Health Congruence in Recent Retirees: Effects on Subjective Well-Being, Developmental Activity Levels and Health-Care Usage

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ABSTRACT

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This study (N=346) aimed to examine the predictive value of health congruence on developmental activity levels, subjective well-being and health-care usage in recent retirees. The Motivational Theory of Lifespan Development was used to postulate differences in primary and secondary control striving according to various health congruence groups (Heckhausen, Wrosch, & Schulz, 2010). Multiple mixed factorial ANCOVAs and logistic regression analyses were used to determine the impact of health congruence on the five facets of developmental activities (number, frequency, importance, difficulty, ability and future intentions) using the Everyday Activities Questionnaire (Pushkar, Arbuckle, Conway, Chaikelson, & Maag, 1997), positive affect, negative affect, quantity of medications used and likelihood of hospitalization. The results indicated that good health realists experienced the most optimal outcomes over four years in terms of activity engagement, subjective well-being and health care usage. In contrast, good health pessimists showed less adaptive outcomes in terms of their subjective well-being, engaged in a lower number of activities and used a higher number of medications. Poor health optimists engaged in a higher number of activities and used fewer medications. Poor health realists were found to engage in compensatory secondary control strategies evidenced by the decline in importance of developmental activities over time (Heckhausen, Wrosch, & Schulz, 2010). These individuals also tended to exhibit the lowest level of subjective well-being and consumed more medications. The findings suggest that health congruence affects primary and secondary control striving leading to

differences in activity engagement which in turn are proposed to affect subjective well-being. Implications for future research in health congruence are discussed.

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The transition from workplace to retirement marks the entry of most individuals into older adulthood. As of 2005, an estimated 4.2 million individuals in Canada were of retirement age. In the next 25 years it is estimated that the number of people over retirement age will more than double and will account for 25% of our population. Not only will a large portion of our population consist of individuals of retirement age but these individuals are also expected to live longer. As a result of increasing life expectancies approximately 20% of the lifespan is now spent in retirement (Statistics Canada, 2006).

Even though the majority of individuals are expected to spend a significant portion of their lives in retirement, the impact of this transition from the workforce to retirement on individuals' psychological well-being and physical health still remains unclear (Pinquart & Schindler, 2007; Wang, 2007) . Some researchers have found retirement to have a detrimental impact on individuals' level of physical activity, social activity, mental health status, life satisfaction and happiness (e.g., Berger, Der, Mutrie, & Hanah, 2005; Hochschild, 1975; Kim & Moen, 2002). Conversely, other researchers have found retirement to be beneficial to individuals, as they experience lower levels of anxiety and distress while experiencing higher levels of positive affect and more adaptive health behaviours (Drenta, 2002; Midanik, Soghikian, Ransom, & Tekawa, 1995). Finally, some researchers have found that retirement is neither harmful nor beneficial to health and psychological well-being (Gall, Evans, & Howard, 1997; van Solinge, 2007). Inevitably, contextual factors such as socioeconomic status, government policy and

company pension plans impact quality of life after retirement (Keating, 2010). However, some of the variability in retirement outcomes has been proposed to arise from individual differences (Wang, 2007; Pinquart, & Schindler, 2007; van Solinge, 2007).

An important difference among retired individuals is their level of physical health (van Solinge & Henkens, 2008). Physical health is defined in medical terms as the absence of disease (Liang, 1986). Poor physical health (i.e., experience of disease) is one of the major factors driving the decision of individuals to retire and those individuals who retire for health reasons tend to experience poorer physical and psychological outcomes (Shaw, Patterson, Semple, & Grant, 1998). Health can also affect engagement in social activities such that incidence of serious health problem can negatively affect postretirement participation in formal activities and visiting friends (Szinovacz, 1992). Thus, incidence of health problems may be a determinant of early retirement but, more importantly, it can dramatically impact daily living and opportunities for future activities once an individual enters retirement (Shaw et al., 1998; Szinovacz, 1992).

This study examines the role of objective and subjective health in determining individual differences in retirement outcomes. Comparing objective measures with subjective measures of health can create a measure of health congruence can inform how subjective views of health contribute to outcomes in retirement over and above objective measures of health. Indeed, health congruence has been associated with subjective well-being, physical activity and health care usage among the oldest-old (Ruthig & Chipperfield, 2006). Examining health congruence in recent retirees may provide pertinent information about how objective and subjective health interact to subsequently affect outcomes in retirement. This study aims to extend current research by examining the longitudinal

affects of health congruence on developmental activity levels, subjective well-being, and health care usage in recent retirees.

Objective Health

Chronic illnesses, such as circulatory diseases, cancer and respiratory diseases, are the leading causes of death in Canada. Despite declines in chronic health conditions in midlife, older adults faced an increase in chronic health conditions in Canada between 1978 and 1998 (Statistics Canada, 1999). Chronic illnesses can lead to functional decline, psychological distress and can negatively impact social functioning in older adults (Husted, Gladman, Farewell, & Cook, 2001; Zautra, Burleson, Smith, Blalock, Wallston et al., 1995).

Research suggests that chronic illness can impact subjective well-being such that it can lead to changes in positive and negative affect. For instance, a study of older individuals suffering from arthritis by Zautra et al. (1995) found that symptoms of pain were associated with increases in negative affect. Activity limitation as a result of this chronic condition was associated with both increases in negative affect and decreases in positive affect. Another study reported associations between functional status and symptom reporting such that lower functional status and increased symptom reporting was associated with higher levels of negative affect (Hu & Gruber, 2008). However, older adults in this study who suffered from chronic illness but experienced less symptamology were more likely to report higher levels of positive affect (Hu & Gruber, 2008). Schilling and Wahl (2006) examined changes in affect over time as individuals adjusted to the onset of age-related macular degeneration, a debilitating chronic illness.

Researchers found differential patterns of change in positive affect and negative affect such that positive affect declined upon disease onset but was restored after two years. Intriguingly, negative affect remained unaffected by disease onset. These studies indicate that the link between chronic illness and affect is mixed depending on the illness's impact on functional ability or the experience of symptamology. All studies indicate that chronic illness either directly or indirectly influences individuals' levels of positive affect. The findings for negative affect remain mixed, however, such that some studies show an association between illness experience and negative affect whereas others do not (Hu & Gruber, 2008; Schilling & Wahl, 2006; Zautra et al., 1995).

Two of the most adverse outcomes resulting from the incidence of chronic disease are the subsequent decrease in level of activity and increase in disability. The number of medical conditions an individual experiences has been related to decreases in the amount of time spent engaged in activities (Vance, Ross, Ball, Wadley, & Rizzo, 2007). Researchers looking at middle-aged and older adults suffering from a variety of chronic health problems found that chronic illness in several conditions led to lowered physical functioning. In contrast, individuals diagnosed with a chronic condition who were currently asymptomatic did not suffer declines in physical functioning (Schlenk, Erlen, Dunbar-Jacob, McDowell, Engberg et al., 1998). Other studies have found that illness chronicity and severity predict declines in activity (Duke, Leventhal, Brownlee & Leventhal, 2002; Benjamins, Musick, Gold & George, 2003). Comorbidity has also been found to be negatively associated with activity levels with increased incidence of comorbidity resulting in lower levels of activity participation (Benjamins, Musick, Gold

& George, 2003). Thus, older adults who suffer from severe chronic illnesses, especially comorbid illnesses, are at increased risk of reducing their activity levels.

On the one hand, maintaining a minimum level of physical activity is necessary to maintaining adequate physical functioning (Benjamins, Musick, Gold, & George, 2003). On the other hand, it is participation in valued activities that is imperative to the maintenance of emotional well-being (Williamson, 2000). For instance, ability to maintain engagement in a wide range of social and cognitive activities has been associated with higher levels of positive affect. Furthermore, health has been found to impact positive and negative affect via its influence on engagement in everyday activities (Bye & Pushkar, 2009; Puskhar et al., 2010). For instance, increased frequency of engagement in everyday activities, higher levels of ability, lower levels of difficulty, and future intentions to engage in an activity was associated with higher positive affect. However, only higher levels of ability and lower levels of difficulty of activity engagement were associated with lower levels of negative affect (Pushkar et al., 2010). The ability of older adults to replace lost activities after the onset of a chronic illness has also been found to be a protective factor against declines in subjective well-being (Duke, Leventhal, Brownlee, & Leventhal, 2002). The incidence of chronic illness evidently affects several facets of engagement in everyday activities. In addition, it seems that the association between chronic illness and declines in subjective well-being are, in part, mediated by the impact of chronic illness on everyday functioning.

Rates of chronic illness are highest among adults of retirement age. As many as 88% of non-institutionalized older adults suffer from at least one chronic condition and as many as 70% suffer from comorbid chronic illnesses (Hoffman, Rice, & Sung, 1996).

Perhaps the most devastating impact of chronic illness on society is its effect on the health care system; 83% of health care expenditures in the United States are spent on individuals suffering from chronic illnesses (Robert Wood Johnson Foundation, 1996). One reason for increased expenditure on chronic illness is the increased likelihood of future hospitalization (Wolinksy, Culler, Callahan, & Johnson, 1994). Chronic illness is also associated with increased usage of prescription medication. Individuals suffering from chronic illness represent 70% of individuals admitted to hospital and 83% of prescription drug users (Hoffman, Rice, & Sung, 1996). Chronic illnesses such as diabetes, heart disease, obstructive pulmonary disease increase the use of using multiple medications to the disease (Jyrkkä, Enlund, Korhonen, Sulkava, & Hartikainen, 2009).

Self-Rated Health

Another measure of physical health is based on global self-assessment of health. Self-rated health is considered one of the most important predictors of physical well-being in older adults (Lundberg & Manderbacka, 1996; Idler & Benyamini, 1997; Mossey & Shapir, 1982). Self-rated health though highly correlated with physical health status has also been shown to incorporate subjective comparisons of health, psychological well-being and sensations of physical vitality (Bailis, Segall, & Chipperfield, 2003). Self-rated health has been found to be a superior predictor than objective health status for long term mortality outcomes in older adults (Mossey & Shapir, 1982). Self-rated health has also been associated with activity functioning, subjective well-being and health-care usage (Rousseau, Pushkar, & Reis, 2005; Benyamini, Idler, Leventhal, & Leventhal, 2000; Wolinsky, Culler, Callahan, & Johnson, 1994).

Self-rated health has also been associated with everyday functioning with individuals reporting higher levels of self-rated health being likely to participate in community activities, such as volunteering (Lee, Saito, Takahashi, & Kai, 2008). Not only is activity participation affected but how individuals engage in activities is also affected by self-rated health. Individuals in poorer self-rated health are more likely to perceive difficulty in performing activities, feel a lowered sense of ability to perform activities and report having performed less activity in the past (Pushkar, Arbuckle, Conway, Chaikelson, & Maag, 1997; Rousseau, Pushkar, & Reis, 2005).

Self-rated health has been found to be correlated to both state and trait levels of positive and negative affect (Casten, Lawton, Kleban, & Sando, 1997). In fact, inducing states of negative affect has lead individuals to perceive themselves as being ill (Croyle & Uretsky, 1987). Numerous studies have found that negative affect and positive affect are strongly correlated with self-rated health (Benyamini, Idler, Leventhal, & Leventhal, 2000; Casten, Lawton, Kleban, & Sando, 1997). Positive affect has been found to account for changes in self-rated health up to five years later and negative affect accounted for changes up to three years later even after controlling for sociodemographic variables and objective measures of health (Benyamini et al., 2000). Moreover researchers have also shown that self-ratings of health are more highly related to positive affect than measures of lifetime illness (Brissett, Leventhal, & Leventhal, 2003). Evidently it would seem that self-perceptions of health and emotional well-being are bi-directionally associated with one another.

Self-assessed health has been related to physician visits, medication and hospitalization usage. Researchers have shown that self-assessed health is a superior

predictor of physician visits and hospital utilization compared to chronic conditions and presence of a serious illness (e.g., hypertension, diabetes, cancer; Mutran & Ferraro, 1988). Being in poor subjective health is also associated with future likelihood of hospitalization (Wolinsky, Culler, Callahan, & Johnson, 1994). Having poor self-rated health is associated with increased use in medications compared to individuals having good self-rated health (Rosholm & Christensen, 1997). In fact, community dwelling older adults who rate their health as poor were at increased risk of using multiple prescription medications simultaneously, which can have hazardous side effects (Jyrkkä, Enlund, Korhonen, Sulkava, & Hartikainen, 2009).

Health Congruence

Previous research indicates that subjective and objective measures of health, while having significant concordance levels do not always correspond (Brisette, Leventhal, & Leventhal, 2003; Maddox & Douglass, 1973; Mossey & Shapiro, 1982; Okura, Urban, Mahoney, Jacobsen, & Rodeheffer, 2004). Differences between objective and subjective measures have been attributed to memory mistakes, recording errors, physiological dysregulation, emotional well-being, and social comparisons (Idler & Benyamini, 1997; Jylhä, Volpato, & Guralnik, 2006; Henchoz, Cavalli, & Girardin, 2008). Only a few recent studies have compared subjective and objective ratings of health, known as health congruence, to investigate outcomes in older adulthood (Chipperfield, 1993: Hong, Zarit, & Malmberg, 2004, Ruthig & Chipperfield, 2006).

Although previous researchers have examined the correspondence between subjective and objective measures of health (e.g., Maddox & Doulass, 1973; Rakowski,

Hickey, & Dengiz, 1987), congruence or incongruence between these health measures as a unique predictor termed "health congruence" was first examined by Chipperfield (1993). The purpose of the study was to determine how much subjective overestimations or underestimations of health related to mortality. It was proposed that overestimations of health could lead to health benefits, whereas underestimations could lead to declines in health and even mortality. Self-rated health was assessed using a single item where individuals compared their health with other individuals within their age group. Objective health was assessed asking individuals about the number of diseases and chronic health problems (e.g., arthritis, heart disease, stroke, kidney problems, diabetes) within the last year. Individuals were then cross-classified to make nine groups ranging from extreme underestimates to extreme overestimates. Chronic illness was used as the genuine measure of health such that overestimations and underestimations reflected subjective deviances from objective illness classification. Sociodemographic information, functional limitations, psychological well-being were assessed. Mortality status was assessed at four, eight and 12+ years follow-up. The results indicated that individuals in the three objective health status categories (i.e., well, typical, and ill) differed on all demographic variables such that those classified as "well" (no chronic illnesses) were typically younger, had higher levels of income, education, life satisfaction and functional independence. In terms of health congruence, 39% of older adults were congruent while 56% of participants overestimated their health and only 5% of participants underestimated their health. Logistic regressions were performed on each of the three health status groups separately controlling for demographic variables, functional independence, mental health and life satisfaction. The results indicated that well older

adults (no chronic illness) who underestimated their health had increased mortality rates at 8 years and 12 years follow up. For typical older adults (1-3 chronic health problems), overestimations of health were associated with increased survival at four, eight, and 12+ years follow-up compared to individuals whose ratings were congruent. For ill adults (> 4 chronic health problems) those who reported extreme overestimations of their health were more likely to survive at four, eight, and 12+ years follow-up. Thus, individuals who were optimistic about their health were more likely to survive, while well individuals who were pessimist about their health status were more likely to suffer mortality. Other studies have confirmed the mortality trend, finding that poor health realists were much more likely to pass away over a three year period compared to poor health optimists (Borawski, Kinney & Kahana, 1996). These studies emphasize the importance of health congruence in determining an irrefutable health outcome, mortality.

A study by Borawski et al.,(1996) identified differences between attributions used to make health appraisals by health congruence in the oldest old. Self-rated health was assessed using a single item on a five point Likert-type scale, but, in this study individuals were asked to justify their self appraisals of their health. Objective health was assessed using four indicators: chronic medical conditions, use of prescription drugs, frequency and intensity of pain, and shortness of breath. Cross classification led to the formation of four groups: good health realists (being in good objective and subjective health), good health pessimists (good objective but poor subjective health), poor health realists (being in poor objective and subjective health) and poor health optimists (poor objective but good subjective health). The results indicated that poor health optimists were the least like to identify health-focused attributions (i.e., attributing health status to

medical conditions, physical symptoms or functional capacities) but the most likely to list attitude, behaviour or transcendence (i.e., acknowledging health problems but being able to see past them) as determinants of their health ratings. Conversely, poor health realists were most likely to focus on health-focused attributions as determinants of health ratings and least likely to focus on attitude/behaviour, social or external sources. Poor health optimists and good health realists were more likely to give positive attributions of health (i.e., "No complaints, I don't let things bother me") while good health pessimists and poor health realists were more likely to give negative attributions of health (i.e., "I can't do what I used to do"). Attributions differed significantly among congruence groups indicating that the information used to determine self-rated health differed according to group. Furthermore, differences in attribution may be indicative of poorer emotional well-being among the different groups. Perhaps good health pessimists and poor health realists who make negative attributions experience lower levels of emotional well-being, such as increased levels of negative affect. In fact, researchers have shown that sensitivity to physical symptoms and attributions of physical symptoms to illness is associated with increased levels of negative affect (Petrie, Moss-Morris, Grey, & Shaw; 2004).

Further studies involving health congruence have looked at a variety of behavioural and psychological outcomes. A cross-sectional study by Hong, Zarit, & Malmberg (2004) examined health congruence in relation to functional status, depressive symptoms and hospitalizations in the oldest old (mean age = 90 yrs) and included individuals who were either community-dwelling or institutionalized. Subjective health was assessed using one item; individuals rating their health as poor or fair were considered to have poor subjective health while individuals that classified their health as

good were considered to have good subjective health. Objective health was assessed using a severity measure based on health history. Individuals were classified as being in poor objective health if they suffered from one or more life threatening, very severe condition, if they had two or more somewhat severe life threatening life conditions, or if they experienced frequent or intense shortness of breath. Cross classification led to the formation of four groups: good health realists, poor health realists, poor health optimists, and good health pessimists. Health congruence groups were quite similar to the previously mentioned study as 58% of individuals had congruent perceptions of their health (Chipperfield, 1993); poor health optimists (also known as overestimators) consisted of 27% of the sample while good health pessimists (also known as underestimators) consisted of 15% of the sample. Interestingly, the four congruence groups in this study did not differ on age, education or gender. The results indicated good health pessimists had significantly higher levels of depressive symptoms compared to good health realists. Poor health realists had significantly higher levels of depressive symptoms compared to poor health optimists and good health realists. Poor health optimists did not significantly differ from good health realists on levels of depressive symptoms. In terms of functional status, good health pessimists had significantly lower functional performance compared to the other three congruence groups. The other three groups were not significantly different from one another on functional performance. For health care usage, good health realists were much less likely to have been hospitalized in comparison to the other three groups. Good health pessimists, poor health optimists and poor health realists did not significantly differ from each other in their rates of hospitalization (e.g., 53-58%). This study showed that good health pessimists

experienced lower emotional well-being, more functional limitations and health care usage rates similar to those of individuals in poor health. Conversely, poor health optimists experienced better emotional well-being, had higher levels of functional ability although their rates of hospitalization were not significantly different from poor health realists and good health pessimists.

Quasi longitudinal research examining differences between health congruence groups on a variety of outcomes has also been conducted. Ruthig and Chipperfield (2006) examined the impact of health congruence on psychological well-being, functional well-being and health care factors across two years in the oldest old (M = 85 yrs). In this study, subjective health was assessed using a single item question (i.e., "For your age, would you say in general your health is good, fair or poor?"). Objective health was assessed using the revised Seriousness of Illness Rating Scale (Rosenberg, Hayes & Peterson, 1987). Perceived control was also incorporated into the study because it was identified as a potential mediating variable between health congruence and the various outcome measures. The four groups did not differ in gender, age, or marital status but only differed in respect to education, such that good health realists were significantly more educated than poor health realists. The results indicated that differences among groups existed for all three outcome factors. Emotional well-being, functional well- being and health care differed among groups. Good health pessimists experienced significantly lower levels of life satisfaction, higher levels of negative emotions, lower levels of perceived activity, greater activity restrictions, more hospital admissions and longer hospital durations compared to good health realists. Poor health optimists experienced significantly greater life satisfaction, higher levels of positive emotions, greater perceived

activity and higher levels of objective activity (i.e., actigraph measures) compared to poor health realists. Interestingly, poor health optimists were not significantly different from poor health realists in their experience of negative emotions or their likelihood of hospitalization. Perceived control was found to partially explain between-group differences in emotional well-being and health care usage but did not explain differences in functional well-being.

Some limitations of this study were that groups were not compared across differing levels of objective health, such that good health realists were not compared to poor health optimists and poor health realists were not compared to good health pessimists. Objective health has long been held as the gold standard for general assessments of health, yet subjective health has proven to be a valid and irrefutable measure of health (Mossey & Shapiro, 1982). As such, comparisons made across differing levels of objective health could provide additional useful information about similarities and differences between various categories of health congruence. Indeed, cross objective comparisons have revealed that good health realists and poor health optimists experience similar levels of emotional well-being (Hong, Zarit, & Malmberg, 2004). Another important limitation of this study is that outcome variables were not controlled at baseline, two years prior. This missing control prevented the researchers from identifying whether differences between groups were present at baseline and persisted two years later or whether group classification resulted in different trajectories of change in outcome measures. This study is essentially no different than a cross-sectional study meaning that associations can be identified, but causality cannot be inferred.

Ruthig and Allery (2008) looked at health congruence in a Native American population with similar results. Compared to poor health realists, poor health optimists reported fewer functional limitations, engaged in more exercise, reported fewer hospitalizations and were more socially engaged. Compared to good health realists, good health pessimists reported more difficulties with functional limitations, greater number of hospitalizations and were less socially engaged. The findings suggest the adaptive value of optimism over realism for individuals in poor health in all aspects of functioning and provide further evidence of the detrimental impact of pessimism on individuals such that their level of functioning is considerably reduced compared to individuals with similar levels of objective health. However, this study is limited by its lack of comparison among groups across the different levels of objective health which prevents more definite conclusions.

Researchers have also examined health congruence in primary care populations. Hong, Oddone, Dudley, and Bosworth (2005) examined health congruence in veterans suffering from hypertension. Their findings were similar to previous research findings in that poor health optimists tended to fare better than poor health realists. Poor health optimists had higher perceived control over their condition compared to good health pessimists. Poor health realists experienced significantly more difficulty with adherence to medication regimen and exercised significantly less frequently than poor health optimists and good health realists. Despite being in poorer objective health, poor health optimists experienced similar levels of functioning as compared to good health realists.

Previous studies have examined health congruence in various ethnic groups, specialized medical populations, or in populations of older adults consisting of the oldest-

old. The majority of these research studies are cross-sectional (e.g., Hong, Zarit, & Malmberg, 2004; Hong, Oddone, Dudley, & Bosworth, 2005; Ruthig & Allery, 2008). Although one study examined the outcome measures two years later, researchers did not control for baseline levels of the measures (Ruthig & Chipperfield, 2006). No current studies have examined the longitudinal effects of health congruence on subjective well-being, activity levels and health care usage. As a result, the causes and effects of health congruence remain unknown. Whether health congruence classification is the result of functional status, subjective well-being and health care usage or whether health congruence determines future functional status, subjective well-being and health care usage still needs to be empirically determined. In addition, few studies to date have examined the impact of health congruence in younger-old adult samples and none have specifically examined its effect among recently retired individuals. As such, research is needed to determine longitudinal impact of health congruence on subjective well-being, activity levels, and health care usage. Additionally, studying the longitudinal effects of health congruence in recent retirement could identify another intervening factor that may impact adjustment to retirement.

The Motivational Theory of Life-Span Development applied to Health Congruence

In addition to lack of longitudinal research, previous studies have failed to provide any theoretical explanations for the differences found among the four health congruence groups. Potential theories include those relating to dispositional optimism or those relating to life-span development (Carver, Scheier, & Segerstrom, 2010; Heckhausen, Wrosch, & Schulz, 2010). Theories of optimism propose that optimists have higher levels of engagement coping such that optimists use problem focused coping when

situations are controllable and emotion focused coping when situations are uncontrollable. Conversely, pessimists are thought to engage in avoidance coping, are less persistant and tend to withdrawl from social activities (Carver, Lehman, & Antoni, 2003; Carver, Scheier, & Segerstrom, 2010). However, this theory fails to indicate which situations would be considered controllable and which would not. Furthermore, this theory also negates age-related changes in adaptive coping. Given these limitations, the motivational theory of life-span development may provide the most comprehensive theoretical basis for the patterns of outcomes that are seen among the various health congruence categories (Heckhausen, Wrosch, & Schulz, 2010).

The motivational theory of life-span development postulates that individuals engage and disengage from goals in accordance to changes in opportunity. Changes in opportunity can also be represented by developmental deadlines. Facing chronic health problems that threaten the ability to maintain everyday functioning may be one of the most formidable developmental deadlines an individual can confront. As opportunities become constricted, as would occur when the number of chronic illnesses increases, goal engagement processes towards the maintenance of everyday functioning should become more urgent and intense leading to increased use of selective primary, selective secondary control and compensatory primary control strategies. Selective primary control strategies would involve the investment of time, effort and persistence towards the maintenance of functioning. Selective secondary control would involve increasing commitment towards goals related to functioning and enhancing perceived control. Compensatory primary control would involve seeking out help or ways to overcome shortfalls of primary control resources. Once individuals have crossed the developmental

deadline and have failed in obtaining their goals they engage in compensatory secondary control which involves distancing oneself from the goal, such as downgrading the importance of the goal.

Changes in opportunities are not necessarily discrete but change progressively over time (Heckhausen, Wrosch, & Schulz, 2010). The opportunity for maintenance of everyday functioning may not be concrete but rather a function of perceived opportunity. If subjective health is any indication of perceived opportunity, it could be hypothesized that individuals with good self-rated health perceive good opportunities to maintain their level of functioning and should engage in primary and secondary control strategies as well as compensatory primary control strategies. With respect to individuals in good subjective health, it could be hypothesized that those individuals with poor objective health would make greater use of compensatory primary control strategies to overcome obstacles compared to those in good objective health. If poor self-rated health is indicative of poor perceived opportunities, it may be expected that individuals with poor self-rated and objective health should engage in compensatory secondary control. However, individuals with good objective health who perceive themselves to be in poor subjective health may engage in maladaptive strategy selections. These individuals may not be selecting the appropriate strategies given their opportunity resulting in poor outcomes in terms of functioning and subjective well-being (Ruthig & Chipperfield, 2006; Hong, Zarit, & Malmberg, 2004).

Previous research provides some validity for these hypotheses such that poor health optimists tend to exhibit higher levels of activity (i.e., selective primary control) and higher perceived control over their conditions (i.e., selective secondary control)

compared to poor health realists. Poor health optimists have higher perceived control over their condition (i.e., higher selective secondary control) as compared to good health pessimists (Oddone, Dudley & Bosworth, 2005). Conversely, good health pessimists tend to have lower perceptions of their activity levels, report more activity restrictions, lower functional status (i.e., lack of selective primary control) and have higher levels of depression (i.e., lack of compensatory secondary control) as compared to good health realists (Hong, Zarit, & Malmberg, 2004; Ruthig & Chipperfield, 2006). However, more research is needed to substantiate these hypotheses and one objective of the present study is to test the motivational theory of lifespan development as the explanatory model for the outcomes found in health congruence research.

The Present Study

The present study has the objective of comparing longitudinal differences among subjective well-being, everyday developmental activity and health care usage among different health congruence groups of recent retirees. The first objective was to identify whether the difference health congruence group of recent retirees are similar to those in previous studies examining health congruence in older adults.

Hypotheses

1. The majority of the participants were expected to have congruent ratings between their self-rated health and objective health.

a. The majority of incongruent classifications were expected to consist of optimistic individuals while a minority of individuals were expected to represent health pessimists.

2. Differences in sociodemographic characteristics among health congruence groups will also be examined. Previous research has indicated that health congruence groups do not differ on age, gender, or education level (Chipperfield, 1993; Hong, Zarit & Malmberg, 2004). Significant differences in age, gender or education level across the different health congruence categories were not expected.

The second objective was to determine whether health optimism leads to more adaptive outcomes in retirement and whether health pessimism leads to more detrimental outcomes in retirement across time applying the Motivational Theory of Life-Span Development (Heckhausen, Wrosch, & Schulz, 2010) and identifying different primary and secondary control striving among the four health congruence groups.

3. Because good health realists and poor health optimists are expected to perceive good opportunities for maintaining everyday functioning, they were expected to have higher levels of engagement in everyday developmental activities, experience higher levels of positive affect, and use a lower number of prescription medications compared to poor health realists and good health pessimists.

4. Good health pessimists were expected to experience lower levels of subjective well-being as compared to good health realists. Because good health pessimists are expected to perceive lower opportunities for maintaining their level of functioning, it is expected that they will have lower levels of engagement in everyday developmental activities and higher health care usage compared to good health realists.

5. Poor health realists in the face of declining opportunities are expected to engage in compensatory secondary control strategies such as downgrading the importance of their everyday activities over time.

6. In accordance with previous research, poor health optimists were not expected to have significantly different levels of negative affect compared to poor health realists (Ruthig & Chipperfield, 2006). Good health realists and good health pessimists were expected to have lower levels of negative affect compared to poor health realists and poor health optimists.

7. Based on previous research findings it was expected that good health realists were expected to have the lowest rates of hospitalization as compared to good health pessimists, poor health optimists and poor health realists.

Method

Participants

This longitudinal study included a large sample of 346 participants (Mean age = 60 years, *SD* = 4.84, range = 44 to 77 years). To be included in the study participants had to have been working full time for at least 20 years and to have been retired from that employment within the last three years. They could not currently be employed for more than ten hours per week. Participants exhibiting signs of dishonesty, cognitive impairment or inability to respond properly to scales were excluded from the data collection.

Participants in the study were generally well educated (Mean years education = 15 years, *SD* =2.5, range = 7 to 22 yrs) and were financially secure on average (Mean family income = $72,000 Canadian per annum, range= $15,000 to $220,000, *SD* = $40, 467). Women accounted for 52% of the total sample. With respect to marital status, 52% of participants were married, 21% were divorced, 13% were single, 11% had a common law spouse and 4% were widowed. At each wave, participants were remunerated $50 for their participation (see Appendix A for consent form).

A total of 79 participants dropped out over the four years of the study. Study attrition was not associated with any variable except for education and health congruence classification. Participants who dropped out of the study were significantly less educated (*M* = 14.25, *SD* =2.64) than those who continued to participate at the fourth wave (*M* = 14.94, *SD* =2.47), $t(418) = -2.21$, $p = .027$. The majority of those who dropped from the study were poor health realists (30%) compared to poor health optimists (15%), good health pessimists (17%) and good health realists (17%). Indeed, the odds of continued

participation in the study were significantly lower in poor health realists (*OR* = .46) compared to good health realists. Both poor health optimists (*OR* = 1.24) and good health pessimists (*OR* = 1.09) were as likely as good health realists to continue participating in the study.

Procedure

The study was described via telephone to potential participants. Appointments were made for groups of 2 to 6 participants to be tested at the Adult Development and Aging Laboratory located at Concordia University for approximately 3 hours. Prior to a test session, questionnaires relating to demographic and health information were mailed to participants to be completed (see Appendix B for demographic and health information). Hospitalization information and medication usage were only collected from the second wave onward. Once at the test session, participants were first given the consent form (Appendix A), then were asked to complete questionnaires relating to the subjective well-being and everyday activities (see Appendix D, E, and F for further information). All aforementioned measures were administered over the 4 waves of the study with the exception of medication and hospitalization information which were assessed from the second wave onward.

Materials

The study measures included measures of demographics, objective and subjective health, as well as measures of everyday developmental activities, subjective well-being and health care. Table 1 shows means and standard deviation of the main study variables.

Demographics. A demographics questionnaire in wave 1 was used to measure standard demographic variables such as gender, age and number of years of education (Bye & Pushkar, 2009).

Objective Health (OH). An abridged version of the revised Seriousness of Illness Rating Scale (SIRS; Wyler, Masuda, & Holmes, 1967; Rosenberg, Hayes, & Peterson, 1987) consisting of 67 items listing different chronic illnesses ranging from obesity to heart failure was used as a measure of objective health. Participants were asked to report which chronic illnesses they have experienced within the last 5 years at baseline (M = 4.14, SD = 2.79). Average illness count of the participants in the sample was then used to create a dichotomous variable. The two classifications of objective health was created using a median split with individuals ranking below the mean as being in good OH (61.3%, n = 212) and individuals ranking above the median as being poor OH (38.7%, n = 134). Previous research has demonstrated high inter-rater reliability on the original SIRS with correlations of .98 and also on the revised SIRS with a concordance coefficient of 0.72 (Wyler, Masuda, & Holmes, 1970; Rosenberg, Hayes, & Peterson, 1987).

Subjective Health (SH). Based on previous research (Pushkar, Arbuckle, Rousseau, & Bourque, 2003; Schonfield, 1973; Appendix D)a single measure of subjective health in the form of a visual ladder consisting of nine choices ranging from 1 *(extremely ill)* to 5 *(average Canadian)* to 9 *(extremely vigorous)* was created to assess global subjective health (M = 6.81 , SD = 1.37). A dichotomous rating of subjective health was created by using a median split with individuals below the mean being in poor

SH (34.6%, *n* = 120) and individuals ranking above the mean as being good SH (65%, *n* = 226).

Health Congruence. A categorical measure of health congruence was created on the basis of the four dichotomous measures of objective and subjective health using methodology similar to previous research (Ruthig & Chipperfield, 2006). Two health congruent groups (SH= OH) were classified if their self-rated health matched their objective health; individuals in good SH and good OH were grouped together as good health realists (GHR; 47.4%, *n* = 164), while individuals in poor SH and poor OH were classified as poor health realists (PHR; 21%, *n* = 72). Individuals with poor SH and good OH (SH < OH) were classified as good health pessimists (GHP; 14%, *n* = 48), and those with good SH and poor OH (SH > OH) were classified as poor health optimists (PHO; 18%, *n* =62). In accordance with previous research (Chipperfield, 1993; Hong, Zarit & Malmberg, 2004) the majority of the participants in this study were classified as congruent (67.4%) and the majority of incongruent participants were classified as poor health optimists (55%).

Everyday Developmental Activities. Activities were measured using the Everyday Activities Questionnaire (EAQ; Pushkar, Arbuckle, Conway, Chaikelson, & Maag, 1997) which consists of a 23-item questionnaire that measures a broad range of functioning. Developmental activities (*n* = 17) are optional activities which consist of social, leisure, cultural and creative activities requiring cognitive and social skills (e.g., entertaining, cultural activities, playing games, playing a musical instrument, reading, traveling, volunteering). The questionnaire assessed number, frequency, importance, difficulty, ability, and future activity on a 5 point-Likert scale ranging from at all four

waves. Participants were asked to rate their current frequency of engaging in an activity (1 = *practically everyday (3 or more times a week)* to 5 = *(not at all)*). Participants were also asked to rate on 5 point-Likert scale the importance (1 = *not at all important* to 5 = *extremely important*), difficulty (1 = *not at all difficult* to 5 = *extremely difficult*), and ability (1 = *not good* to 5 = *extremely good*) of the activities they were currently engaged in. Participants were asked to rate future activity (1 = *definitely no* to 5 = *definitely yes*), the likelihood that they would engage in the activity over the next two years for all activities (i.e., those they were currently engaged in and those they were not engaged in). The number of activities was calculated by counting the number of developmental activities an individual was engaged in at each wave. Frequency scores were reversed and calculated by summing the frequency ratings across all of the developmental activities. Difficulty, importance, ability and future intentions were calculated by averaging scores across all developmental activities (Appendix F). Previous research has demonstrated good test-retest reliability for frequency, importance, ability, difficulty and future intentions of engagement in activities over twelve months (*r*s =.67, .69, .66, .53 and .61 respectively; Rousseau, Pushkar, & Reis, 2005). See Table 1 for means and standard deviations of all control, predictor and outcome variables.

Subjective Well-Being. Participants were asked to complete a questionnaire relating to subjective well-being, namely the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS is a 20 item scale that was administered at all four measurement intervals to assess the level of positive and negative emotions. Ten items assessed negative affect (e.g. *upset, scared, guilty*) and ten items assessed positive affect (e.g. *interested, alert, inspired*). Items were ranked on a 5-point

Likert scale (1 = *very slight or not at all,* 5 = *extremely*)whereby participants rated how much they felt the emotions described by the item over the past few weeks. Mean scores for positive affect were computed separately at each wave (Appendix E). Previous research has found the internal consistency to be high for both negative affect and positive affect (Cronbach's alpha = .87 for both). The PANAS has also demonstrated good test-retest reliability over a two month period for both positive affect (r = .58) and negative affect (r = .48; Watson, Clark, & Tellegen, 1988).

Health Care Usage. Participants were asked to report the number of prescription medications they used over the previous year in waves 2, 3, and 4. The number of medications was summated to provide a total score. Participants were also asked how many times they had been hospitalized over the past year in waves 2, 3, and 4. This variable was recoded into a dichotomous variable such that individuals who had been hospitalized were given a value of 1 (regardless of the number of times they had been hospitalized) and those that had not been hospitalized were assigned a value of 0 (Appendix G).

Table 1
Means and Standard Deviations of Socio-demographic and Main Study Variables

Variables	Min	Max	*M*	*SD*
Age (T1)	44.00	77.00	60.00	4.84
Gender[a] (T1)	1.00	2.00	1.52	0.50
Education (T1)	9.00	21.00	14.82	2.50
Number of Chronic Illnesses (T1)	0.00	15.00	4.14	2.79
Self-rated Health (T1)	3.00	9.00	6.77	1.40
Subjective Well-Being				
Positive Affect (T1)	16.00	50.00	37.65	6.89
Positive Affect (T2)	18.00	50.00	37.71	6.32
Positive Affect (T3)	18.00	50.00	37.51	6.27
Positive Affect (T4)	17.00	50.00	37.13	6.12
Negative Affect (T1)	10.00	42.00	15.28	5.78
Negative Affect (T2)	10.00	43.00	15.55	5.46
Negative Affect (T3)	10.00	39.00	16.02	5.47
Negative Affect (T4)	10.00	40.00	16.22	5.80
Health Care Factors				
Medication Usage (T2)	0.00	11.00	2.21	1.70
Medication Usage (T3)	0.00	10.00	3.13	2.40
Medication Usage (T4)	0.00	10.00	3.41	2.55
Number of Hospitalizations (T2)	0.00	0.67	0.06	0.12
Number of Hospitalizations (T3)	0.00	2.00	0.07	0.30
Number of Hospitalizations (T4)	0.00	2.00	0.09	0.31

Note. [a]1 = males, 2 = females

Variables	Min	Max	*M*	*SD*
Everyday Developmental Activities				
Number of Developmental Activities (T1)	12.00	17.00	13.77	1.31
Number of Developmental Activities (T2)	9.00	17.00	13.33	1.58
Number of Developmental Activities (T3)	9.00	17.00	13.35	1.71
Number of Developmental Activities (T4)	9.00	17.00	13.21	1.72
Frequency of Developmental Activities (T1)	40.00	75.00	56.11	5.73
Frequency of Developmental Activities (T2)	43.00	73.00	55.48	5.86
Frequency of Developmental Activities (T3)	39.00	75.00	55.48	6.29
Frequency of Developmental Activities (T4)	40.00	77.00	54.82	6.26
Importance of Developmental Activities (T1)	2.17	5.00	3.88	0.45
Importance of Developmental Activities (T2)	2.58	5.00	3.91	0.44
Importance of Developmental Activities (T3)	2.79	5.00	3.88	0.46
Importance of Developmental Activities (T4)	2.75	5.00	3.87	0.46
Ability of Developmental Activities (T1)	2.25	5.00	3.85	0.49
Ability of Developmental Activities (T2)	2.75	5.00	3.92	0.48
Ability of Developmental Activities (T3)	2.73	5.00	3.91	0.49
Ability of Developmental Activities (T4)	2.33	5.00	3.89	0.50
Difficulty of Developmental Activities (T1)	1.00	3.08	1.34	0.36
Difficulty of Developmental Activities (T2)	1.00	3.92	1.29	0.38
Difficulty of Developmental Activities (T3)	1.00	4.29	1.33	0.46
Difficulty of Developmental Activities (T4)	1.00	2.92	1.32	0.38
Future intentions to Engage in Developmental Activities (T1)	2.53	4.94	4.33	0.32
Future intentions to Engage in Developmental Activities (T2)	2.53	4.88	4.27	0.32
Future intentions to Engage in Developmental Activities (T3)	1.59	5.00	4.24	0.40
Future intentions to Engage in Developmental Activities (T4)	1.35	5.00	4.21	0.39

Prior to conducting analyses, data were screened for the presence of univariate and multivariate outliers, and for non-normal distributions. The results of the evaluation of assumptions led to the transformation of sixteen variables to reduce skewness, improve normality, linearity, and homoscedasticity of residuals. Square root transformations were performed on all measures of negative affect, positive affect, future intention to perform developmental activities and difficulty with developmental activities. Analyses were conducted with both original and transformed scores with no significant differences in results between the two. For ease of interpretation, original scores for all aforementioned variables were retained. The scores of all other variables were normally distributed. One multivariate outlier was detected and the individual was removed from the analyses.

Approximately 12% of the data was missing in the dataset. Multiple imputation was conducted using Amelia II and R (Honaker, Kin, & Blackwell; Ihaka & Gentlemen, 1997). Multiple imputation is currently the preferred method of dealing with missing data over other alternatives such as listwise deletion, using sample means or regression predictions (Schafer & Olsen, 1998). In accordance with recommendations in the field of psychometrics, the data file was imputed 20 times (Little, 2009). A consolidated file was created by merging the 20 imputed files on which all analyses were conducted. Analyses using the imputed data file yielded identical results to the original data file and thus the results reported here are those obtained from the original data file.

To determine if individuals differed on any baseline measures of sociodemographic variables by health congruence group classification, a MANOVA was conducted. In order to estimate mean level differences in subjective well-being and developmental activities across the various health congruence groups over time, a total of

eight (4 between subjects health congruence groups x 4 within subjects repeated outcome measures) mixed factorial ANCOVAs were conducted. For outcome variables relating to health care usage, one (4 between subjects health congruence groups X 3 within subjects repeated measures of total medication) mixed factorial ANCOVA was conducted to determine differences in the number of medications used and 3 sequential logistic regressions were conducted to predict the likelihood of hospitalization. In accordance with previous research, age, gender and education were included as covariates for all analyses conducted (e.g., Borawski et al., 1996; Ruthig & Chipperfield, 2006; Hong et al., 2005). The statistical analyses were conducted using the Statistical Package for the Social Sciences for Windows (SPSS, version 13.0).

Results

Prior to conducting the main analyses, a MANOVA was conducted to examine whether groups differed on sociodemographic variables such as gender, education and age. Using Wilks' criterion, the sociodemographic variables as a group were found to differ by health congruence $F(9, 1002.85) = 4.61$, $p < .01$. More specifically, gender differences, $F(3, 414) = 11.49$, $p < .01$ between health congruence groups were found such that women were overrepresented in the poor objective health groups (they comprised 75% of the poor health optimists and 62% of the poor health realists). However, the composition of the health congruence groups did not significantly differ on education, $F(3, 414) = .86$, $p > .05$ or age, $F(3, 414) = 2.07$, $p > .05$.

Everyday Developmental Activities. To determine differences in the number of developmental activities individuals engaged in over the four waves by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was

significant, $\chi^2 = 354.46$, $p < .05$, indicating that the variance between sets of difference scores were not equal. As such, Greenhouse-Geisser corrections were used for the remaining within subjects hypotheses tests. No significant main effect of time, $F(1.77, 628.01) = .37$, $\eta^2 = 0.00$, $p > .05$ in predicting change in the number of developmental activities was found. Interactions between time and education, $F(1.77, 628.01) = 1.85$, $\eta^2 = 0.00$, $p > .05$, time and age $F(1.77, 628.01) = 1.77$, $\eta^2 = 0.00$, $p < .05$, as well as time and gender, $F(1.77, 628.01) = 1.61$, $\eta^2 = 0.00$, $p > .05$ were not found to significantly predict changes in the number of developmental activities over time. In addition, there was no significant interaction between time and health congruence, $F(1.77, 628.01) = 1.14$, $\eta^2 = 0.01$, $p < .05$. A significant between subjects main effect of education was found, $F(1, 354) = 5.37$, $p < .05$ such that individuals who were more educated ($M = 12.96$, $SD = 2.14$) tended to engage in a greater number of activities in comparison to individuals with less education($M = 12.23$, $SD = 2.45$). A significant main effect of health congruence on the number of developmental activities one engaged in was found, $F(3, 333) = 3.00$, $\eta^2 = 0.03$, $p < .05$. Poor health optimists ($M = 13.20$, $SE = .23$) engaged in significantly more developmental activities as compared to good health pessimists ($M = 12.18$, $SE = .26$). Good health realists ($M = 12.70$, $SE = .14$) and poor health realists ($M = 12.57$, $SE = .21$) were not significantly different from each other or the other two groups. These results can be viewed in Figure 1 (See Appendix H, Tables 1, 2 and 3).

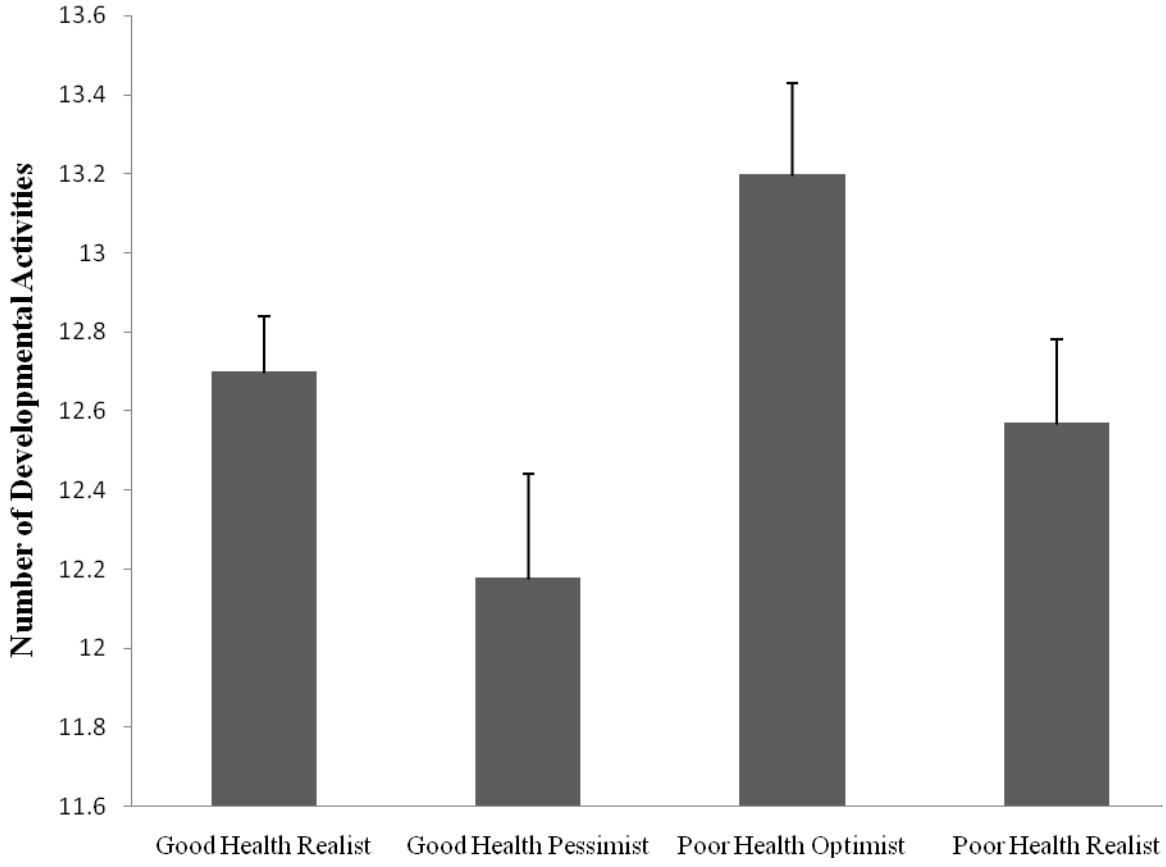

Figure 1. Covariate-adjusted mean level of number of developmental activities over four years by health congruence group

To determine differences in the importance individuals attributed to developmental activities over the four waves by health congruence another 4 X 4 factorial ANCOVA was

conducted. Mauchley's test of sphericity was significant, $\chi^2 = 11.43$, $p < .05$ requiring Greenhouse-Geisser corrections to be used for the remaining within subjects hypotheses tests. No significant main effect of time, $F(2.93, 930.38) = .62$, $\eta^2 = 0.00$, $p > .05$ in predicting change in the importance attributed to developmental activities. Interactions between time and education $F(2.93, 930.38) = .22$, $\eta^2 = .00$, $p > .05$, time and age $F(2.93, 930.38) = .42$, $\eta^2 = .00$, $p < .05$, as well as time and gender $F(2.93, 930.38) = 1.08$, $\eta^2 = .00$, $p > .05$ were not found to significantly predict changes in the importance of developmental activities over time. However, there was a significant interaction between time and health congruence $F(2.93, 930.38) = 2.44$, $\eta^2 = 0.02$, $p < .05$. Within subjects contrast indicated a significant quadratic association in change of importance of developmental activities and health congruence $F(3,318) = 5.36$, $\eta^2 = 0.05$, $p < .01$. Post-hoc analyses revealed that significant changes in importance of developmental activities across time occurred for poor health realists such that a significant drop in importance of developmental activities ($M = 3.82$, $SE = .06$) occurred in the fourth wave as compared to the third ($M = 3.98$, $SE = .05$), second wave ($M = 3.96$, $SE = .06$) and first wave ($M = 3.92$, $SE = .05$; See Figure 2 and Appendix H, Tables 4, 5, and 6).

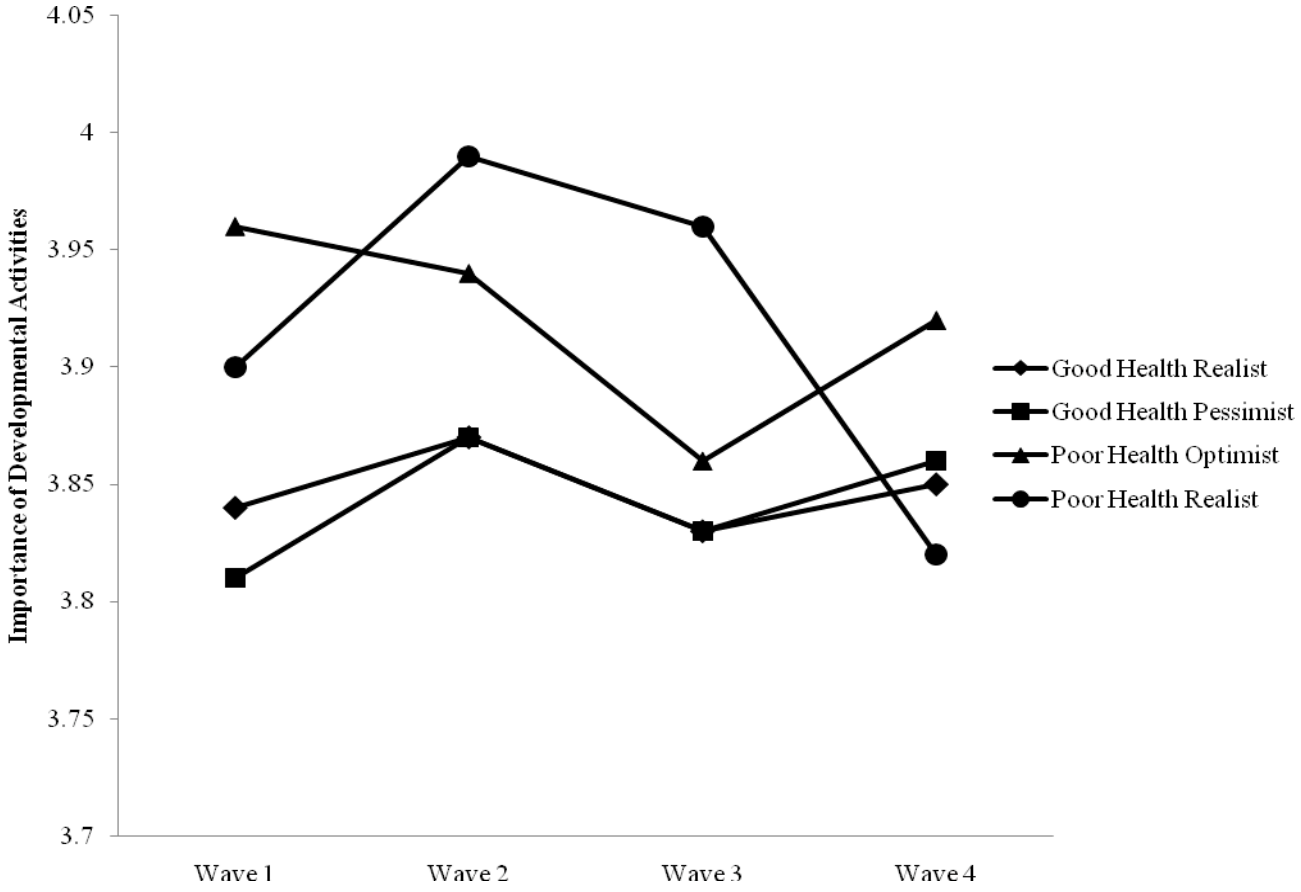

Figure 2. Covariate-adjusted importance of developmental activities over four years by health congruence group.

To determine differences in the frequency with which individuals engaged in developmental activities over the four waves by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 18.54$, $p < .05$, necessitating the use of Greenhouse-Geisser corrections for the remaining within

subjects hypotheses tests. No significant main effect of time, $F(2.90, 964.00) = 1.19$, $\eta^2 = 0.00$, $p > .05$ in predicting change in frequency of engagement in developmental activities was found. Interactions between time and education, $F(2.90, 964.00) = 1.47$, $\eta^2 = 0.00$, $p > .05$, time and age, $F(2.90, 964.00) = .24$, $\eta^2 = 0.00$, $p < .05$, as well as time and gender, $F(2.90, 964.00) = 2.53$, $\eta^2 = 0.01$, $p > .05$ were not found to significantly predict changes in the frequency of developmental activities engaged in over time. In addition, there was no significant interaction between time and health congruence, $F(2.90, 964.00) = 1.27$, $\eta^2 = 0.01$, $p < .05$. A significant between subjects main effect of education was found, $F(1, 333) = 5.16$, $\eta^2 = 0.01$, $p < .05$ such that individuals with higher levels of education ($M = 54.80$ $SD = 6.45$) engaged more frequently in developmental activities as compared to individuals with lower levels of education ($M = 52.24$, $SD = 8.62$). A significant main effect of gender, $F(1, 333) = 4.55$, $\eta^2 = 0.01$, $p < .05$ was also found such that women ($M = 54.71$ $SD = 6.78$) engaged in developmental activities more frequently in developmental activities as compared to men ($M = 53.30$ $SD = 6.9$). No significant main effect of health congruence on the frequency of engagement in developmental activities was found, $F(3, 333) = .89$, $\eta^2 = 0.01$, $p > .05$ (See Appendix H, Tables 7, 8 and 9).

To determine changes over the four waves in difficulty individuals experienced when performing developmental activities by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 21.97$, $p < .05$ requiring Greenhouse-Geisser corrections for within subjects tests. No significant main effect of time, $F(2.86, 910.70) = .37$, $\eta^2 = 0.00$, $p > .05$ in predicting change in the difficulty with developmental activities was found. Interactions between time and education, $F(2.86, 910.70) = 2.16$, $\eta^2 = 0.01$, $p > .05$, time and age, $F(2.86, 910.70) = .84$,

η^2 =0.00, $p < .05$, as well as time and gender, $F(2.86, 910.70) = 1.15$, η^2 =0.00, $p > .05$ were not found to significantly predict changes in the difficulty of developmental activities over time. In addition, there was no significant interaction between time and health congruence, $F(2.86, 910.70) = .94$, η^2 =0.01, $p < .05$. A significant between subjects main effect of age was found, $F(1, 318) = 13.44$, $p < .05$ such that older participants ($M = 1.47$, $SD = .53$) experienced more difficulty with developmental activities compared to younger participants ($M = 1.29$, $SD = .36$). A significant main effect of health congruence on the difficulty experienced performing developmental activities was found, $F(3, 318) = 16.64$, η^2 =0.14, $p < .01$ such that good health realists ($M = 1.22$, $SE = .02$) experienced significantly less difficulty than poor health optimists ($M = 1.36$, $SE = .04$) and poor health realists ($M = 1.52$, $SE = .04$). Good health pessimists ($M = 1.29$, $SE = .05$) experienced significantly less difficulty than poor health realist. Poor health optimists experienced significantly more difficulty than good health realists but significantly less than poor health realists (See Figure 3 and Appendix H, Tables 10, 11, and 12).

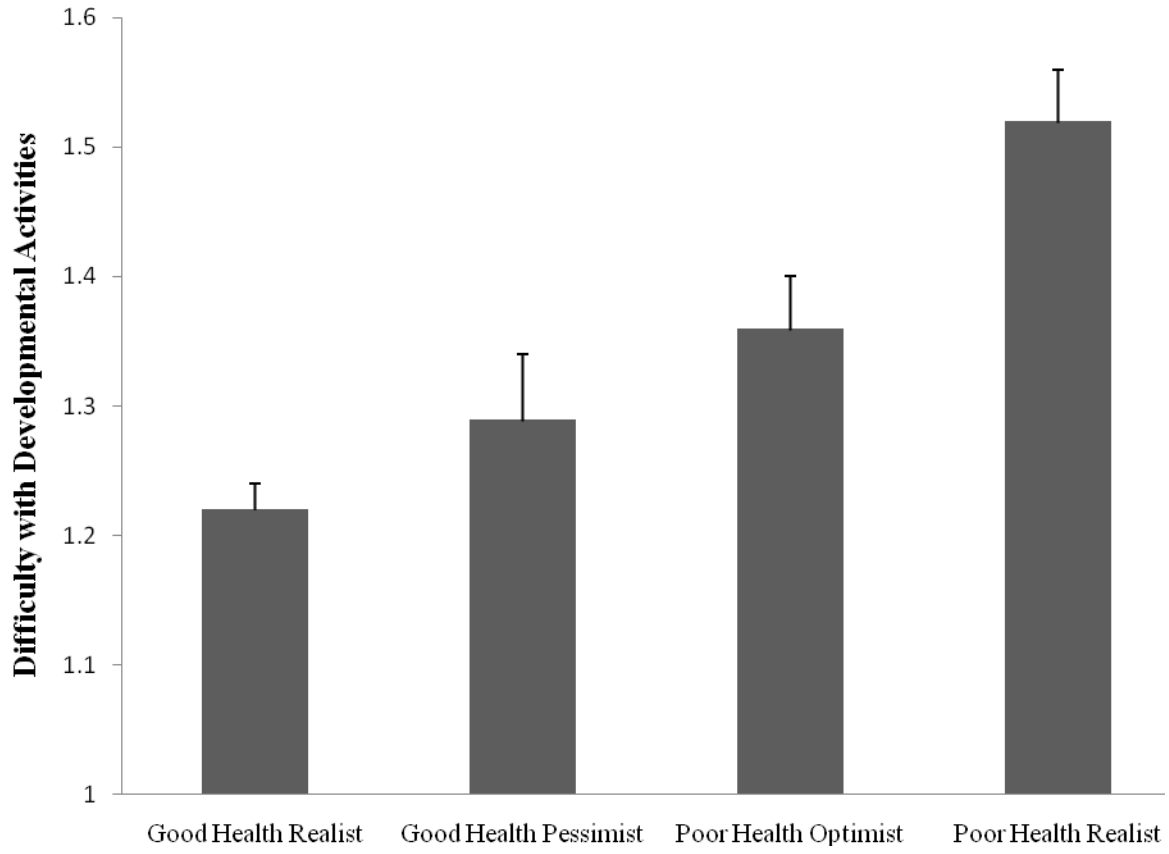

Figure 3. Covariate-adjusted mean level of difficulty with developmental activities over four years by health congruence group

To determine changes over the four waves in the ability individuals reported when performing developmental activities by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 24.53$, $p <$ .05 requiring Greenhouse-Geisser corrections for within subjects tests. No significant

main effect of time, $F(2.86, 910.73) = .39$, $\eta^2 = 0.00$, $p > .05$ in predicting change in ability while performing developmental activities was found. Interactions between time and education, $F(2.86, 910.73) = 1.67$, $\eta^2 = 0.01$, $p > .05$, time and age, $F(2.86, 910.73) = .62$, $\eta^2 = 0.00$, $p < .05$, as well as time and gender, $F(2.86, 910.73) = .73$, $\eta^2 = 0.00$, $p > .05$ were not found to significantly predict changes in ability over time. In addition, there was no significant interaction between time and health congruence, $F(2.86, 910.70) = 1.61$, $\eta^2 = 0.01$, $p < .05$ in predicting changes in ability. A significant between subjects main effect of education, $F(1, 318) = 11.93$, $\eta^2 = 0.04$, $p < .05$ such that those individuals with higher levels of education ($M = 3.94$, $SD = .53$) reported higher levels of ability in performing developmental activities as compared to individuals with lower levels of education ($M = 3.72$, $SD = .53$). Age, $F(1, 318) = 7.33$, $\eta^2 = 0.02$, $p < .05$ was also found to be a significant predictor of ability with younger participants ($M = 3.91$, $SD = .48$) reporting higher levels of ability as compared to older participants ($M = 3.78$, $SD = .57$). There was also a significant effect of gender, $F(1, 318) = 7.68$, $\eta^2 = 0.02$, $p < .05$ such that men ($M = 3.83$, $SD = .48$) reported lower levels of ability as compared to women ($M = 3.94$, $SD = .50$). No significant main effect of health congruence on ability in performing developmental activities was found, $F(3, 318) = .14$, $\eta^2 = 0.00$, $p > .05$ (See Appendix H, Tables 13, 14, and 15).

To determine changes in future intentions to engage in developmental activities over the four waves by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 15.77$, $p < .05$ requiring Greenhouse-Geisser corrections for within subjects tests. No significant main effect of time, $F(2.91, 967.88) = .27$, $\eta^2 = 0.00$, $p > .05$ in predicting changes in future intentions to

perform developmental activities was found. Interactions between time and education, $F(2.91, 967.88) = .67$, $\eta^2 = 0.00$, $p > .05$, time and age, $F(2.91, 967.88) = .74$, $\eta^2 = 0.00$, $p < .05$, as well as time and gender, $F(2.91, 967.88) = .49$, $\eta^2 = 0.00$, $p > .05$ were not found to significantly predict changes in future intentions over time. Furthermore, the interaction between time and health congruence, $F(2.91, 967.88) = .81$, $\eta^2 = 0.01$, $p < .05$ in predicting changes in future intentions was insignificant. A significant between subjects main effect of education, $F(1, 333) = 6.96$, $\eta^2 = 0.02$, $p < .01$ such that those individuals with higher levels of education ($M = 4.24$, $SD = .37$) reported greater intentions to perform developmental activities in the future as compared to individuals with lower levels of education ($M = 4.02$, $SD = .46$). Age, $F(1, 333) = 4.94$, $\eta^2 = 0.02$, $p < .05$ was also found to be a significant predictor of future intentions such that younger participants ($M = 4.19$, $SD = .39$) reported higher intentions to perform developmental activities in the future as compared to older participants ($M = 4.10$, $SD = .47$). There was also a significant effect of gender, $F(1, 333) = 8.34$, $\eta^2 = 0.02$, $p < .05$ such that women ($M = 3.94$, $SD = .49$) reported greater intentions to perform developmental activities as compared to men ($M = 3.83$, $SD = .48$). No significant main effect of health congruence on the intention to engage in developmental activities in the future was found, $F(3, 333) = 1.51$, $\eta^2 = 0.01$, $p > .05$ (See Appendix H, Tables 16, 17 and 18).

Subjective Well-Being. In order to examine the effects of health congruence on positive affect a 4 X 4 mixed factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 16.01$, $p < .05$, indicating that the variance between sets of difference scores were not equal. As such, Greenhouse-Geisser corrections were used for the remaining within subjects hypothesis tests. No significant main effects of time, $F(2.91, 967.94) = .70$, $\eta^2 = 0.00$, $p > .05$ nor any interaction between time and the

covariates such as education, $F(2.91, 967.94) = .37$, $\eta^2 = 0.00$, $p > .05$, age, $F(2.91, 967.94) = 1.45$, $\eta^2 = 0.00$, $p > .05$ or gender, $F(2.91, 967.94) = .79$, $\eta^2 = 0.00$, $p > .05$ were found to be significant in predicting changes in positive affect over time. Changes in positive affect over time were not significantly predicted by health congruence, $F(2.91, 967.94) = .35$, $\eta^2 = 0.00$, $p > .05$. However a significant between subjects effect of gender was found to be significant, $F(1, 333) = 13.29$, $\eta^2 = 0.04$, $p < .01$ such that women ($M = 38.38$, $SD = 6.18$) reported higher levels of positive affect over the four years as compared to men ($M = 36.60$, $SD = 6.19$). Furthermore, a significant between subjects main effect of health congruence on positive affect was found to be significant, $F(3, 333) = 8.23$, $\eta^2 = 0.07$, $p < .01$ such that good health realists ($M = 38.89$, $SE = .43$) had significantly higher levels of positive affect as compared to poor health realists ($M = 35.42$, $SE = .65$) and good health pessimists ($M = 35.92$, $SE = .78$) . No significant differences were found between poor health optimists ($M = 37.36$, $SE = .69$) and the other three groups. These results are shown in Figure 4 (Also see Appendix H, Tables 19, 20 and 21).

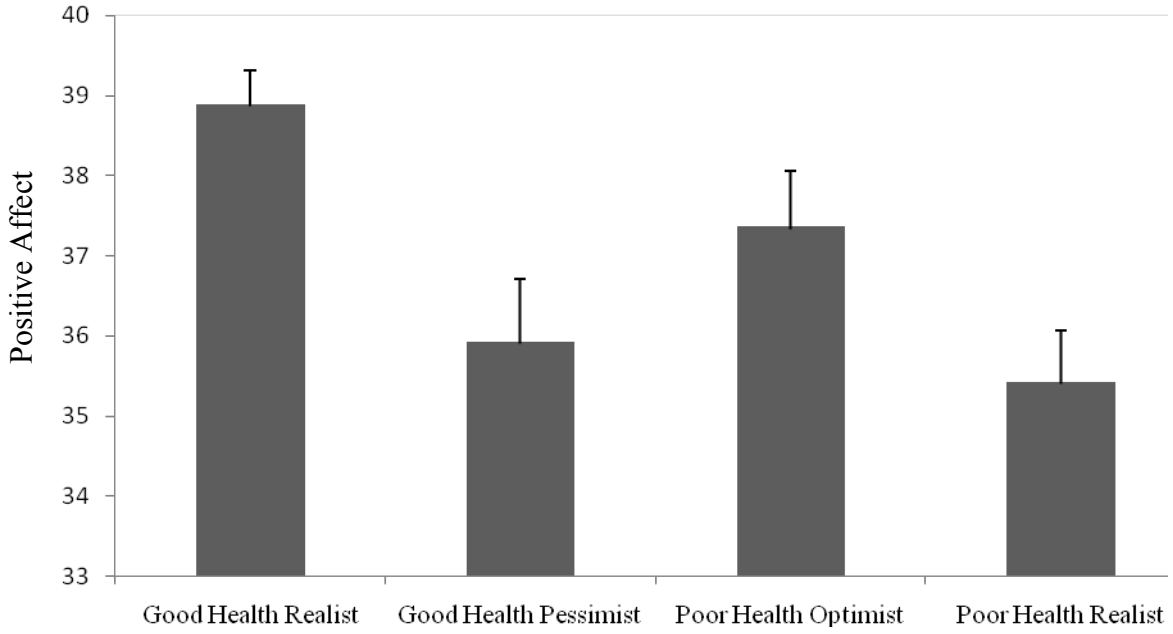

Figure 4. Covariate-adjusted mean level of positive affect over four years by health congruence group

To determine differences in negative affect over the four waves by health congruence another 4 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 32.70$, $p < .05$, indicating that the variance between sets of

difference scores were not equal. As such, Greenhouse-Geisser corrections were used for the remaining within subjects hypotheses tests. No significant main effect of time, $F(2.82, 938.84) = 1.80$, $\eta^2 = 0.00$, $p > .05$ in predicting change in negative affect was found. Interactions between time and education, $F(2.82, 938.84) = .53$, $\eta^2 = 0.00$, $p > .05$, between time and age, $F(2.82, 938.84) = 2.74$, $\eta^2 = 0.01$, $p > .05$ as well as time and gender, $F(2.82, 938.84) = 1.01$, $\eta^2 = 0.00$, $p > .05$ were not found to significantly predict changes in negative affect over time. A significant between subjects main effect of health congruence on negative affect was found, $F(3, 333) = 12.48$, $\eta^2 = 0.10$, $p < .01$. Good health realists were found to have significantly lower levels of negative affect ($M = 14.55$, $SE = .35$) compared to poor health optimists ($M = 17.19$, $SE = .56$) and poor health realists ($M = 18.16$, $SE = .53$). Good health pessimists were found to have significantly lower levels of negative affect ($M = 15.59$, $SE = .64$) as compared to poor health realists but not compared to poor health optimists. Although poor health optimists had higher levels of negative affect compared to good health realists they were not significantly different from either good health pessimists or poor health realists. These results can be seen in Figure 5 (See Appendix H, Tables 22, 23, and 24).

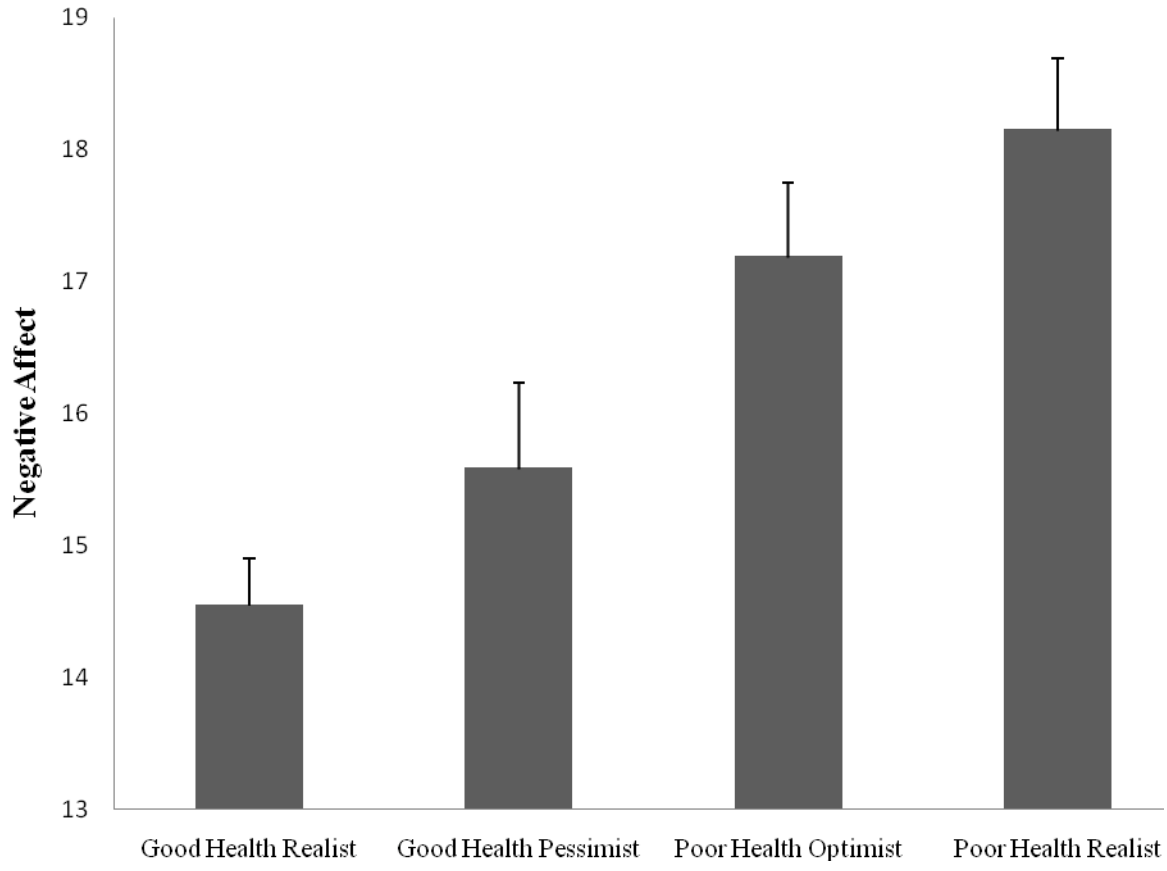

Figure 5. Covariate-adjusted mean level of negative affect over four years by health congruence group

Health Care Usage. To determine changes over three waves in medication usage by health congruence another 3 X 4 factorial ANCOVA was conducted. Mauchley's test of sphericity was significant, $\chi^2 = 26.06$, $p < .05$ requiring Greenhouse-Geisser corrections for within subjects tests. No significant main effect of time, $F(1.87, 660.97) = .07$, $\eta^2 = 0.00$, $p > .05$ in predicting change in the number of medications used was found.

Interactions between time and education, $F(1.87, 660.97) = 1.54$, $\eta^2 = 0.00$, $p > .05$, time and age, $F(1.87, 660.97) = 1.09$, $\eta^2 = 0.00$, $p > .05$, as well as time and gender, $F(1.87, 660.97) = 2.25$, $\eta^2 = 0.01$, $p > .05$ were not found to significantly predict changes in the number of medications used over time. In addition, there was no significant interaction between time and health congruence, $F(1.87, 660.97) = 2.07$, $\eta^2 = 0.02$, $p > .05$. A significant between subjects main effect of age was found, $F(1, 354) = 7.75$, $p < .05$ such that older participants ($M = 3.37$, $SD = 2.59$) used more medications as compared to younger participants ($M = 2.82$, $SD = 2.21$). A significant main effect of health congruence on the usage of medication was found, $F(3, 354) = 30.06$, $\eta^2 = 0.20$, $p < .01$ such that good health realists ($M = 2.03$, $SE = .14$) used significantly less medications as compared to good health pessimists ($M = 3.01$, $SE = .25$), poor health optimists ($M = 3.29$, $SE = .22$) and poor health realists ($M = 4.31$, $SE = .20$). Good health pessimists used significantly less medication than poor health realists but their usage did not significantly differ from poor health optimists. Poor health optimists used significantly more medications than good health realists but significantly less than poor health realists (See Figure 6 and Appendix H, Tables 25, 26 and 27).

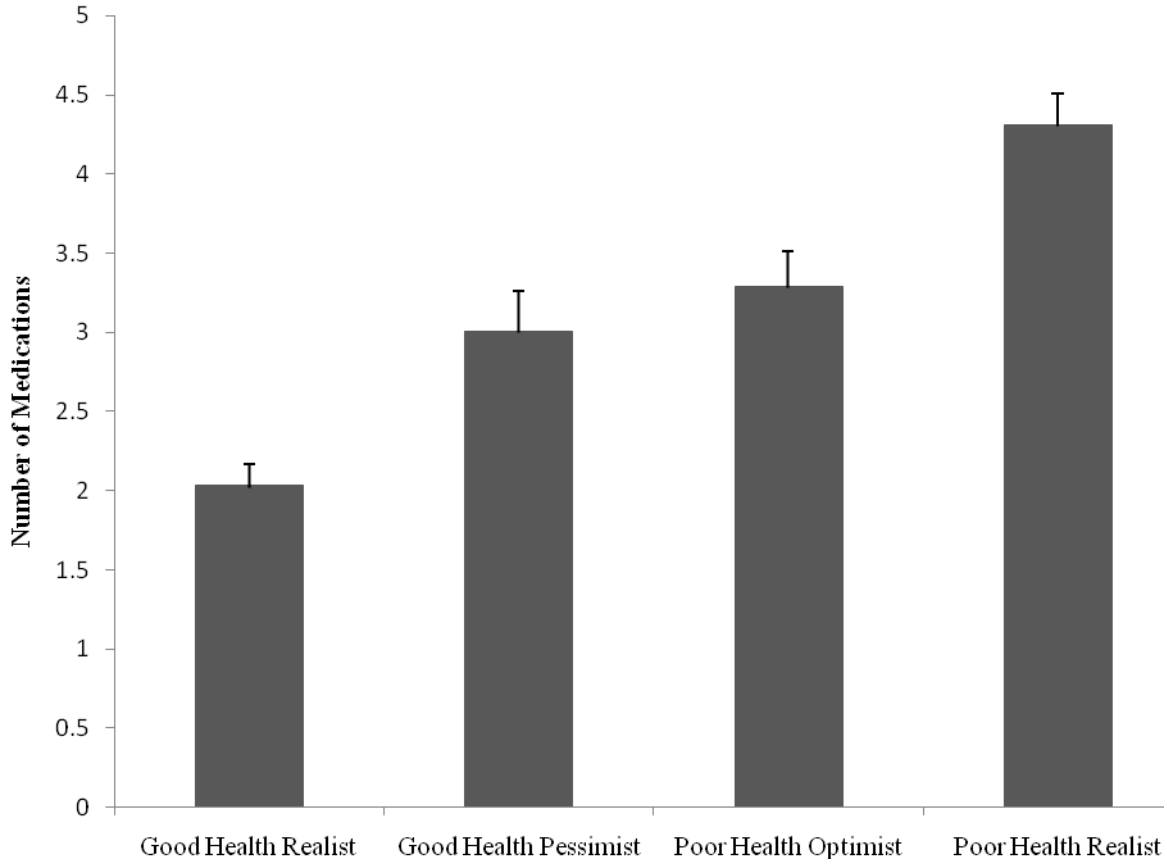

Figure 6. Covariate-adjusted mean level medications used over three years by health congruence group

To determine the effect of health congruence on the probability of being hospitalized, 3 sequential logistic regressions were preformed with sociodemographic variables being entered in the first step and health congruence being entered in the second step. The first logistic regression was performed on the second wave. The addition of sociodemographic variables in the first step did not significantly improve model fit, χ^2 (3,

N = 378) = 3.02, $p > .05$ indicating that gender, age or education did not significantly predict the likelihood of being hospitalized. Adding health congruence in the second block significantly improved model fit, χ^2 (3, N = 378) = 13.04, $p < .01$ and rendered the entire model significant, χ^2 (3, N = 378) = 16.06, $p < .05$. The model resulted in correct classification of 99.6% of those individuals not having been hospitalized over the last five years but only correctly classified 2% of those individuals having been hospitalized. Good health pessimists had an odds ratio of .84 indicating little change in the likelihood of being hospitalized as compared to being good health realists. However, individuals in the poor health groups such as poor health optimists and poor health realists had significantly higher odds of being hospitalized (2.22 and 2.41 respectively; See Table 28). The second logistic regression was performed on the third wave. As with the first regression, addition of sociodemographic variables in the first step did not significantly improve model fit, χ^2 (3, N = 359) = 6.21, $p > .05$ indicating that gender, age or education did not significantly predict the likelihood of being hospitalized. Adding health congruence in the second block did not significantly improve model fit, χ^2 (3, N = 359) = 2.11, $p > .05$ and the entire model remained insignificant, χ^2 (3, N = 359) = 8.32, $p > .05$. A third logistic regression was conducted on the fourth wave. Addition of sociodemographic variables in the first step did not significantly improve model fit, χ^2 (3, N = 341) = 5.37, $p > .05$. Adding health congruence in the second block did not significantly improve model fit, χ^2 (3, N = 341) = .12, $p > .05$ and the entire model remained insignificant, χ^2 (3, N = 341) = 5.49, $p > .05$ (see Appendix H, Table 28).

Discussion

The fundamental purpose of this study was to examine the effects of health congruence on subjective well-being, everyday activity and health care usage in recent

retirees. Differences between health congruence groups were found for positive affect, negative affect, the number, difficulty and importance of everyday developmental activities as well as medication usage and the likelihood of being hospitalized in the second wave. No significant differences between health congruence groups were found on the frequency, ability or future intentions to perform everyday developmental activities nor did health congruence group membership predict the likelihood of being hospitalized in waves 3 and 4.

Good health realists exhibited significantly higher levels of positive affect and consumed less medication compared to the three other groups. Good health realists had lower levels of negative affect, reported having less difficulty engaging in everyday activities and were less likely to be hospitalized in the second wave compared to poor health realists and poor health optimists. Good health pessimists experienced significantly lower levels of positive affect compared to good health realists. They also experienced lower levels of negative affect and used fewer medications compared to poor health realists. Good health pessimists experienced less difficulty performing developmental activities as compared to both poor health realists and poor health optimists. The level of positive affect reported by poor health optimists was not significantly different from that reported by the other three groups, but they did experience higher levels of negative affect and were more likely to be hospitalized in the second wave compared to good health realists. Poor health optimists engaged in more developmental activities as compared to good health pessimists. Poor health optimists also reported more difficulty in performing developmental activities and greater medication usage compared to good health realists but less than poor health realists. Poor health realists reported lower levels of positive

affect compared to good health realists and poor health optimists. They also experienced higher levels of negative affect has compared to good health realists and good health pessimists. Compared to the three other groups, poor health realists had the highest level of reported difficulty in performing developmental activities and experienced significant changes over time in the importance they attributed to their developmental activities such that importance attributed to activities dropped from the first, second and third wave to the fourth wave. Finally, poor health realists were also more likely to be hospitalized compared to good health realists in the second wave.

Age, gender and education were used as control variables in this study and significant effects of these variables on various outcome measures were found. Women reported higher levels of positive affect compared to men. Findings on subjective well-being and gender have been mixed, some studies indicate that women have lower levels of positive affect, others indicate the contrary and some show no gender differences in affect (Shmotkin, 1990; Fujita, Diener, & Sandvik, 1991; Okun & George, 1984; Stone, Schwartz, Broderick, & Deaton, 2010). However, researchers now propose that the association between gender and subjective well-being may be the result of societal gender inequality. A recent study found that education and income reduced the association between gender and subjective well-being (Tesch-Römer, Motel-Klingebiel, & Tomasik, 2008). Women in this study were all previously employed full-time and the overall level of education in the sample was high, which could reduce gender differences related to social roles.

Women also engaged in developmental activities more frequently, rated those activities as more important and were more likely to report intentions to undertake

developmental activities in the future compared to men. This finding seems contradictory to previous research that women tend to be less active than men (Berger, Der, Mutrie, & Hannah, 2005). The current study examined a broad range of activities requiring cognitive and social skills and that extend beyond physical activity which may account for the gender differences found (Pushkar et al., 2010). Previous research supports this notion such that women have been found to participate more frequently in leisure and cognitive activities compared to men (Freysinger, Alessio, & Mehdizadeh, 1993; Wilson et al., 1999). A second explanation may be related to societal gender inequality such that previous research indicates that though women experience higher rates of functional impairments, once education and income are covaried the association between gender and functional limitations is reversed (Maddox & Clark, 1992). Women in this study were part of a retirement sample which indicates that they were working prior to the study. Furthermore, some of the sample consisted of retirees from a government corporation which provided their employees with guaranteed retirement income. Thus, it is possible that women in this study have higher post retirement income compared to those in the general population which may have influenced their involvement in developmental activities.

More educated individuals reported engaging in a greater number of everyday activities, engaged in those activities more frequently and reported higher levels of ability compared to those with less education. Previous research supports this finding such that education predicted higher frequency of engagement in activities for a sample of older volunteers (Rousseau, Pushkar, & Reis, 2005). Frequency of activity engagement has also been associated with greater cognitive competence (Arbuckle, Gold, & Andres, 1986;

Arbuckle, Pushkar-Gold, Chaikelson, & Lapidus, 1994). Thus, individuals who have greater education regard themselves as being more able to perform their developmental activities which required both social and cognitive skills and engaged in them more frequently.

Older retirees experienced more difficulty and reported having less ability engaging in developmental activities and used a greater number of medications compared to younger retirees. This finding is not surprising, as age has been found to be associated with poorer functional status and increased medication usage (Linjakumpu, Hartikainen, Klaukka et al., 2002; Jrykkä et al., 2009; Wensing, Vingerhoets, & Grol, 2001). Younger retirees in this study were more likely to report intentions to undertake developmental activities in the future, compared to older retirees. Indeed, previous research indicates that older adults anticipate declines in future participation in developmental activities (Rousseau, Pushkar, & Reis, 2005). This study supports the notion that increased age is associated with increasing activity limitations and medication usage.

Health Congruence Group Classification

The first objective of this study was to verify whether the proportion of individuals in the various health congruence groups were similar to those found in previous studies. The findings indicated that 67.4% of the individuals in this study had congruent ratings between their physical health and self-rated health. This result is reasonably close to previous studies which found 65% (Ruthig & Chipperfield, 2006) and 58% (Hong, Zarit, & Malmberg, 2004) of their sample to be congruent. This supports the notion that majority of individuals accurately assess their physical health. In the remaining percentage that did not accurately estimate their health, the majority of the individuals in our sample

overestimated their health (55%). Previous research also supports this finding, for example, Ruthig and Chipperfield (2006) found that 65% and Chipperfield (1993) found 55.5% of their sample had tended to overestimate their health. Poor health optimists in this study accounted for 18% of the total sample which is within the range of previous research findings showing poor health optimists to account for anywhere from 14% to 31% of the total sample (Borawski et al., 1996; Van Doorn, 1999). This study found 14% of individuals to be good health pessimists, comparable to Hong, Zarit, and Malmberg (2004) who found 15.2% of their sample to be good health pessimists. Thus, the proportion of individuals making up the various health congruence groups are consistent with previous research. Differences in group proportions across the studies have been attributed to differences in age, methodology and definition of objective health (Hong, Zarit, & Malmberg, 2004).

Findings from the present study indicated that women were over represented in the poor objective health groups. Previous research on health congruence has failed to reveal gender differences between health congruence groups (Chipperfield &Ruthig, 2006; Hong, Zarit, & Malmberg, 2004). However, these studies examined health congruence among the oldest-old; the average age of participants in the study by Chipperfield and Ruthig (2006) was 86 years old and 90 years old in the study by Hong, Zarit, and Malmberg (2004). The current study examined health congruence in recent retirees with an average age of 60, a comparatively large age difference with those studies. As such, gender differences between health congruence groups found in this study could be attributable to differences in life stage. The paradox of gender and health has been extensively studied (Denton, Prus & Walters, 2004). It is common knowledge that though

women display lower mortality rates than men, women exhibit excess morbidity in terms of chronic illness (Baum & Grunberg, 1991). However, some researchers suggest the relation between chronic illness and gender is more complex and varies across the lifespan (Macintyre, Hunt, & Sweeting, 1996). Indeed, it seems that although women may exhibit higher morbidity at certain points of their lives, such as during their child bearing years or menopause, the relation between gender and morbidity becomes less apparent or even reversed as older adults continue to age (Macintyre, Hunt, & Sweeting, 1996). Given this evidence, it is unsurprising and even expected that gender differences between health congruence classification would occur in the present study, but not in the earlier research.

Engagement in Developmental Activities

The second major objective of this study was twofold; (i) it sought to determine impact of health congruence on various dimensions of activity engagement, subjective well-being and usage of the health care system; (ii) it aimed to provide a theoretical explanation for outcomes in health congruence research which has been lacking thus far (Ruthig & Chipperfield, 2006; Hong, Zarit, & Malmberg, 2004).

Previous research on health congruence has only examined activity as it pertains to physical activity, activity restriction and functional status. In addition, research thus far has failed to provide any theoretical explanation for findings between the different health congruence groups. Further some previous studies did not make any comparisons across the objective health status groups (Ruthig & Chipperfield, 2006; Hong, Zarit, & Malmberg, 2004). Intriguingly, this study showed significant differences in developmental activity engagement across objective health group status. The results showed that despite the presence of a higher number of chronic illnesses, poor health

optimists engaged in a greater number of activities than good health pessimists, in spite of the finding that poor health optimists reported significantly higher levels of difficulty in performing activities compared to good health realists and good health pessimists. Thus, despite facing higher levels of difficulty in activities, poor health optimists engage in a significantly higher number of developmental activities compared to good health pessimists, which may indeed explain the higher level of difficulty they experience. Previous research has found good health pessimists tend to report restricting their activities and have lower perceived levels of activity compared to good health realists and that poor health optimists have higher levels of perceived and objective activity levels compared to poor health realists (Ruthig & Chipperfield, 2006). In addition, poor health optimists have been found to exercise more frequently compared to good health pessimists. Poor health optimists have been found to have significantly lower levels of functional limitations and reduced physical impairment 15 years later (Hong, Oddone, Dudley, & Bosworth, 2005; Hong, Zarit, & Malmberg, 2004; Maddox & Douglass, 1973). Thus, the findings from this study further support the notion that poor health optimists have superior outcomes in terms of activity engagement. Furthermore, findings suggest that the high level of engagement of poor health optimists extends beyond physical activity to a broad range of developmental activities.

This study indicates that poor health optimists have superior outcomes in terms of engagement in developmental activities compared to good health pessimists. However, previous research has failed to provide any theoretical basis for this occurrence. Examining these findings from a theoretical perspective may shed light as to how poor health optimists maintain higher levels of engagement and why good health pessimists do

not. The motivational theory of lifespan development posits that primary control striving is universal such that individuals prefer to do behaviour that leads to desired outcomes and that primary control striving is beneficial both psychological and physical well-being (Heckhausen, Wrosch, & Schulz, 2010; Wrosch & Schulz, 2008; Wahl, Becker, & Burmedi, 2004). By engaging in a higher number of developmental activities, poor health optimists are demonstrating higher use of selective primary control strategies compared to good health pessimists. This suggests that good health pessimists may be engaging in maladaptive coping and may have a tendency to disengage prematurely. Indeed, previous research indicates that good health pessimists have higher levels of depression which have been found to facilitate disengagement from goals (Hong, Zarit, & Malmberg, 2004; Wrosch & Miller; 2009). Indeed, higher levels of depression have been associated with lower levels of participation in social and recreational activities amongst older adults (Shokes & Glenwick, 1987). Thus, poor health optimists may engage in a greater number of developmental activities because they engage in selective primary control whereas good health pessimists engage in compensatory secondary control.

In addition, poor health optimists reported significantly less difficulty engaging in developmental activities compared to poor health realists, despite facing the same physical health constraints. This discrepancy in difficulty suggests that poor health optimists are engaging in compensatory primary control strategies by either seeking help or modifying the way they engage in activities to enable them to continue engaging in those activities without undue costs to their physical health. For example, both poor health realists and poor health optimists may report engaging in leisure activities such as golf. Poor health realists may try to continue playing 18 holes of golf despite health limitations and thereby

experience high levels of difficulty doing so. Conversely, poor health optimists may also continue to play golf but instead of playing a full 18 hole game they may play 9 holes of golf, use a golf cart or merely go to the driving range. This hypothesized modification of activity would enable poor health optimists to continue engaging in the activity but moderating their activity engagement would also allow them to experience less difficulty. These findings suggest that poor health optimists are more likely to make use of compensatory primary control compared to poor health realists.

Poor health realists did not differ in the number of development activities they engaged in over the four years, compared to either good health realists or poor health optimists. This is unexpected considering that poor health realists reported the greatest level of difficulty engaging in their activities compared to all other groups. Indeed, previous research indicates that individuals who view their health as being poor are more likely to decrease or abandon their activities in response to severe chronic illness (Duke, Leventhal, Brownlee, & Leventhal, 2002). According to the motivational theory of life-span development by Heckhausen, Wrosch, and Schulz (2010), individuals who find goal pursuit (i.e., activity engagement) futile or too costly shift from pursing those activities and disengage from them. Though the results indicated that poor health realists continued to engage in a variety of activities throughout the four waves of the study and had difficulty doing so, the importance of those activities begins to decline significantly in the fourth wave. Downgrading the importance of such activities in the fourth wave may be indicative of a goal disengagement strategy. One method of goal disengagement involves distancing oneself from the goal and this can be accomplished by devaluing the importance of the goal (Heckhausen, Wrosch, & Schulz, 2010). Thus, poor health realists

may be reaching a developmental deadline such that their objective and subjective health has lowered their future opportunities to continue engaging in developmental activities. Given this indication of goal disengagement one would expect poor health to subsequently decrease either the number or frequency of engagement in developmental activities. However, no differences in future intentions to engage in developmental activities were found between groups. Despite the high difficulty associated with continued activity engagement and the use of strategies related to disengagement (i.e., devaluation of importance of activities) poor health realists indicated no intention to decrease their activities in the future. It might be that engagement and disengagement processes are not mutually exclusive such that individuals may begin to disengage from activities that have become difficult to perform while still not fully accepting the idea that they will not engage in these activities in the future. Thus, the poor health realists in this study may be at the preliminary stages of the disengagement process which might explain why we failed to see declines in the number, frequency or future intentions to engagement in developmental activity. Alternatively, poor health realists were more likely to drop out of the study than those in other groups. It may be possible that those poor health realists who started to lower the number, frequency or future intentions to perform developmental activities dropped out from the study.

Subjective Well-Being

Good health realists in the present study had significantly higher levels of subjective well-being with higher levels of positive affect compared to the other three groups and significantly lower levels of negative affect compared to poor health realists and poor health optimists. This is in accordance with previous research found no

differences in positive emotions between good health realists and good health pessimists (Ruthig & Chipperfield, 2006). Contrary to expectations, poor health optimists in this study did not have significantly higher levels of positive affect compared to good health pessimists or poor health realists. Ruthig and Chipperfield (2006) did find differences in positive emotions between poor health realists and poor health optimists with optimists having significantly more positive emotions. One reason the current study failed to exhibit significant differences in positive affect between poor health optimists and poor health realists may be the result of age differences between the two studies. The average age of individuals in the study by Ruthig and Chipperfield (2006) was 85 years old, as opposed to 60 years old in this study. Researchers have indicated a nonlinear relationship between age and self-rated health such that age and self-rated health are inversely related but only up to a certain age, after which older individuals are more likely to see themselves as healthy. For instance, results from a study by Borawski, Kinney, and Kahana (1996) demonstrated that for individuals aged 75 and under, only 17% of those rated themselves as "very healthy" compared to 27% of those aged 85 and older. Individuals who are quantified as the oldest-old tend to focus more on positive attitude or behavioural attributions and less on purely physical aspects of their health when assessing their self-rated health. Previous research examining global well-being over the life span find a similar trend to self-rated health, global well-being follows a U-shaped pattern throughout the life-span with the lowest point in well-being occurring around the age of 54 (Stone, Schwartz, Broderick, & Deaton, 2010). This implies that self-rated health may become more intimately tied to subjective well-being as people age and may explain why this study failed to find differences in positive affect between poor health optimists and poor health realists.

Health congruence was also found to predict differences in negative affect. Poor health optimists and poor health realists did not significantly differ in their level of negative affect. This is in accordance with previous research that negative affect did not differ between poor health realists and poor health optimists (Ruthig & Chipperfield, 2006). Good health realists in this study had lower levels of negative affect compared to individuals with poor objective health (poor health realists and poor health optimists) but did not differ from good health pessimists. This contradicts previous research findings where good health pessimists exhibited significantly higher levels of negative emotions compared to good health realists (Ruthig & Chipperfield, 2006). The link between subjective well-being and health congruence can further be elucidated by examining the association between affect and health congruence with respect to engagement in activities. Indeed, the association between affect and activity has been well established (Menec, 2003; Heckhausen & Schulz, 1995). Previous research has demonstrated the effect of illness on the difficulty associated with performing voluntary activities such that individuals who experience increases in difficulty with voluntary activities have also been found to experience higher levels of negative affect at follow up, compared to those who experience decreases in difficulty (Pushkar et al., 2010). Health congruence research indicates that groups who significantly differ in their level of negative affect also differ in their activity restriction (Ruthig & Chipperfield, 2006). Activity restriction is somewhat analogous to difficulty engaging in an activity (Zautra et al., 1995). Interestingly, individuals in the good objective health categories did not differ in their levels of negative affect nor did they differ in terms of the difficulty they experienced performing developmental activities. Thus, a plausible reason for the lack of differences in negative

affect between the good objective health groups may be due to the low levels of difficulty the two groups experienced when engaging in developmental activities.

These research findings indicate that good health realists maintain the most optimal subjective well-being in retirement over a four year period, as they exhibited the highest level of positive affect and the lowest level of negative affect. Intriguingly, this study failed to support previous research that being a poor health optimist has beneficial impacts on subjective well-being (Ruthig & Chipperfield, 2006; Hong, Zarit & Malmberg, 2004). From a theoretical perspective, it is possible that the differences in findings for poor health optimists may be due to age-related changes in emotional self-regulation. Effective emotional regulation increases with increasing age and resultant affective well-being is thought to become "normative" when adults reach their 70s and 80s (Scheibe & Carstensen, 2010). One reason adults in the oldest-old category may be more effective at regulating their emotions compared to young-old adults may be the overall life cycle phase of the two groups (Heckhausen, Wrosch, & Schulz, 2010). This study focused on recently retired individuals, a phase in which individuals may rely more heavily on primary control strategies and may, in turn, use these strategies to maintain or enhance their physical health (Heckhausen, Wrosch, & Fleeson, 2001). Previous research on health congruence has focused on older adults in the oldest-old category where overall increases in secondary control strategies would be expected. This increase in secondary control strategies would lead to increased emotional self-regulation through the use of self-protective mechanisms such as downward social comparisons (Cheng, Fung, & Chan, 2007). Indeed previous research has indicated that individuals in the oldest-old category maintain their level of self-rated health through social comparison (Henchoz, Cavalli, &

Girardin, 2008). It may be possible that the beneficial effects of being a poor health optimist on subjective well-being may become increasingly pertinent as individuals continue to age.

An alternative explanation for differences between the patterns of findings in this study versus previous research could be the result of methodological differences in the measurement of psychological well-being. This study used measures of subjective well-being whereas previous research used measures of emotional well-being and depression (Ruthig & Chipperfield, 2006; Hong, Zarit, & Malmberg, 2004). The PANAS is compiled of items that measure high emotional arousal states and traits. It neglects the measurement of lower arousal states and traits in an effort to keep the positive and negative affect scales orthogonal (Mossholder, Kemery, Harris, Armenakis, & McGrath, 1994; Watson, Clark, & Tellegen, 1988). Conversely, the measurement of emotions in the study by Ruthig and Chipperfield (2006) included items of high (e.g., excited, irritable) and low arousal (e.g., relieved, bored). Furthermore, this study also included items such as regret and gratitude which express different emotions than those described by the PANAS. Researchers have recently examined the role of affective arousal on changes in affect over the lifespan and their findings indicated that while high arousal positive affect was not significantly different by age category, low arousal positive affect was significantly higher in older adulthood compared to middle-aged and younger adults (Kessler & Staudinger, 2009). The measure used in this study included only high arousal positive affect whereas previous research has included both high and low arousal measures and included a greater realm of emotions which could provide a reasonable explanation for differences in the findings. Another plausible methodological explanation for differences found between

studies could be attributed to the time frame over which emotions were measured. This study examined positive and negative affect over a period of the last few weeks. Previous research indicates that self-reported affect over a period of three weeks exhibits test-retest stability at levels similar to trait measures (Waston, Tellegen, & Clark, 1988). However, researchers previously examined positive and negative emotions over a period of the previous two days and as such were assessing more state emotions as opposed to trait affect (Ruthig & Chipperfield, 2006). Thus, the differences in methodology, namely the use of the PANAS, a high arousal affect measure and the assessment of trait affect as opposed to state emotion could provide two additional reasons for differences in findings between this study and previous research.

Health Care Usage

Finally, this study aimed to examine the impact of health congruence on the health care system over four years by examining medication consumption and likelihood of hospitalizations. Good health pessimists were expected to use more medications than good health realists while poor health optimists were expected to use fewer medications than poor health realists. The results confirmed these hypotheses, good health realists used significantly fewer medications than all the other groups. The use of multiple medications also known as polypharmacy has been shown to lead to decreased adherence to medication regimen and poorer health outcomes such as increased risk of hospitalization, increased risk of adverse drug effects and increased likelihood of interactions between drugs (Barat, Andreasen, & Damsgaard, 2001; Field et al., 2004; Haider, Johnell, Thorslund, & Fastbom, 2008). Poor health optimists and good health realists show decreased risk of polypharmacy decreasing the chances of experiencing the adverse effects

of medication use and increasing the likelihood of adherence to treatment. In contrast, good health pessimists and poor health realists show increased risk of polypharmacy which could prove detrimental to their overall health status over time.

Increased usage of hospitals has been associated with increased mortality (Wolinsky, Culler, Callahan, & Johnson, 1994). Based on previous research, it was hypothesized that poor health optimists and poor health realists would have similar likelihood of being hospitalized. The hypothesis was supported only in the second wave of the study, individuals in both poor objective health categories exhibited similar likelihoods of being hospitalized. Furthermore, both poor health realists and poor health optimists were more likely to be hospitalized compared to good health realists and good health pessimists in the second wave. However, this is contradictory to previous research which has shown that good health pessimists are more likely to be hospitalized than good health realists and that their rates of hospitalization are not different from poor health realists or poor health optimists (Ruthig & Chipperfield, 2006; Hong, Zarit, & Malmberg, 2004). One potential explanation for these differences could be attributed to gender differences that have been found between the groups. Women in this study were over-represented in the poor objective health categories and researchers have argued that women are more willing to seek help for health problems and are socialized to be more health conscious (Verbrugge, 1979). Given that women are more likely to seek help for health problems it is possible that they are more likely to make use of hospital services and as such have greater chances of being hospitalized for their complaints.

Intriguingly, the current study failed to find differences in hospitalization usage in the third and fourth wave. This is somewhat contradictory to previous research that found

hospitalization rates related to both self-rated health and presence of chronic illness (Wolinsky, Culler, Callahan, & Johnson, 1994). Other factors such as having lower body limitations (i.e., defined as having difficulty walking a quarter of a mile, walking up 10 steps without rest, standing for 2 hours, stooping, crouching or kneeling) and having recently visited a physician are also predictive of hospitalization (Mutran & Ferraro, 1988; Wolinsky, Culler, Callahan, & Johnson, 1994). In addition, though hospitalizations can occur as a result of chronic illness or self perceptions of illness, individuals can also be hospitalized for acute conditions such as accidents or falls (Shapiro, 1988).

Limitations and Future Directions

This study measured objective health using the revised seriousness of illness rating scale (Rosenberg, Hayes, & Peterson, 1987). Previous research has also used the seriousness of illness rating scale, however, this study measured objective health by counting the number of chronic illnesses as opposed to computing a severity score based on the seriousness of each chronic illness reported. While indicators of illness severity were available for the 67 items listed on the scale, many of the participants in our study reported other chronic illnesses for which severity ratings were unavailable. However, the correlation between the count value of illness (for the 67 items) and the severity value for those illnesses is extremely high (r = .90) leading to the conclusion that a very similar pattern of findings may have emerged irrespective of the use of illness count or illness severity. However, future research should aim to obtain severity rankings for the additional items to confirm the current findings.

Secondly, in order to partake in the study individuals had to come to the university. This commute entails that they have a certain level of functional capacity. As such,

individuals facing severe health problems may not have participated in a study that required them to travel to a university to partake in several hours of testing. Furthermore, those in poor objective and subjective health were more likely to drop out from the study. Since some individuals retire as a result of health problems, and these individuals are more likely to experience poorer psychological and physical outcomes, the format of this study may have deterred their participation (Shaw, Patterson, Semple, & Grant, 1998). Thus, individuals who would be expected to suffer decreases in retirement may not have participated or may have dropped out of the study. Consequently, the findings of this particular study may not be extrapolated to all retirees.

This study demonstrated the process by which poor health realists begin to let go of unattainable objectives such as maintaining their current level of engagement in developmental activities. Poor health optimists were shown to continue engaging in a high number of developmental activities; however, the process by which this occurs remains unknown. How poor health optimists were able to continue engaging in numerous activities remains unspecified, perhaps these individuals modify their activities to continue engagement. Thus, although our measure of activity engagement is quite comprehensive, it did not include any measure of activity modification. Future research should aim to identify strategies by which poor health optimists continue to achieve superior outcomes despite the presence of chronic illnesses.

This study extends previous research by examining the effects of health congruence in a young-old sample of recent retirees. Findings indicate that those in good health, who perceive their health to be good experience the most optimal outcomes over the four years, in terms of activity engagement, subjective well-being and health care

usage. In contrast, good health pessimists show less adaptive outcomes in terms of their subjective well-being, engage in a lower number of activities and use a higher number of medications. Poor health optimists, despite suffering from high levels of chronic illness engage in a higher number of activities and use fewer medications. The picture for those with a higher number of chronic illnesses who also perceive themselves in poor health is bleak. This study indicates that soon after retirement these individuals engage in preparatory strategies to begin decreasing their level of activity engagement by decreasing the importance they attribute to their activities. As a result these individuals also tend to exhibit the lowest level of subjective well-being and consume larger amount of medications. Future research should identify adaptive strategies that poor health optimists utilize to maintain their level of engagement. Identification of such strategies could then assist in developing intervention models for poor health realists and good health pessimists.

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Appendix A:

Consent Form

ID # _____

CONSENT FORM

This is to state that I, _____, agree to participate in the study on retirement being conducted by Drs Pushkar, Conway, Li and Wrosch from the Centre for Research in Human Development and the Department of Psychology at Concordia University.

I have been informed that:

1. My participation in this study entails my completing a battery of questionnaires, including questionnaires about the activities I do, my physical health, as well as about various life domains including my well-being, memory, cognition and my attitudes.

2. All information about me or any other person will remain completely confidential. Results from this study will be accessible only to the researchers involved in this study. They will be able to use the information for scientific purposes, such as for publications in scientific journals or presentations at scientific conferences, as long as I cannot be identified as a participant in this study.

3. I am free to withdraw my consent and discontinue my participation at anytime without negative consequences.

4. This interview should last approximately four hours. I will receive a monetary compensation of $50 for the four hours.

5. Because this study is a longitudinal study, I may be contacted again for an annual interview in 2006, 2007 and 2008. Each annual interview will last approximately four hours. I will receive $50 for each annual interview in which I will take part.

6. I will receive a copy of the general results as they become available if I have indicated my name and address on the previous page.

7. I understand the purpose of this study; I know that there is no deception involved.

8. The person in charge of this study is Dr. Dolores Pushkar. She can be reached at (514) 848.2424, extension 7540, e-mail: retraite@alcor.concordia.ca

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

Name (please print) _____

Signature _____

Date _____

Witness _____

If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at (514) 848-2424, extension 7481 or by email at areid@alcor.concordia.ca.

Appendix B:

Demographics Questionnaire

ID# _____

Date _____

1. What is your sex? Male _____ Female _____
2. What is your date of birth? Year _____ Month _____ Date _____
3. What is your age? _____

4. What is the highest level of education you have completed? (please circle that which corresponds best)

Primary School : 1 2 3 4 5 6

Secondary School : 7 8 9 10 11 12

CEGEP/College : Diploma

University : Bachelor's Master's Doctorate

Other (please indicate what, how many years)

_____

5. How many years were you employed at Hydro-Québec?

_____

6. What was your position at Hydro-Québec?

_____

7. When did you retire from Hydro-Québec? Year _____ Month _____ Date _____

8. At the time of your retirement, what was your annual salary at Hydro-Québec? [optional] _____

9. What is your present annual income from all sources? [optional] _____

10. What is your total family income from all sources? [optional] _____

11. Compared to other people of your age that you know, how would you rate your financial situation? (please circle the corresponding number) [optional]

1) A lot worse than most
2) Worse than most
3) A little worse than most
4) About the same as most
5) A little better than most
6) Better than most
7) A lot better than most

12. What languages do you speak?

French _____

English _____

Other (please specify): _____

13. What languages do you read and write?

French _____

English _____

Other (please specify): _____

14. What is your civil status?

Married _____

Single _____

Divorced _____

Widowed _____

Common-Law _____

15. How many times have you been married? _____

16. Do you have children? Yes_____ No _____

17. If yes, how many girls? _____ How many boys? _____

18. Who do you live with?

Alone _____

Spouse _____

Brother/Sister _____

Friend _____

Child(ren) _____

Other (please specify) : _____

Appendix C:

Seriousness of Illness Rating Scale

The following questions deal with specific illnesses or conditions that people may have.
Please check those symptoms or illnesses you have experienced in the **last year**.

☐ I have NOT had any symptoms or illnesses in the last year.

☐ 1. Headache
☐ 2. Dizziness
☐ 3. Varicose veins
☐ 4. Hemorrhoids
☐ 5. Low blood pressure
☐ 6. Drug allergy
☐ 7. Bronchitis
☐ 8. Hyperventilation
☐ 9. Bursitis
☐ 10. Lumbago
☐ 11. Migraine
☐ 12. Hernia
☐ 13. Irregular heart beats
☐ 14. Overweight/Obesity
☐ 15. Anemia
☐ 16. Anxiety reaction
☐ 17. Gout
☐ 18. Pneumonia
☐ 19. Depression
☐ 20. Kidney/Urinary infection
☐ 21. Sexual intercourse difficulties
☐ 22. Thyroid Problems
☐ 23. Asthma
☐ 24. Glaucoma
☐ 25. Gallstones
☐ 26. Arthritis/Osteoarthritis
☐ 27. Slipped disk
☐ 28. Hepatitis
☐ 29. Kidney stones
☐ 30. Peptic ulcer
☐ 31. Pancreatitis
☐ 32. High blood pressure
☐ 33. Deafness
☐ 34. Collapsed lung
☐ 35. Epilepsy
☐ 36. Chest pain
☐ 37. Nervous breakdown

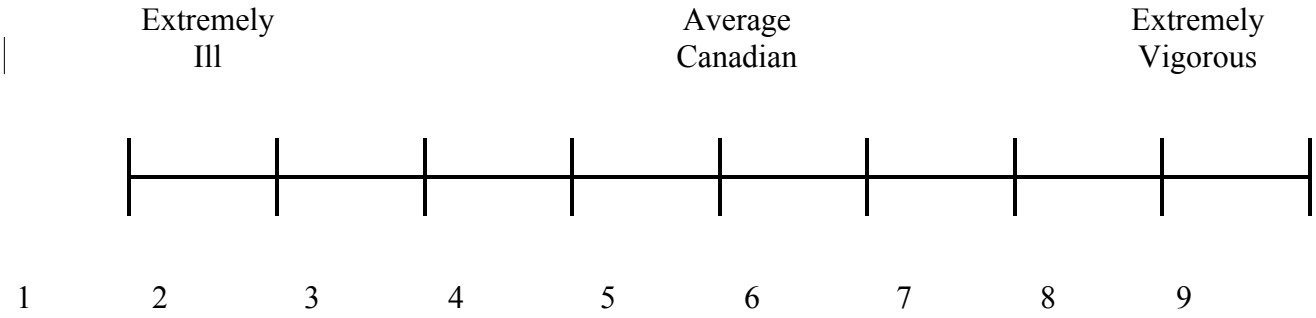
☐ 38. Diabetes
☐ 39. Blood clots
☐ 40. Hardening arteries
☐ 41. Emphysema
☐ 42. Tuberculosis
☐ 43. Alcoholism
☐ 44. Drug addiction
☐ 45. Cirrhosis of the liver
☐ 46. Parkinson's
☐ 47. Blindness
☐ 48. Stroke
☐ 49. Muscular dystrophy
☐ 50. Cerebral palsy
☐ 51. Heart failure
☐ 52. Heart attack
☐ 53. Brain infection
☐ 54. Multiple sclerosis
☐ 55. Bleeding brain
☐ 56. Uremia
☐ 57. Cancer
☐ 58. Leukemia
☐ 59. Cataracts
☐ 60. Difficulty with vision
☐ 61. Rheumatism
☐ 62. Uterine/Breast fibroids
☐ 63. Breast inflammation
☐ 64. Pelvic inflammation
☐ 65. Vaginal infection
☐ 66. Cyst
☐ 67. Other (please describe) ⟹
☐ 68. Colour Blindness
☐ 69. Tendonitis
☐ 70. Cardiomyopathy
☐ 71. Prostate Problems
☐ 72. Shingles
☐ 73. Degeneration of the eye
☐ 74. Chicken Pox
☐ 75. Cholesterol Problems
☐ 76. Internal Bleeding
☐ 77. Allergies/Hives
☐ 78. Osteoporosis
☐ 79. Gastric Reflux/Gastroenteritis
☐ 80. Psoriasis/Exema
☐ 81. Sleep Apnea
☐ 82. Carpal Tunnel Syndrome
☐ 83. Muscle/Ligament/Tendon tear
☐ 84. Angina

☐ 85. Lung Problems
☐ 86. Balance Problems
☐ 87. Dental Problems
☐ 88. Incontinence
☐ 89. Colon Problems
☐ 90. Skin Infections
☐ 91. Neurological Problems
☐ 92. Sciatica
☐ 93. Sinusitis/Sinus Infection
☐ 94. Manic Depression
☐ 95. Vitiligo
☐ 96. Hearing Problems
☐ 97. Persistent Backache
☐ 98. Insomnia
☐ 99. Addison's Disease
☐ 100. Fibromyalgia
☐ 101. Raynaud Disease
☐ 102. Blood Disorder
☐ 103. Hypoglycemia
☐ 104. Spinal Disc Degeneration
☐ 105. Rosacea
☐ 106. Burnout

Appendix D:

Self-Rate Health Questionnaire

HQ



This is a health scale. People in extremely poor health are rated as **1**, that is, extremely ill. People with excellent health are called extremely vigorous, that is **9**. The average Canadian is rated as **5**.

Where would you put yourself on this scale?
Mark the number with an **X**.

Now think of people your own age in general. Where would you put them on this scale?
Mark the number with an **O**.

Think of the healthiest time of your life. What would your rating be then?
Mark the number with a **B**.
How old were you then? Age: _____

The following questions deal with your general health.

How many times did you visit a doctor in the last year?

☐ Never
☐ 1 or 2 times
☐ 3 or 4 times
☐ 5 or 6 times
☐ 7 or 8 times
☐ 9 times or more

Compared to one year ago, is your health…

☐ Worse ☐ About the same ☐ Better

How much do health problems stand in the way of your doing the things you want to do?

☐ Not at all ☐ A little ☐ A great deal

Appendix E:

Positive and Negative Affect Scale

ID# _____

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way *during the past few weeks* by choosing the answer that *describes you best*. Use the following scale to record your answers.

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	A lot

1.	Interested	1	2	3	4	5
2.	Distressed	1	2	3	4	5
3.	Excited	1	2	3	4	5
4.	Upset.....	1	2	3	4	5
5.	Strong.....	1	2	3	4	5
6.	Guilty.....	1	2	3	4	5
7.	Scared.....	1	2	3	4	5
8.	Hostile.....	1	2	3	4	5
9.	Enthusiastic.....	1	2	3	4	5
10.	Proud	1	2	3	4	5
11.	Irritable.....	1	2	3	4	5
12.	Alert	1	2	3	4	5
13.	Ashamed	1	2	3	4	5
14.	Inspired	1	2	3	4	5
15.	Nervous	1	2	3	4	5
16.	Determined	1	2	3	4	5
17.	Attentive.....	1	2	3	4	5
18.	Jittery	1	2	3	4	5
19.	Active	1	2	3	4	5
20.	Afraid.....	1	2	3	4	5

Appendix F:

Everyday Developmental Activities Questionnaire

ID# _____

EAQ: Current

We'd like to know more about the things that you do in everyday life, the activities that might be necessary or important to you, that you might enjoy doing and that you may be good at.

We'd like some more information about how you spend your time. There are certain activities that everyone does, for example, eating and so on, but we'd like to know more about the other things you do.

Please use the response key provided to answer questions 1 to 23.

Please note that if you do not do the activity, you may skip b, c, and d. However, please be sure to mark your responses for a and e.

1. Do you do **HOME ACTIVITIES**, such as maintenance, shopping, housework, routine cooking?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., moving or lifting objects)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., cleaning on a regular basis)	1	2	3	4	5
e. Do you intend to do home activities in the **next two years**?	1	2	3	4	5

2. Do you handle **PERSONAL FINANCES**, such as in business, legal, and banking areas?

a. How **often**?	1	2	3	4	5
b. How **important**?	1	2	3	4	5
c. Any **difficulty** now? (e.g., staying within your budget)	1	2	3	4	5
d. How **good** do you think you generally are at doing this? (e.g., doing your banking transactions)	1	2	3	4	5
e. Do you intend to handle your personal finances in the **next two years**?	1	2	3	4	5

3. Do you **DRIVE A CAR**?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now?	1	2	3	4	5

(e.g., following the traffic)

d. How **good** do you think you are generally at driving a car? (e.g., reacting on time)	1	2	3	4	5
e. Do you intend to drive a car in the **next two years**?	1	2	3	4	5

4. Do you use **PUBLIC TRANSPORTATION**, such as buses, metros?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., going up or down the stairs on the bus)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., knowing the bus schedule)	1	2	3	4	5
e. Do you intend to use public transportation in the **next two years**?	1	2	3	4	5

5. Do you receive **MEDICAL CARE** from dentists, doctors or medical treatments?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., making appointments)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., getting to your appointments on time)	1	2	3	4	5
e. Do you intend to receive medical care in the **next two years**?	1	2	3	4	5

6. Do you work as a **SALARIED EMPLOYEE**?

a. How **often**? How many hours per week? _____h./week.	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., understanding what you are asked to do)	1	2	3	4	5
d. How **good** do you think you generally are in your job? (e.g., completing your work well and on time)	1	2	3	4	5
e. Do you intend to work as a salaried employee in the **next two years**?	1	2	3	4	5

7. Do you **ENTERTAIN** family members or friends at your home, do you **VISIT** family members or friends, or do you **GO OUT** (e.g., have coffee) with these people?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., not enough time)	1	2	3	4	5
d. How **good** do you think you are generally at entertaining family and friends, visiting them, or going out with them? (e.g., making them feel comfortable and at ease)	1	2	3	4	5
e. Do you intend to visit, entertain, or go out with family and friends in the **next two years**?	1	2	3	4	5

8. **Do you WRITE LETTERS, E-MAIL**, or **TALK ON THE PHONE** with family members or friends?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., poor eyesight or hearing loss)	1	2	3	4	5
d. How **good** do you think you are generally at writing letters, e-mailing, or talking on the phone with family members and friends? (e.g., maintaining a correspondence)	1	2	3	4	5
e. Do you intend to write letters, e-mail, or talk on the phone to family members and friends over the **next two years**?	1	2	3	4	5

9. Do you **HELP FAMILY MEMBERS OR FRIENDS**, for example by babysitting, helping with shopping, giving lifts?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., not enough time or lack energy)	1	2	3	4	5
d. How **good** do you think you are generally to help people (e.g., driving them to their appointments)?	1	2	3	4	5
e. Do you intend to help family members and friends over the **next two years**?	1	2	3	4	5

10. Do you **RECEIVE HELP FROM FAMILY MEMBERS OR FRIENDS**, for example to drive you to your appointments, to help you with spring cleaning, etc?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., reluctance asking for help)	1	2	3	4	5
d. How **good** do you think you are generally at receiving help from people (e.g., accepting offered help with shopping)?	1	2	3	4	5
e. Do you intend to receive help from family members and friends over the **next two years**?	1	2	3	4	5

11.Do you do **PHYSICAL ACTIVITIES** such as exercising, walking, swimming, or gardening?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., health problems)	1	2	3	4	5
d. How good do you think you are generally at doing physical activities (e.g., having the necessary skills) ?	1	2	3	4	5
e. Do you intend to engage in physical activities in the **next two years**?	1	2	3	4	5

12. Do you attend **CULTURAL ACTIVITIES** such as films, theatre, concerts, museums?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., getting tickets)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., understanding the film or concert)	1	2	3	4	5
e. Do you intend to attend cultural activities in the **next two years**?	1	2	3	4	5

13. Do you play a **MUSICAL INSTRUMENT OR SING**?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5

c. Any **difficulty** now? (e.g., arthritis)	1	2	3	4	5
d. How **good** do you think you are generally at playing a musical instrument or singing? (e.g., playing difficult pieces)	1	2	3	4	5
e. Do you intend to play a musical instrument or sing in the **next two years**?	1	2	3	4	5

14. What about **CONTINUING EDUCATION**? Have you taken any **ACADEMIC OR INFORMATION COURSES** over the **last two years**?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., getting to class)	1	2	3	4	5
d. How **good** do you think you are at doing this? (e.g., following and participating in class discussions)	1	2	3	4	5
e. Do you intend to continue taking courses in the **next two years**?	1	2	3	4	5

15. Do you **READ** books, magazines, newspapers, union or association newsletters or other types of documents?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., poor eyesight)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., understanding what you read)	1	2	3	4	5
e. Do you intend to read in the **next two years**?	1	2	3	4	5

16. Do you play **GAMES** such as board games or card games?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., poor eyesight)	1	2	3	4	5
d. How **good** do you think you are generally at playing games? (e.g., understanding the rules)	1	2	3	4	5
e. Do you intend to play games in the **next two years**?	1	2	3	4	5

17. Do you do any **CRAFTS AND HOBBIES**, such as knitting, woodworking, needle work, stamp collecting, or any other activities involving a regular routine or pattern, or do you do any **CREATIVE ACTIVITIES**, such as writing, painting, composing, or designing?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., arthritis)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., completing your projects)	1	2	3	4	5
e. Do you intend to engage in crafts and hobbies or creative activities in the **next two years**?	1	2	3	4	5

18. Do you listen to the **RADIO** or watch **TV**?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., poor eyesight or hearing loss)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., when listening or watching a program, do you understand it?)	1	2	3	4	5
e. Do you intend to listen to the radio/watch TV in the **next two years**?	1	2	3	4	5

19. Do you **SURF THE INTERNET** to read or chat, or are you a member of a listserv?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., getting access to a computer)	1	2	3	4	5
d. How **good** do you think you are generally to surf the internet? (e.g., knowing how to do a search)	1	2	3	4	5
e. Do you intend to surf the internet in the **next two years**?	1	2	3	4	5

20. Are there any **OTHER LEISURE ACTIVITIES OR HOBBIES** that you do?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., arthritis)	1	2	3	4	5

d. How **good** do you think you are generally at doing this? (e.g., completing your projects)	1	2	3	4	5
e. Do you intend to engage in these activities in the **next two years**?	1	2	3	4	5

21. Do you engage in **SOLITARY PRAYER, MEDITATION**, or do you engage in any **RELIGIOUS ACTIVITIES**, such as attending religious or study groups?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., not enough time)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., being able to focus your attention)	1	2	3	4	5
e. Do you intend to pray, meditate, or engage in religious activities in the **next two years**?	1	2	3	4	5

22.Do you do **VOLUNTEER WORK** (i.e., offering services through a recognized organization to people other than your family members or friends) or do you participate in any **ORGANIZATIONAL ACTIVITIES**, such as professional associations, political, community, self-help, service groups?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., not enough time or lack the energy)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., participating regularly)	1	2	3	4	5
e. Do you intend to do volunteer work or to participate in organizational activities in the **next two years**?	1	2	3	4	5

23.Do you do any **TRAVELLING** such as day trips, holidays, recreational trips?

a. How **often**?	1	2	3	4	5
b. How **important** to you?	1	2	3	4	5
c. Any **difficulty** now? (e.g., cannot afford financially to travel)	1	2	3	4	5
d. How **good** do you think you are generally at doing this? (e.g., planning a trip)	1	2	3	4	5

e. Do you intend to travel in the **next two years**? 1 2 3 4 5

Appendix G :

Medication and Hospitalization Usage Questionnaire

The following questions refer to the use of medicines and pills.

Please list ALL of the medications which you have taken in the **last 30 days.** This includes both over-the-counter medications (like pain relievers, cough/cold medicine, stomach remedies, sleeping pills, diet pills, etc.) and prescription drugs (like tranquilizers, anti-depressants, allergy medications, antibiotics, diabetes medicine, heart medication, etc.). For each medication write the exact name (e.g. Penicillin), the reason for taking it (e.g. bronchial infection), and the treatment course (e.g. 20mg twice a day for seven days). Finally, please indicate whether the medication was prescribed by a doctor.

Name of medication	**Reason**	**Treatment Course**	**Prescribed?**
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No

☐ I have not taken any medications in the last thirty days.

The following questions refer to hospital stays.

Have you been hospitalized (i.e. admitted) **in the last year**?☐ Yes ☐ No

If yes, how many times? _____

In the space below, please indicate why you were hospitalized and the duration of each hospital stay.

Appendix H:

Descriptive Statistics, Repeated Measures ANCOVAs, Between-Subjects ANCOVAs and Logistic Regression Analyses

Table 1.

Means and Standard Deviations of Number of Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	13.11	1.79	12.85	1.75	12.75	1.92	12.12	3.31
Good Health Pessimist	12.73	1.95	12.22	2.16	12.12	2.86	11.57	3.69
Poor Health Optimist	13.34	1.83	13.30	1.81	13.31	2.01	12.81	3.04
Poor Health Realist	13.01	1.87	13.03	1.95	12.79	1.99	11.45	4.14

Table 2.
Repeated measures Analysis of Variance of the Number of Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	2.08	1.77	.37	.00
Time x Education	10.54	1.77	1.85	.00
Time x Age	10.06	1.77	1.77	.00
Time x Gender	9.14	1.77	1.61	.00
Time x Health Congruence	6.46	5.32	1.14	.01
Error	5.69	628.01		

* $p < 0.05$

Table 3.

Analysis of Variance for Predicting Average levels of Number of Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	71.64	1	5.37*	.02
Age	28.44	1	2.13	.01
Gender	.35	1	.03	.00
Health Congruence Group	40.06	3	3.00*	.03
Error	13.34	354		

* $p < 0.05$

Table 4.

Means and Standard Deviations of the Importance of Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	3.84	.44	3.87	.43	3.83	.46	3.85	.48
Good Health Pessimist	3.81	.45	3.87	.45	3.83	.49	3.86	.41
Poor Health Optimist	3.96	.42	3.94	.45	3.86	.45	3.92	.44
Poor Health Realist	3.90	.45	3.99	.43	3.96	.46	3.82	.45

Table 5.
Repeated measures Analysis of Variance of the Importance of Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	.04	2.93	.62	.00
Time x Education	.01	2.93	.12	.00
Time x Age	.03	2.93	.42	.00
Time x Gender	.06	2.93	1.08	.00
Time x Health Congruence	.15	8.78	2.44*	.02
Error	.06	930.38		

* $p < 0.05$

Table 6.

Analysis of Variance for Predicting Average Importance of Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	1.35	1	.14	.01
Age	.65	1	.30	.00
Gender	10.54	1	17.51**	.05
Health Congruence Group	.06	3	.10	.00
Error		318		

* $p < 0.05$ ** $p < 0.01$

Table 7.

Means and Standard Deviations of the Frequency of Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	54.41	6.59	54.23	6.53	53.84	6.79	53.50	6.76
Good Health Pessimist	53.49	8.18	52.13	7.43	52.87	8.05	52.91	7.90
Poor Health Optimist	54.48	6.15	54.95	6.56	55.19	6.80	55.21	6.85
Poor Health Realist	54.40	6.70	54.20	6.43	54.29	6.98	52.69	7.13

Table 8.
Repeated measures Analysis of Variance of Frequency of engagement in Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	19.83	2.90	1.19	.00
Time x Education	24.44	2.90	1.47	.00
Time x Age	4.05	2.90	.24	.00
Time x Gender	42.014	2.90	2.52^{t}	.01
Time x Health Congruence	21.14	8.69	1.27	.00
Error	16.62	964.00		

* $p < 0.05$ ^{t} $p < 0.10$

Table 9.

Analysis of Variance for Predicting Average Frequency of engagement in Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	709.35	1	5.16*	.01
Age	.60	1	.00	.00
Gender	625.96	1	4.55*	.01
Health Congruence Group	122.03	3	.89	.01
Error	137.59	333		

* $p < 0.05$ ** $p < 0.01$

Table 10.

Means and Standard Deviations of the Difficulty experienced while performing Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	1.24	.30	1.19	.25	1.21	.37	1.22	.25
Good Health Pessimist	1.30	.38	1.29	.47	1.35	.56	1.23	.27
Poor Health Optimist	1.35	.27	1.35	.29	1.34	.33	1.37	.32
Poor Health Realist	1.58	.46	1.47	.49	1.52	.51	1.53	.53

Table 11.
Repeated measures Analysis of Variance of the Difficulty experienced while performing Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	.01	2.86	.11	.00
Time x Education	.14	2.86	2.16^{t}	.01
Time x Age	.05	2.86	.84	.00
Time x Gender	.08	2.86	1.15	.00
Time x Health Congruence	.06	8.59	.94	.01
Error	.07	910.70		

* $p < 0.05$ ^{t} $p < 0.10$

Table 12.

Analysis of Variance for Predicting Average Difficulty experienced while performing Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	1.11	1	3.25	.01
Age	4.58	1	13.44**	.04
Gender	.01	1	.04	.00
Health Congruence Group	5.67	3	16.64**	.14
Error	.34	318		

* $p < 0.05$ ** $p < 0.01$

Table 13.

Means and Standard Deviations of the Ability experienced while performing Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	3.86	.53	3.95	.49	3.96	.49	3.94	.50
Good Health Pessimist	3.81	.53	3.89	.40	3.86	.46	3.77	.49
Poor Health Optimist	3.93	.43	3.90	.42	3.89	.40	3.92	.45
Poor Health Realist	3.74	.48	3.87	.51	3.85	.53	3.80	55

Table 14.
Repeated measures Analysis of Variance of the Ability experienced while performing Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	.03	2.86	.39	.00
Time x Education	.11	2.86	1.67	.00
Time x Age	.04	2.86	.62	.00
Time x Gender	.05	2.86	.73	.00
Time x Health Congruence	.11	8.59	1.61	.01
Error	.07	910.73		

* $p < 0.05$ ^{t} $p < 0.10$

Table 15.

Analysis of Variance for Predicting Average Ability experienced while performing Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	8.54	1	11.92**	.04
Age	5.25	1	7.33*	.02
Gender	5.50	1	7.68*	.02
Health Congruence Group	1.31	3	1.83	.02
Error	.72	318		

* $p < 0.05$ ** $p < 0.01$

Table 16.

Means and Standard Deviations of Future Intentions to engage in Developmental Activities over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	4.23	.37	4.18	.37	4.15	.44	4.14	.40
Good Health Pessimist	4.18	.43	4.10	.37	4.07	.46	4.05	.44
Poor Health Optimist	4.28	.33	4.29	.35	4.26	.40	4.23	.52
Poor Health Realist	4.26	.39	4.22	.40	4.18	.41	4.08	.37

Table 17.
Repeated measures Analysis of Variance of Future Intentions to engage in Developmental Activities as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	.02	2.91	.27	.00
Time x Education	.05	2.91	.67	.00
Time x Age	.06	2.91	.74	.00
Time x Gender	.04	2.91	.49	.00
Time x Health Congruence	.06	8.72	.81	.00
Error	.07	967.88		

* $p < 0.05$ ^{t} $p < 0.10$

Table 18.

Analysis of Variance for Predicting Average Future Intentions to engage Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	2.90	1	6.96*	.02
Age	2.05	1	4.94*	.01
Gender	3.47	1	8.34**	.02
Health Congruence Group	.63	3	1.51	.01
Error	.42	333		

* $p < 0.05$ ** $p < 0.01$

Table 19.

Means and Standard Deviations of Positive Affect over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	38.87	6.54	39.05	5.79	38.67	6.04	38.08	5.73
Good Health Pessimist	35.98	6.80	35.60	6.43	35.68	6.50	35.34	6.41
Poor Health Optimist	38.29	6.79	37.61	6.66	37.66	5.61	37.85	6.18
Poor Health Realist	35.71	6.50	35.87	6.53	35.70	6.52	35.39	6.45

Table 20.
Repeated measures Analysis of Variance of Positive Affect as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	9.11	2.91	.70	.00
Time x Education	4.87	2.91	.37	.00
Time x Age	18.96	2.91	1.45	.00
Time x Gender	10.28	2.91	.79	.00
Time x Health Congruence	4.56	8.72	.35	.00
Error	13.06	967.92		

Table 21.

Analysis of Variance for Predicting Average levels of Positive Affect by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	47.70	1	.42	.00
Age	20.75	1	.18	.00
Gender	1525.74	1	13.29**	.04
Health Congruence Group	944.70	3	8.23**	.07
Error	114.77	333		

** $p < 0.01$

Table 22.

Means and Standard Deviations of Negative Affect over four waves according to Health Congruence Group Classification

Health Congruence Group	Wave 1		Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	13.56	4.09	14.53	4.24	14.92	5.06	15.04	5.44
Good Health Pessimist	15.06	5.16	14.97	4.46	15.89	6.92	16.21	6.39
Poor Health Optimist	16.90	6.72	17.19	6.64	18.02	5.61	17.32	5.81
Poor Health Realist	17.94	6.90	17.71	7.04	18.06	6.11	18.83	6.40

Table 23.
Repeated measures Analysis of Variance of Negative Affect as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	31.53	2.82	1.80	.00
Time x Education	9.37	2.82	.54	.00
Time x Age	48.05	2.82	2.74*	.01
Time x Gender	17.77	2.82	1.01	.00
Time x Health Congruence	11.74	8.46	.67	.01
Error	17.52	938.84		

* $p < 0.05$

Table 24.

Analysis of Variance for Predicting Average levels of Negative Affect by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	154.28	1	.15	.01
Age	8.56	1	.74	.00
Gender	81.09	1	.30	.00
Health Congruence Group	944.93	3	12.48**	.10
Error	75.70	333		

** $p < 0.01$

Table 25.

Means and Standard Deviations of Number of Medications over three waves according to Health Congruence Group Classification

Health Congruence Group	Wave 2		Wave 3		Wave 4	
	M	*SD*	*M*	*SD*	*M*	*SD*
Good Health Realist	1.54	1.27	2.13	1.65	2.31	2.08
Good Health Pessimist	2.33	1.61	3.39	2.52	3.29	2.52
Poor Health Optimist	2.53	1.48	3.66	2.13	3.70	2.19
Poor Health Realist	3.44	2.16	4.83	2.96	4.92	3.14

Table 26.

Repeated measures Analysis of Variance of Number of Medications over three waves as a function of time, gender, age education and Health Congruence Group Classification

Effect	*MS*	*df*	*F*	η^2
Time	.14	1.87	.07	.00
Time x Education	3.16	1.87	1.54	.00
Time x Age	2.23	1.87	1.08	.00
Time x Gender	4.61	1.87	2.25	.01
Time x Health Congruence	4.26	5.60	2.07^{t}	.02
Error	2.06	660.97		

* $p < 0.05$ ^{t} $p < 0.10$

Table 27.

Analysis of Variance for Predicting Average Future Intentions to engage Developmental Activities by gender, age, education and Health Congruence Group Classification

Source	*MS*	*df*	*F*	η^2
Education	3.59	1	.39	.00
Age	71.17	1	7.75	.02
Gender	14.71	1	1.60	.01
Health Congruence Group	275.91	3	30.06**	.20
Error	9.18	354		

* $p < 0.05$ ** $p < 0.01$

Table 28.
Logistic Regression Analyses of Odds of Hospitalization as a function of Health Congruence with Good Health Realist as comparison group

Source	Wave 2			Wave 3			Wave 4		
	B	Wald χ^2	Odds Ratio	*B*	Wald χ^2	Odds Ratio	*B*	Wald χ^2	Odds Ratio
Gender	0.40	2.61	1.50	-0.65	1.91	0.52	0.74	3.52	2.09
Age	0.03	2.02	1.04	0.06	2.05	1.06	-0.02	0.35	0.98
Education	-0.01	0.05	0.99	0.15	2.78	1.17	0.07	0.90	1.07
GHP	-0.18	0.19	0.84	0.26	0.15	0.77	0.08	0.02	0.93
PHO	0.80	5.61	2.22*	0.02	0.00	1.02	-0.10	0.03	0.91
PHR	0.88	8.42	2.41**	-0.86	1.63	0.42	-0.16	0.10	0.85

Note. GHP(Good Health Pessimist), PHO(Poor Health Optimist), PHR(Poor Health Realist)
*$p < 0.05$, **$p < 0.01$