirement, so the change in the social support retirees receive after retirement is not well studied. Shaw et al. (2007) noted from their study on retirees’ social support that retirees experienced a change in social support after retirement. Cross-sectional studies have a limitation in explaining the direction of the influence, so the relationship between social support and psychological well-being should be studied in a longitudinal model. In fact, Stice, Ragan, and Randall (2004) reported that one’s depression predicted less social support.

Antecedents of Retirement

Finally, the effects that antecedents of retirement through social resources can have on retirement adjustment are not explored. Predictors of retirement adjustment such as retirement age (e.g., Asebedo & Seay, 2014; Bender, 2012), job satisfaction, and marital status (e.g., Becchetti et al., 2012; Choi, 2001) may have effects via social resources. Therefore, how antecedents of retirement influence retirement outcomes with social resources should be tested in order to understand their role in the retirement adjustment process better.

Personality traits, especially extraversion and neuroticism, are predictors of social support. More extraverted individuals, for example, received more social support than introverted persons (Cutrona & Russell, 1987; Russell, Booth, Reed, and Laughlin, 1997). Extraverted people have larger social networks (Henderson, 1981) and more frequent
contacts with others (Bolger & Eckenrode, 1991). However, the literature is still inconsistent:
Hill (1987) maintained that extraverted individuals have more affiliative needs, which makes it more difficult for them to receive supports as a stress buffer even if they receive the same amount of support as introverted people. Krause, Liang, and Keith (1990) noted that extraversion was not associated with receiving social support. Less availability of emotional support was associated with neuroticism due to fewer opportunities for social integration and attachment (Henderson, 1981). The perception, not the reality, is also suggested as the reason for neurotic individuals’ receiving less social support whereas extraverted individuals report more social support (Bolger & Eckenrode, 1991; Cutrona & Russell; Russell et al. 1997; Zellars & Perrewé, 2001).

Regarding the relationship between retirees’ job satisfaction before retirement and social support after retirement, most studies have reported that the social support employees receive at work promotes their job satisfaction (Baruch-Feldman & Schwartz, 2002). Baruch-Feldman and Schwartz reported that social support from family, coworkers, supervisors all predicted more job satisfaction. Results from several studies imply that social relationships, in turn, could be influenced by spill-over effects from work. For example, Ilies, Wilson, and Wagner (2009) reported that job satisfaction was related to marital satisfaction. However, little attention has been paid to the possible association between job satisfaction and friendship, although spill-over effects of work on friendship may exist. Only the friendship within the workplace was studied: Winstead, Derlega, Montgomery, and Pilkington (1995) reported that better relationships with one’s best friends in the workplace related to better job satisfaction.
The Current Study

The current study assesses the links between the social support retirees receive and their depressive symptoms and investigates whether retirees’ depressive symptoms also influences the social support from their close relationships. Effects of retirement antecedents such as personality traits and job satisfaction before retirement are also investigated. The current study follows Wang et al.’s (2011) resource-based dynamic model by evaluating the effects of social support on retirement adjustment manifested by depressive symptoms.

Therefore, the research questions of the current study are:

1. What are the cross-lagged relations between retirees’ social support from spouse/children/friends and psychological well-being?

2. Do antecedents of retirement (personality traits, job satisfaction) have direct and indirect effects, through social support, on psychological well-being after retirement?

Method

Participants

From the HRS RAND dataset, data were collected from newly retired married people. People who were already retired before time 1, or divorced, never married, or widowed were excluded. The sample (N = 312) is comprised of individuals who were not retired in 2006/2008 (t1) and were partly/fully retired in 2010/2012 (t2). People who were not married in any of the time and who later became fully employed were excluded from the study. Participants’ mean age at time 1 was 63.56 (SD = 5.95) years. The average level of education was approximately 14 years (M = 13.59, SD = 2.48). Participants were mostly White (90%).
There were more female (53.2%) than male participants. Compared with the HRS total sample, the sample of this study showed a lower female ratio (49.7% vs. 56.2%), a higher ratio of being married (100% vs. 66.4%), fewer depressive symptoms ($M = 0.96$ vs. $M = 1.50$), and was 3.9 years younger. However, there was no significant difference in retirement satisfaction ($M = 1.5$ vs. $M = 1.54$).

**Measures**

**Social support.** Social support that retirees receive from their spouse/partner, children, and friends was measured separately over two waves before and after retirement. Three items assessing social support include: “How much do they really understand the way you feel about things?” “How much can you rely on them if you have a serious problem?” and “How much can you open up to them if you need to talk about your worries?” The response options ranged from 1 (a lot) to 4 (not at all). Items were recoded so that a higher value indicates a higher level of social support. Cronbach’s alpha coefficients for social support were .80 (time 1) and .76 (time 2) for spouse; .79 (time 1) and .80 (time 2) for children; .86 (time 1) and .84 (time 2) for friends.

**Depressive symptoms.** Retirees’ depressive symptoms were measured with the summary score of the 8-item Center for Epidemiological Studies depression scale (CES-D; Radloff, 1977). The eight items include six negative well-being questions (i.e., depressed, effort, restless, lonely, sad, and could not go on) and two positive items (i.e., happy, enjoyed life). All the items were dichotomous questions (1 = yes, 0 = no). Items showing positive well-being were reversely coded so that higher values indicated more depressive symptoms. Cronbach’s alpha coefficients for time 1 and time 2 were .84 and .85, respectively.
**Personality.** A total of 26 items were used to measure the Big Five personality traits (i.e., openness, conscientiousness, extraversion, agreeableness, and neuroticism) of the participants. Because the HRS divided the sample into two groups and measured personality every second wave in turn, data on personality in 2006 and 2008 were used. The Midlife Development Inventory (Lachman & Weaver, 1997) with a 4-point scale (1 = not at all and 4 = a lot) was used. The examples of the items are “creative,” “imaginative,” and “intelligent” for openness; “organized,” “responsible” and “hardworking” for conscientiousness; “outgoing,” “friendly,” and “active” for extraversion; “helpful,” “warm,” “caring,” and “softhearted” for agreeableness; “moody,” “worrying,” “nervous,” and “calm” for neuroticism. Some items were reversely coded so that high scores indicate strong personal traits. Cronbach’s alpha coefficients for openness, conscientiousness, extraversion, agreeableness, and neuroticism were .81, .61, .79, .79, .72, respectively.

**Job satisfaction.** Participants’ job satisfaction before retirement was measured in 2006 and 2008 according to the year participants retired with a single question: “I really enjoy going to work” (1 = strongly disagree and 4 = strongly agree).

**Data Analyses**

A cross-lagged structural equation model was computed by using Mplus 7.0 to examine the cross-lagged relations between social support and depressive symptoms. In cross-lagged models, change in each variable over time is modeled using stability coefficients between time-adjacent measures of each variable (e.g., depressive symptoms before and after retirement), and cross-lagged relations between social support and psychological well-being.
Model fit of the cross-lagged model was assessed by the chi-square statistic, the Tucker-Lewis Index (TLI), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). Because the chi-square statistic is sensitive to large samples, other model fit indices were used as the primary criteria to evaluate model fit. The TLI and the CFI range between 0 and 1, with values above 0.90 indicating adequate model fit (Hu & Bentler, 1999). A rule of thumb for RMSEA is that values less than .05 indicate close approximation, values between .05 and .08 reasonable error of approximation, and values greater than .10 show poor fit (Browne & Cudeck, 1993). The chi-square difference test difference was used to compare the fit of nested models. A significant chi-square test of difference suggests that the less constrained model should be retained, whereas a nonsignificant test indicates that the two models provide an equal fit to the data.

Mplus uses full information maximum likelihood (FIML) estimation in order to include missing data under the missing at random (MAR) assumption. MAR makes the assumption that missing data can be predicted from available data and that missingness is unrelated to the dependent variable. Parameter estimates and standard errors were estimated using a robust version of FIML (maximum likelihood - robust, MLR; Muthén & Muthén, 2012; Yuan & Bentler, 2000).

Results

Participants’ descriptive information on social support and depressive symptoms they received from their spouse, children, and friends are presented in Table 1. Results from bivariate correlation analyses between study variables are also included. Depressive symptoms were stable over time before and after retirement. Participants’ depressive
symptoms before retirement (t1) were associated with social support from their spouse \( (r = -0.16, p = 0.007) \), children \( (r = -0.26, p < 0.001) \), and friend \( (r = -0.18, p = 0.003) \) at time 1. Depressive symptoms after retirement (t2) were associated with social support from their spouse \( (r = -0.23, p < 0.001) \) and children \( (r = -0.17, p = 0.005) \) at time 1. Depressive symptoms at time 2 were also associated with social support from spouse \( (r = -0.22, p < 0.001) \) and children \( (r = -0.15, p = 0.017) \) at time 2. Among the five personality traits, agreeableness \( (M = 3.52, SD = 0.46) \) was the highest and neuroticism \( (M = 2.02, SD = 0.58) \) was the lowest. Mean job satisfaction \( (M = 3.20, SD = 0.59) \) indicated that participants were overall satisfied with their job before retirement. Results from paired t-tests with mean scores of measured items indicated that social support received from children significantly decreased after retirement \( (t = -2.57, p = 0.011) \), whereas social support from spouse and friends did not change.

After we found that the measurement models of three latent variables had a good model fit, \( \chi^2(117) = 206.33, p < 0.001, TLI = 0.96, CFI = 0.97, RMSEA = 0.05 \), a cross-lagged SEM model was conducted to address the research question: what are the cross-lagged relations between retirees’ social support from their spouse/children/friends and psychological well-being? The results showed that stability coefficients between social support and between well-being measured at time 1 and time 2 were assessed. Cross-lagged paths from social support to well-being and from well-being to social support were examined to test the influence of each other. Additionally, we examined whether the effects of social support on well-being were different according to who provided the support by equating all the paths from social support to well-being. To select a better fitting model, a fully unconstrained model and a model with constrained paths were compared using a chi-square difference test. The fully unconstrained model, \( \chi^2(146) = 273.10, p < 0.001, TLI = 0.94, CFI = 0.94 \)
= .95, RMSEA = .05, and the constrained model $\chi^2(153) = 299.73, p < .001, \text{TLI} = .93, \text{CFI} = .95, \text{RMSEA} = .06$ both showed good model fit. However, the fully unconstrained model showed a significantly better model fit than the constrained model, $\Delta \chi^2 (df = 7) = 26.63, p < .001$.

The model without antecedents yielded all significant stability paths (support from spouse, $\beta = .73, p < .001$; children, $\beta = .73, p < .001$; friends, $\beta = .56, p < .001$; depressive symptoms, $\beta = .47, p < .001$), indicating that an individual who had received more social support before retirement received more support after retirement. Regarding the cross-lagged paths, only support from spouse at t1 predicted depressive symptoms at t2, $\beta = -.15, p = .005$.

Antecedents of retirement (e.g., personality traits, job satisfaction before retirement) were added to the final model (Figure 1). The model showed an acceptable model fit, $\chi^2(218) = 338.51, p < .001, \text{TLI} = .94, \text{CFI} = .96, \text{RMSEA} = .04$. The standard coefficients obtained from the final model did not show a difference in the stability paths and cross-lagged paths when compared to the previous model without the antecedents. The final model indicated that (a) psychological well-being and social support from spouse/partner, children, and friends showed positive stability coefficients before and after retirement, and (b) social support from spouse/partner predicted depressive symptoms at the following time period, but not the reverse. Social support from children and friends did not predict depressive symptoms. Age, the only covariate entered into this model due to limited sample size, predicted depressive symptoms before retirement ($\beta = -.03, p = .045$).

Social support from spouse before retirement (t1) was predicted by participants’ neuroticism ($\beta = -.14, p = .024$); support from children by extraversion ($\beta = .24, p = .002$) and neuroticism ($\beta = -.21, p = .001$); support from friends by agreeableness ($\beta = .34, p$
and job satisfaction ($\beta = .16, p = .017$). Lastly, social support from spouse and friends at t2 were predicted by agreeableness ($\beta = -.14, p = .020$) and extraversion ($\beta = .18, p = .012$), respectively: agreeable retirees experienced a decrease of social support from their spouse, whereas extraverted retirees experienced an increase in social support from friends.

The change in depressive symptoms was associated with the change in the social support from spouse: retirees who experienced an increase of social support from their spouse during the retirement transition experienced a decrease of depressive symptoms.

**Discussion**

This study aimed to determine the relationship between the social support retirees receive and depressive symptoms. Social support (from spouse, children, and friends) and psychological well-being were measured both before and after retirement over four years. The results showed that although children’s social support decreased over time after retirement (intra-individual change), retirees’ individual relative standing in social support from all three sources changed very little. In terms of the effect of social support, although children’s support was associated with fewer depressive symptoms before retirement, only social support from a spouse before retirement had a direct effect on depressive symptoms after retirement. Regarding antecedents of retirement, personality and job satisfaction were associated with social support before retirement, but the associations were different according to the source of social support: less neurotic retirees received more support from their spouse; more extraverted and less neurotic participants received more support from children; higher scores on agreeableness and satisfaction with job were associated with more support from friends. We further found that retirees less agreeable and more extraverted
experienced an increase of social support from spouse and friends, respectively. Finally, we identified a negative association between the change in social support from spouse and the change in depressive symptoms.

There were mixed findings on the continuity of social support retirees received. At an inter-individual level, all social support showed continued stability over time: retirees with more social support before retirement received more support after retirement. At an intra-individual level, however, children’s support decreased during the retirement process. Considering that social support is coming from social relationships, this result implies that retirement may not have much influence on the pattern of social relationships. Studies taking a life-course perspective on relationships (e.g., Caspi, Elder, & Bem, 1988; Elicker, Englund, & Sroufe, 1992) suggest that social relationships are built on patterns formed throughout the life course. For example, Caspi et al. (1988) reported that stable personality traits influenced relationships over the life course. The stability of social support from spouse and friends found in the current study supports previous studies (Chappell & Havens, 1985). However, the finding that children’s emotional support decreased during the retirement process is different from previous findings that retirement does not have an effect on the change in the quality of social support retirees receive (Bossé, Aldwin, Levenson, Spiro, & Mroczek, 1993). Bossé et al. combined the social support from family and friends, so it is not clear whether children’s social support changed. Further studies are suggested to investigate the change in the social support from these relationships during retirement transition.

It is not surprising that more emotional support from spouses influenced retirees’ depressive symptoms. This result is in line with previous research findings that the support from a spouse is related to retirees’ psychological well-being and retirement adjustment as
well as life satisfaction (Austrom et al., 2003; Kubicek et al., 2011; Vaillant et al., 2006). The contribution of this study is that we found a longitudinal influence of social support from a spouse before retirement on retirees’ psychological well-being. Moreover, we also found the association of change in social support from a spouse with the change retirees experienced in depressive symptoms. Because of the co-occurring timeline, it is difficult to argue that this change-change relationship is a causal relation. However, the aforementioned finding that support from spouse influenced depressive symptoms suggests that a change in social support brings about a change in retirees’ depressive symptoms.

It is worthwhile to note that the regression coefficients predicting post-retirement period’s social support and depressive symptoms show relative changes. Except for adult children’s social support, social support from spouse and friends, and depressive symptoms did not differ at the mean level. Therefore, the significant effect of social support from a spouse before retirement on depressive symptoms after retirement should be interpreted in this way: more social support before retirement predicted the relative rank of the retirees’ depressive symptoms.

As hypothesized, retirees’ personality traits influenced their social support. The findings that neuroticism, extraversion, and agreeableness were associated with social support is consistent with previous research (Cutrona & Russell, 1987; Russell, Booth, Reed, and Laughlin, 1997; Zellers & Perrewé, 2001). Zellars and Perrewé explained the association between these personality traits and social support: extraverted people may be more optimistic, which is associated with social support seeking behaviors as well as greater perceived social support. Similarly, neurotic workers might be less optimistic and perceive their social support as small. Lastly, agreeableness was described as associated with the
motivation of striving for intimacy and solidarity with people, which might have helped participants in getting more support. Interestingly, the influence of personality traits differed according to the source of the social support. In the current study, social support from a spouse was negatively associated with neuroticism, support from children with extraversion and neuroticism, and support from friends with agreeableness. Some personality traits seem to be more beneficial for relationships with others. These results are consistent with previous findings that neuroticism is negatively related to marital quality (Bouchard, Lussier, & Sabourin, 1999), and extraversion and agreeableness are related to friendships (Selfhout, Burk, Branje, Denissen, van Aken, & Meeus, 2010). The association between a decrease of social support from the spouse with agreeableness might be explained by the tendency of agreeable people to over-exert themselves to help others (Bruck & Allen, 2003). Therefore, they may remain as “givers” rather than as receivers. Although we suggest that different personality traits are helpful in receiving specific types of social support, further research is needed for investigating the different effects of personality traits on the types of social support.

The result that job satisfaction was associated with the social support from friends should be carefully interpreted because job satisfaction was measured only at one time point, which limits a causal interpretation. A spill-over effect from the workplace to personal life is one possible explanation. Satisfactory work conditions may help workers to build and maintain friendships. For example, flexible working time arrangements were found as an important factor for maintaining friendships (Pedersen & Lewis, 2012), and a flexible work schedule is associated with higher job satisfaction (McNall, Masuda, & Nicklin, 2009). Another explanation is that friendships in a workplace are related to higher job satisfaction
Morrison (2004) explained the association between friendship and job satisfaction with Maslow’s (1954) classic theory of human motivation, which implies that social needs (i.e., friendships) are antecedents of vocational achievement.

There are several limitations in this study. First, moderation effects of gender on the association between social support and depressive symptoms was not tested, although women receive more social support from multiple sources (e.g., Antonucci & Akiyama, 1987). Regarding the effect of social support from a spouse, Reitzes and Mutran (2004) reported that married women had more positive attitudes than single women toward retirement after retirement, whereas widowed men had less positive attitudes than married men toward retirement before retirement. Likewise, there might be gender differences in the effect of social support from children or friends that might have diluted the effect of social support for a certain gender.

Second, although we could investigate the stability of social support from close relationships, we were not able to assess the influence of a change in social support on retirees’ psychological well-being. Because the data collection on social support began in 2006 and every four years thereafter, we did not have enough waves of data for this analysis. Further studies are recommended once the data from wave 12 in 2014 become available to test the longitudinal influence of changes in social support. Third, we did not include physical health, financial resources, and social support because of different sampling and because of a reduced sample size. In addition, the influence of the economic recession in 2008 which fell into the pre- and the postretirement period was not considered. Cohort effects were not considered, either: more studies are needed to compare the results of this
study with the results including other cohorts. This study also sampled only relatively new retirees, so comparing the results of this study with retirees who have been retired for a longer time will be important future work. We did not compare the effect of social support on depressive symptoms with non-retirees. It is possible that the effects of social support for retirees are not different from the effects for non-retirees.

Despite the limitations noted above, the findings of the present study that social support retirees receive from their spouse before retirement positively influence the psychological well-being sheds lights on research concerning social support and retirement adjustment. Previous studies have studied the change of social support during the retirement process. However, very few studies have assessed the influence of the change in social support over time. The effects of individual and job levels of antecedents of retirement on psychological well-being were also assessed.

That social support from a spouse before retirement influences psychological well-being once more underscores, like other research on retirement, the importance of the marital relationship during the retirement process. We suggest that during the retirement process, a spouse is a key person for retirees’ adjustment. We also suggest an application for retirement programs: a starting point of education programs is to emphasize the importance of social support from a spouse.
References


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Table 1

*Bivariate Correlations between the Variables Used in Analyses*

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<td>1. SS from Spouse (t1)</td>
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<td>2. SS from Spouse (t2)</td>
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<td>3. SS from Children (t1)</td>
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<td>4. SS from Children (t2)</td>
<td>.16*</td>
<td>.20**</td>
<td>.77***</td>
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<td>5. SS from Friends (t1)</td>
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<td>.34***</td>
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<td>6. SS from Friends (t2)</td>
<td>.09</td>
<td>.09</td>
<td>.35***</td>
<td>.45***</td>
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<td>7. Depressive Symptoms (t1)</td>
<td>-.16**</td>
<td>-.04</td>
<td>-.26***</td>
<td>-.22***</td>
<td>-.18**</td>
<td>-.09</td>
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<td>8. Depressive Symptoms (t2)</td>
<td>-.23***</td>
<td>-.22***</td>
<td>-.17**</td>
<td>-.15*</td>
<td>-.15*</td>
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<td>M</td>
<td>3.48</td>
<td>3.49</td>
<td>3.17</td>
<td>3.08</td>
<td>2.97</td>
<td>2.99</td>
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<td>SD</td>
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<td>0.58</td>
<td>0.70</td>
<td>0.72</td>
<td>0.74</td>
<td>0.71</td>
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<td>1.47</td>
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<tr>
<td>t (t2 – t1)</td>
<td>0.53</td>
<td>-2.57*</td>
<td>0.35</td>
<td>0.35</td>
<td>0.92</td>
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*Note. N = 312. SS = social support. * p < .05. ** p < .01. *** p < .001.*
Figure 1. Structural equation model. Non-significant paths between latent variables are presented with dashed line; SS = social support.
CHAPTER 6. GENERAL CONCLUSIONS AND DISCUSSION

Retirement adjustment is an important indicator of well-being in later life. The main purpose of this dissertation was to assess the influence of retirees’ resources on retirement adjustment over time through longitudinal analyses. Wang, Henkens, and van Solinge’s (2011) resource-based dynamic process of retirement adjustment theory was used in this study. This theory suggests that the levels of retirement adjustment changes according to the change in the levels of resources retirees have. Therefore, we tested the effects of retirees’ health, financial resources, and social support from close relationships on retirement adjustment and satisfaction. As van Solinge and Henkens (2008) had suggested that a caution is needed when measuring retirement adjustment, we measured retirees’ depressive symptoms and retirement satisfaction. Antecedents of retirement such as retirees’ personality traits, marital status, and job satisfaction before retirement were also tested, specifically whether they influenced retirement outcomes via the three types of resources.

Longitudinal methods of multivariate latent growth curve modeling and cross-lagged model were employed to address the main research questions of the studies with the data drawn from the Health and Retirement Study. The findings of this study show that retirees experienced a change (decrease) in health and financial resources over time and a decrease in social support from children during the retirement transition period. Retirees’ health and financial resources at the beginning of retirement, as well as the social support, retirees receive before retirement predicted better retirement adjustment after retirement. The change in health and financial resources over time after retirement was also associated with the change in retirement adjustment. Finally, antecedents of retirement such as personality traits,
marital status, and job satisfaction before retirement also predicted retirement resources and adjustment.

An important finding of this study suggests that the levels of retirees’ health, financial, and social resources changed during the post-retirement period. As a group, retirees’ health and financial status declined in the post-retirement stage, and the social support from children showed a decrease during the transition from employment to retirement. Resources can increase and decrease. The result that these three types of resources showed change over time has important implications. This finding is important because there are very few reports on changes in health, finances, and social support in the post-retirement period. There is a research trend of focusing on the transition from employment to retirement. Therefore we have a limited understanding of the changes in these resources in the post-retirement period. This focus may reflect the assumption that the changes in resources are not as important when compared to changes in the transition from employment to retirement. Therefore, the changes in the levels of resources over time after retirement found in this study can draw the attention of researchers on retirement adjustment during the post-retirement period.

The result that all the resources were associated with retirement adjustment is an important finding suggesting that health, financial resources, and social support are important resources for retirement adjustment. As expected, retirees with higher levels of health, financial resources, and social support experienced fewer depressive symptoms and better satisfaction. Change in resources predicted changes in retirement adjustment. For example, in the first study concerning health resources, the change in retirees’ health predicted the change in depressive symptoms and satisfaction. In the second study, a trend effect of a change in financial resources on retirement adjustment was found. These results underline the
importance of starting retirement with more resources as well as maintaining retirees’ resources. Even if retirees stay in good health and accumulate enough resources, failing to maintain optimal health and financial resources could bring about more decline in retirement adjustment.

Personality, marital status, and job satisfaction included as the antecedents of retirement were also unique components of the three studies. As expected, married retirees reported better retirement adjustment. The results reported in the third study help understand the positive effect of being married: spousal support predicted better psychological well-being after retirement. Although there may exist variations in the amount of social support retirees receive from their spouse, it seems that the retirees’ spouse plays an important role in retirement adjustment.

In terms of personality, conscientiousness and extraversion were related to better retirement adjustment outcomes, whereas openness, agreeableness, and neuroticism were related to worse outcomes. Personality traits likely influence an individual to experience retirement in different ways. It is generally accepted that extraverted and neurotic people have the tendency to experience positive and negative affect, respectively (Cioqueta & Stiles, 2005). Therefore, extraverted retirees experience fewer depressive symptoms and better retirement satisfaction, whereas neurotic retirees experience more depressive symptoms and poor retirement satisfaction. Conscientious retirees’ tendency to have higher levels of positive affect (Watson & Clark, 1992) seems to be associated with lower depressive symptoms and better retirement satisfaction.

Previous studies (e.g., Finch & Graziano, 2001) provided another view of the association between personality traits and retirement outcomes: personality traits have effects
on developmental outcomes through social interactions. In this study, we hypothesized that personality traits influence depressive symptoms and retirement satisfaction through processes such as health, financial resources, and social support. Although there were no significant indirect effects of the antecedents on retirement outcomes via retirement resources, personality traits were associated with resources. For example, conscientiousness was associated with more assets and better physical health, whereas openness was associated with better health and more income and subjective financial resources.

Similarly, job satisfaction was associated with higher income levels after retirement and more social support from friends before retirement. As described in the life-course perspective (Huinink & Feldhaus, 2009), these results show that retirement adjustment and satisfaction can be understood better in the context of individual, family, and job domains. Therefore, being married and having a job with which individuals can be satisfied can help retirees to experience better retirement adjustment and satisfaction. Regarding the effects of personality traits, retirees with high levels of openness and conscientiousness need to be cautious about the likelihood to have poor health at the beginning of retirement, although they are more likely to have better financial resources. Neurotic people should realize the risk of receiving less social support from their spouse.

There are several limitations in the current study. First, although we employed a longitudinal design, changes of the covariates such as personality and marital status were not included in the study. Second, factors of retirement outcomes at macro levels were not considered in this study. Considering the timeline of this study which was embedded in the global recession in 2008 the explanation of the effects of the resources may be confounded by the influence of macro effects. Third, potential moderation and mediation were not tested.
Retirees’ gender, age, and education may not only have direct effects on the retirement outcomes but also work as moderators. Considering that subjective measures of health and financial resources tested are the retirees’ perception of the objective resources, subjective measures may also play mediator roles in the relationship between the objective predictors and retirement outcomes. Fourth, possible differences among the subgroups of retirees have not been tested (e.g., involuntary retirement vs. voluntary retirement; fully retired vs. partly retired; working spouse vs. retired spouse). Finally, we could not assess the influence of a change in social support during the post-retirement period: we could only identify the association between the change in social support and the change in depressive symptoms. The initial plan of this study was to include data in the post-retirement period to address the limitations of previous studies which focused only on the transition from employment to retirement. However, the HRS included the items on social support only recently, and participants were given the items every two years, which prohibited us from testing longitudinal growth models.

Notwithstanding the limitations, there are several possible contributions of this study to the literature on retirement. We employed multiple measurements for resources and retirement outcomes to evaluate whether different measurements show different assessments and which measure best captures the association between retirement and adjustment. By employing multiple measures, we attempted to address the multidimensionality of retirement adjustment: retirement is not simple, but a construct with multiple dimensions including emotional satisfaction, morale, social integration, and self-esteem (Price, 2003). Gurin and Brim (1984) also argued that it is desirable to have a multidimensional measure for the study on the change with aging because this type of measure enables researchers to assess the
differential change trajectories across domains. Therefore, we assessed health with three measurements: functional health, the number of chronic diseases, and self-rated subjective health. For financial resources, we used assets, income, and subjective financial resources. Retirement outcomes were measured by retirement adjustment (psychological well-being) and retirement satisfaction.

The results suggest that both health and financial resources can be measured with subjective indicators, and the subjective health measurement was better in predicting changes in retirement adjustment and satisfaction than objective health measurements. For financial resources, changes in income and subjective measures predicted retirement adjustment better than assets. The two retirement outcomes (depressive symptoms and retirement satisfaction) also showed different associations with predictors. Depressive symptoms seemed to be related to resources and antecedents.

We introduced a new way of measuring the subjective financial resources including assets and income: the probability of leaving an inheritance. Previous studies which employed subjective measurements of financial resources focused on retirees’ income ignoring their asset levels. The measurement used here for subjective financial resources seems to capture both assets and income well based on the correlation analyses. More research is needed to test its validity further.

The comparison of the effects of three sources of social support (i.e., spouse, children, and friends) on retirement adjustment and satisfaction in this study is also a contribution to the literature on retirement. Although retirees could receive social support from various sources, support from a spouse was the only one which influenced retirees’ psychological well-being. We interpreted this result that the spouse is the main social support in midlife and old age.
throughout the retirement process (i.e., from making a retirement decision to post-retirement adjustment).

We suggest a need for developing a comprehensive measurement for retirement adjustment. Several of our findings support the notion that the influence of the predictors of retirement outcome can be different depending on the measurement. For example, the number of chronic diseases predicted retirement adjustment, whereas it did not predict retirement satisfaction. As is common in other studies, retirement adjustment was measured in this study with a reversed CES-D score, which does not exactly show retirees’ psychological well-being solely as a result of retirement. Retirement satisfaction was measured only by a single question, which reduces confidence in its reliability and validity. Hence, in addition to the need for future research to be cautious when selecting measurements, we suggest developing a well-structured scale for retirement adjustment.

There are several suggestions for future and current retirees. They can benefit from our finding that more physical, financial, and social resources are helpful for better retirement adjustment and satisfaction. Therefore, it is recommended to try to begin retirement with more retirement resources and optimize the quantity and quality of these resources. We suggest to take care of physical functioning as well as keeping the number of health problems to a minimum by engaging in good health behaviors. If work before retirement is not substituted with other activities, retirement may bring a decrease of activities with subsequent health decline. Participating in physical activities can help to maintain the level of physical health (Payne, Mowen, & Montoro-Rodriguez, 2006). In addition to the simple advice, “spend less and save more” to optimize financial resources, we suggest allocating assets and income wisely. We also suggest annuitizing assets to have a more stable income. Retirees should
maintain a positive relationship with their spouse before and during retirement. Aforementioned resources, however, may not be easily achievable in a short amount of time, but take time and strategic planning.

We also suggest an extension of retirement education programs to the post-retirement period. Most current retirement programs are called retirement preparation programs and focus on helping employees in making decisions about and adjusting to retirement (Olson, 1981). These programs provide information about Social Security, Medicare, Medicaid, as well as the benefits from the current employer (e.g., Wagner, n.d.). These retirement programs end when employees retire, which may show the underlying assumption that helping employees to have a good start into retirement will prepare them to be successful retirees. However, the findings of this study that retirement resources and retirement adjustment change after retirement highlight the dynamic adjustment in a post-retirement period, suggesting that failure in maintaining resources would bring about poor retirement adjustment. Therefore, employers should consider extending retirement programs for their employees to the post-retirement period: this may sound like an additional burden on employers, but there are some potential benefits for employers as well. For example, employers’ simple maintenance of communication with former workers could increase the morale of current employees assuring them they will not be cut-off from former employers (Avery & Jablin, 1988), which may bring about higher productivity (Iverson & Zatzick, 2011). Avery and Jablin suggested that retirees may keep identifying themselves with their former employers through continuing communication with former employees and are likely to be a good support group for their former employers. Therefore, employers’ continuing effort and support for
their former employees can be beneficial not only for the retirees but also the remaining workforce and the employers.

The findings regarding the influence of the three types of resources (i.e., physical health, finance, and social support) on retirement adjustment and satisfaction from a longitudinal design support Wang et al. (2011)’s resource-based dynamic theory. More resources predicted better retirement outcomes, and an increase and a decrease of the resources predicted an increase and a decline of retirement outcomes, respectively. We also confirmed that the antecedents of retirement at individual, marital, and work levels were influential on retirement resources as well as the retirement outcomes. More research with other types of retirement resources such as motivational and emotional resources will enrich the understanding of the relationship between resources and retirement adjustment. Searching for other antecedents of retirement such as retirees’ lifestyle before retirement as well as an attempt to expand the resource based dynamic model by including distal life experiences (e.g., childhood experiences) are also suggested. We hope the findings of this study contribute to developing ideas for future studies as well as enhancing the quality of retirees’ life.
References


Date: 5/25/2016
To: Kyuho Lee  
    078 LeBaron Hall
CC: Dr. Peter Martin  
    1085 Elm Hall

From: Office for Responsible Research

Project Title: The Influence of Physical, Financial, and Social Resources on Retirement Adjustment

The Co-Chair of the ISU Institutional Review Board (IRB) has reviewed the project noted above and determined that the project:

☐ Does not meet the definition of research according to federal regulations.
☒ Is research that does not involve human subjects according to federal regulations.

Accordingly, this project does not need IRB approval and you may proceed at any time. We do, however, urge you to protect the rights of your participants in the same ways you would if IRB approval were required. For example, best practices include informing participants that involvement in the project is voluntary and maintaining confidentiality as appropriate.

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.