The Values of Retired Adults: Measurement Issues, Links to Well-Being, and the

Correlates of Value Change

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ABSTRACT

The Values of Retired Adults: Measurement Issues, Links to Well-Being, and the Correlates of Value Change

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Research on values has focused almost exclusively on samples of university students and working adults and is significantly lacking for older, retired adults. The general focus of this dissertation is on extending research on values to older adults and to the post-employment stage of life using a sample of 433 recently retired individuals from the Montreal area. The dissertation is divided into three separate studies, presented as individual manuscripts. The first of these is focused on the structural and measurement properties of a widely used value questionnaire (the Portrait Value Questionnaire: Schwartz et al., 2001) that has seen little use with older adults. The second study examines how values, health, and money, independently and in combination, are longitudinally linked with affective well-being in retirement. The third study investigates subjective perceptions of value change compared to longitudinally-assessed value change over three years of retirement and the extent to which these different kinds of change are adaptive processes linked to positive and negative affect and meaning in life. The major areas of interest in the dissertation (values, retirement, subjective well-being, and value change) are reviewed in a general introduction, followed by the three manuscripts. Finally, an integrative discussion of the findings across the three studies is presented.

Acknowledgements

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Contributions of Authors

I, Andrew Burr, am the first author for each of the three manuscripts that are contained herein. As such, I was responsible for the vast majority of the work involved in the three manuscripts, from conceptualization to writing stages. Significant statistical consultation and collaboration did occur, however, with Concordia University doctoral candidate in psychology Jonathan Santo. Jonathan Santo was involved in all structural equation modeling analyses as well as in the preparation of results sections, including certain figures and tables. In recognition of the substantial contribution of his time and statistical expertise, Jonathan Santo is listed as second author on each of the manuscripts. My research supervisor, Dolores Pushkar, is the third author on each of the manuscripts in recognition of her significant conceptual, methodological, and editorial contributions.

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Introduction

Values

The concept of values, or what is most important in life, has a long tradition

dating back to the earliest chapters of human civilization when ancient thinkers grappled

with the question of what creates a morally good life (Haidt, 2008). The values discussion

has been present in many academic domains, including psychology, sociology,

anthropology, economics, political science, education, and religion (Feather, 1999). It

was not until the early 20th century that psychologists took up the question of values, a

delay likely linked to values' nebulous meaning and difficulty of measurement.

Psychologists were the first to attempt to address values from an empirical perspective

with operational definitions and corresponding measurement tools. An important

distinction in the work of psychologists on values, however, is that psychologists, unlike

philosophers, were generally not attempting to address the question of what values people

should have, but rather to describe values in empirical terms, and to examine the

correlates and consequences of different kinds of value systems. The investigation of

moral development – knowing what is good and right – is often linked to the

development of particular value systems, but the "moral values" literature can be

considered distinct from the literature investigating the more general nature and function

of human values. It is this latter version of values that will be the focus of this

dissertation.

A general characteristic of the values literature in psychology is definitional

inconsistency (Rohan, 2000). Values have varied in definition because: (a) they resemble

other psychological constructs such as goals, attitudes, preferences, interests, aspirations,

and needs; (b) they can be conceptualized on a variety of levels, including personal values, social value systems, worldviews, and ideologies; and (c) because the term "value" can be used as both a noun (denoting worth) and a verb (indicating the action of evaluating worth), each representing a slightly different target for investigation (Rohan, 2000). In the recent literature, one value theory in particular (Schwartz, 1992) has facilitated the effort of psychologists to understand values with a widely accepted definition of what values are and with corresponding validated measurement tools. Before describing this recent development, however, the evolution of the approach to values in psychology will be briefly reviewed.

History of the values construct in psychology. In a review of the development of the values construct in psychology, Rohan (2000) notes that early value theories were focused on individual differences in prioritization of a set of principles or attitudes (e.g., Shand, 1914; Spranger, 1928). These theories led to the development of a series of measurement tools that suggested the relative priority of different values through individuals' responses to questions (Allport, Vernon, & Lindzey, 1960) or through their preferences for various "ways to live" (Morris, 1956).

A major figure in the development of a psychology of values was Clyde Kluckhohn, whose definition of values influenced several later value theorists, including Schwartz (1992). Kluckhohn (1951) defines values as follows: "A value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action" (p. 395). Of note, there is an implicit connection between values and morality in Kluckhohn's value theory, such that values are not merely things that are desired, but

rather, in a more abstract sense, represent "the desirable", and therefore signify what people as individuals or groups "ought or should" desire (p. 396). What is desirable, however, goes beyond a sense of morality (right and wrong) to include as well aesthetic judgment and cognitive appraisals. The desirable, then, according to Kluckhohn (1951), is partly attached to morality, partly a cultural product, but is also open to individual interpretation.

Another major development in the value construct in psychology was Rokeach's (1973) value theory and the accompanying Rokeach Value Survey. Building on Kluckhohn's conception of values as "the desirable," Rokeach defined a value as "a belief that a specific mode of behavior or end-state of existence is preferred to an opposite mode of behavior or end-state ... " and elaborated on the idea of values as general and broadly applicable standards that guide multiple areas of human functioning: "This belief transcends attitudes toward objects and toward situations, it is a standard that guides and determines action, attitudes toward objects and situations, ideology, presentation of self to others, evaluations, judgments, justifications, comparisons of self with others, and attempts to influence others" (p. 25). Operationalizing these standards as the principles that people see as most important in life, Rockeach's measurement tool asked people to rank a list of values in terms of their importance as guiding principles in their lives. The values to be ranked included specific goals (terminal values) such as "comfortable life (a prosperous life)" as well as more abstract "modes of conduct" (instrumental values) such as "broad-minded (open-minded)" (Rokeach, 1973, p. 359-361). In sum, Rokeach's influential theory proposed that values were distinct from both attitudes and specific beliefs, were hierarchically organized, and represent abstract

guiding principles, standards, or "general beliefs that people hold about desirable and undesirable modes of conduct and end states of existence" (Feather, 1999, p. 53).

One major debate that emerged in the values literature was over ranking versus rating methods of measuring values. The Rokeach Value Survey popularized the ranking task, in which respondents are asked to place a list of values in order of importance. This was often a difficult task for respondents, and, as some argued, had inherent drawbacks such as being time consuming, forcing distinctions between values of equivalent importance, and not being amenable to standard statistical analyses due to the interdependence of the ranks (Ovadia, 2004). The alternative to *ranking* tasks for measuring values are *rating* tasks in which respondents rate each value independently of the others, usually on a Likert-type rating scale. Rating tasks have also come under criticism for the possibility of under-dispersion of responses, or the tendency of respondents to use only a narrow range of the response scale resulting in the equivalence of several values (Ovadia, 2004). Although some critics argue strongly for one method or the other (e.g., Maio, Roese, Seligman, & Katz, 1996, argue the superiority of the rating method), the issue of the best way to measure values remains debatable. In a review of the ratings and rankings debate for values measurement, Ovadia (2004) suggests that both methods have methodological and statistical imperfections, and neither is clearly superior. Further, Ovadia recommends using both methods as complimentary sources of information about values: rankings tell us about value structure (i.e., the relative importance of values in relation to other values), whereas ratings tell us about values independent of other values. The rationale for using both methods is as follows. First, two people could have the same overall ranking of values, but differ significantly on their

value ratings. Second, in the analysis of change in values over time, these two methods of measurement can provide different results: change may occur in value ratings, but that change may not be enough to upset the overall ranking of values in the system (Ovadia, 2004). Each method on its own, then, can be seen as representing an incomplete understanding of values, and Ovadia argues that they should not be seen as mutually exclusive but rather complimentary approaches to the measurement of values. The Schwartz (1992) value measurement system (described in detail later) can be seen as a combination of rating and ranking methods, as respondents use a rating scale but raw ratings can then transformed into ipsative scores that indicate the relative importance of values as a system.

Through the 1970's and 1980's, the Rokeach (1973) value theory was widely used by researchers, while at the same time other approaches to the measurement of values were also developed (see Braithwaite & Scott, 1991 for a review). These approaches have generally been superseded by the more recent Schwartz (1992) value theory, which represents an integration and extension of the previous values literature. It must be acknowledged that there are currently several other ways of conceptualizing and measuring values both on a personal level (e.g., agency and communion values; Pohlmann, 2001) and cultural level (e.g., Hofstede, 2001; 2008; Inglehart & Baker, 2000). An on-going large-scale international research program targeting values – the World Values Survey – incorporates multiple value tools from both the personal and cultural perspective in its lengthy assessment battery (http://www.worldvaluessurvey.org/). A review of all values literature and measurement tools, however, is beyond the scope of this dissertation. As the Schwartz (1992) value

theory is a dominant theory of personal values in the current psychological literature, the development of the Schwartz (1992) value theory will be discussed next.

The Schwartz (1992) value theory. Building on the common themes in the values literature, including those outlined above, and highly influenced by Kluckhohn (1951) and Rokeach (1973), Schwartz and Bilsky (1987, 1990) identified five formal features of values as the basis for the Schwartz value theory:

> Values (1) are concepts or beliefs, (2) pertain to desirable end states or behaviors, (3) transcend specific situations, (4) guide selection or evaluation of behavior and events, and (5) are ordered by relative importance. Values, understood this way, differ from attitudes primarily in their generality or abstractness (feature 3) and in their hierarchical ordering by importance (feature 5). (Schwartz, 1992, p. 2)

In addition to these formal features, values were reasoned to be derived from three universal requirements of human beings, namely (1) biological needs; (2) requisites of coordinated social interaction; and (3) demands of group survival and functioning (Schwartz, 1992). From these universal needs, Schwartz and colleagues derived ten universal motivations that represent the ten values in the theory (defined and summarized in Table 1): power, achievement, universalism, benevolence, self direction, stimulation, hedonism, conformity, tradition, and security.

The first measurement tool developed to assess the theory was the Schwartz Value Survey (SVS: Schwartz, 1992), an instrument that asks respondents to rate 57 specific values that represent the ten higher-order value types in terms of how important each value is as a guiding principle in life. To address one important limitation of the SVS, namely its highly abstract nature, a second measurement tool, the Portrait Value

Questionnaire (PVQ: Schwartz et al., 2001) was developed. Respondents to the PVQ read 40 brief descriptions of individuals (portraits) in terms of what is important to them and rate the similarity of each portrait to themselves. The 40 items and the values that they represent are listed in Table 2. While the SVS is a highly abstract and explicit measure of values, the PVQ is a shorter, more concrete task that is less transparent since it does not explicitly identify values as the topic of investigation.

Both the SVS and the PVQ have been used widely in psychological research in cross-cultural (e.g., Schwartz & Rubel, 2005), social (e.g., Caprara & Steca, 2007) and personality domains (e.g., Cohrs, Moschner, Maes, & Kielmann, 2005), as well as in management (e.g., Ralston, Egri, Stewart, Terpstra, & Yu, 1999), political (e.g., Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2006), and marketing research (e.g., Steenkamp, ter Hofstede, & Wedel, 1999). In addition, short versions of the PVQ are included in two on going large-scale international research programs, the European Social Survey and the World Values Survey (for details, see http://www.europeansocialsurvey.org/; http://www.worldvaluessurvey.org/). The PVQ is, in short, one of the most important and popular measures of values in current psychological and sociological research.

The ten values in the Schwartz value theory have shown associations with a wide variety of variables including demographics, behavioral tendencies, attitudes, personality traits, and well-being. Demographic correlates of values include age, gender, education, and culture (Prince-Gibson & Schwartz, 1998; Schwartz & Rubel, 2005; Schwartz et al., 2001); behavioral correlates include major in school, autocratic behavior, change seeking, use of mobile phones, and use of alcohol (Schwartz et al., 2001) as well as environmental

conservation (Schultz et al., 2005), and voting behaviors (Barnea & Schwartz, 1998); attitudinal correlates include religiosity and political orientation (Caprara & Zimbardo, 2004) as well as readiness for out-group social contact (Sagiv & Schwartz, 1995); personality correlates include the big five traits (Roccas, Sagiv, Schwartz, & Knafo, 2002); and finally, well-being correlates include the experience of worry (Schwartz, Sagiv, & Boehnke, 2000) and of positive emotions (Sagiv & Schwartz, 2000).

There are two important features of Schwarz's (1992, 1994) theory related to how values function as a system: (a) the structure of relations among the values and (b) the idea of value "priorities" (Oishi, Schimmack, Diener, & Suh, 1998). The structural aspects of the theory have implications for making predictions about the relations of values to other values and other variables, whereas the "priorities" view of values has implications for how value scores should be calculated.

In terms of the structure of relations among values, Schwartz (1992) argues that it is crucial to consider particular values not in isolation but rather as a part of a larger value system. Each of the ten values in this theory is, therefore, related to the others as a function of the degree of compatibility of the motivational goals of each value with the other values. A circumplex structure emerges from this system of congruities and conflicts among the values. Within this structure, values adjacent to one another are most compatible in terms of motivation, while those on opposite sides of the circumplex are the most conflicting. For example, the values of power and achievement, which are based on enhancing the self, are closely related to one another but oppose the values of benevolence and universalism, which are focused on concern and caring for others. Schwartz (1992) argues that this pattern of systematic associations among values makes it

possible to generate hypotheses about how other variables will relate to values. For example, if conformity values are predicted to increase with age, then stimulation values, with opposite motivational content, could be predicted to decrease with age. The content and structural aspects of Schwartz's theory of basic human values were assessed and generally supported in a series of large-scale cross-cultural studies in the 1990's (Schwartz, 1992, 1994; Schwartz & Bilsky, 1987, 1990; Schwartz & Sagiv, 1995) that examined over 200 samples in more than 60 countries (Schwartz & Boehnke, 2004).

Despite this large database on personal values from tens of thousands of participants worldwide (Schwartz & Rubel, 2005), no data exist to support the content and structural aspects of the Schwartz value theory in the context of older adulthood. It is important for the integrity of this theory that the same 10 latent value factors emerge in older adults, as they have in younger and working adults, and that the 10 values show a pattern of relations among each other (i.e., the circumplex structure) in older adults that approximates previous findings with younger and working adults. In addition, in order to investigate group differences in values, for example between young adults and retirees, or to examine the stability of values across several points in time, it is crucial to address the issue of measurement invariance. These issues are addressed in detail in the first manuscript.

In addition to the idea of the values having a predictable pattern of inter-correlations with each other and with outside variables, Schwartz and colleagues (1992; Schwartz & Rubel, 2005) have argued that mean scores for each value based on the value instruments are not, in and of themselves, the most important quantification of values. Rather, a scoring procedure known as ipsatizing is advocated as a way of representing the

relative importance of each value in relation to the entire value system (Schwartz & Rubel, 2005). Although there is theoretical reason to use such transformations, and they appear to be used in most research conducted by S. H. Schwartz and colleagues, such transformations come with a set of both costs and benefits (e.g., see Baron, 1996; Fischer, 2004 for reviews). The nature and purpose of ipsative transformations, their conceptual meaning, and related statistical issues will, therefore, be examined in greater detail next.

The ipsative scoring debate. There has not been much debate about the use of ipsative scores with the PVQ; their use is near ubiquitous given that S. H. Schwartz advocates for this type of transformation and he has been a collaborator on the majority of published research using these measurement tools. There are, however, important theoretical and statistical issues related to the use of ipsative scores that have not received much attention (Fischer, 2004).

In the scoring manual for the PVQ-IV (Schwartz, n.d.: see Appendix A), S. H. Schwartz advocates within-subject ipsative scoring of the PVQ prior to most, but not all types of statistical analyses. This type of ipsative scoring involves creating a deviation score representing the *relative* importance of a particular value for an individual in relation to all of the other values. Ipsative scores are calculated by taking an individual's mean score across all 40 PVQ items and subtracting it from the individual' mean score for a particular value. The ipsatizing of PVQ scores is intended to serve two functions: (a) remove a response bias and (b) to represent the relative rather than absolute importance of each value (Schwartz & Rubel, 2005). Fischer (2004) defines response bias as follows:

> Response bias is the systematic tendency to distort individual responses to rating scales so that observed scores are unrelated to the true score of the individual by

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either selecting extreme or modest answers (extreme or modest response bias) or a shifting of responses to either end of the scale (acquiescence response bias). (p. 263)

Schwartz (n.d.) notes that individuals differ on their use of response scales and suggests that, "scale use differences often distort findings and lead to incorrect conclusions" (p. 1). The argument for ipsatizing is that a raw mean value score, or in other words the absolute importance of a single value across individuals, does not reflect values as a part of a system. This systemic view of values is deemed important because, "the way that values affect cognition, emotion, and behavior is through a trade-off or balancing among multiple values that are simultaneously relevant to action" (Schwartz, n.d., p. 2). The ipsatizing process described above converts absolute value ratings into relative value ratings, or the individual's "value priorities" (p. 1). Schwartz and Rubel (2005) cite Fischer (2004) as supporting the legitimacy of ipsatizing value scores from the Schwartz value theory instruments. In the same review, however, Fischer outlines a variety of potential problems and complications as a result of within-person ipsatization. These will now be briefly addressed.

The ipsatization process has both strengths and limitations, depending on the research question and the issues ipsatization is intended to address (Baron, 1996). In a review of standardization methods in cross-cultural research, Fischer (2004) identifies several important problems with ipsatization. He provides a useful analogy involving two very different-sized animals, a mouse and an elephant, for conceptualizing the effects of ipsatization on data analysis.

Assume someone measured the extremities of both animals and used within-subject (within-animal) standardization. If the researcher would now proceed to compare the length of, let us say, the legs, probably no significant differences would be found. This is despite the fact that the legs of an elephant and a mouse are surely different. This is because all the measures are related to the size of the whole animal. (p. 275)

A question that follows from this logic, regarding ipsatizing PVQ scores, is to what extent is the size of the whole animal (i.e., the strength of identification with values overall) a variable of interest or a source of variance one wishes to consider as response bias?

To explore this question, let us consider some examples of how ipsative scores represent different response patterns on the PVQ. If person A's raw mean score for items assessing benevolence was 5 (on a scale ranging from 1 to 6), and his average score across all PVQ items was 3, suggesting he does not identify strongly with many values, then the ipsative score for person A on benevolence would be 5 − 3 = 2, the positive value of the number indicating that benevolence is more important than all of the other values, on average. If person B had the same raw mean score for benevolence (5), but instead had an average score across all items of 5, suggesting she identifies strongly with multiple values, then the ipsative score for person B on benevolence would be 5 − 5 = 0, indicating that, although benevolence is important to this individual, it is not more or less important than any other value on average. Now consider person C who does not consider benevolence highly important (a mean of 3 for all benevolence items) but who also does not identify strongly with most values (with an average score across all values

of 3). Person C's ipsative score would also be zero. Two individuals then (person B and person C), one of whom indicated on the questionnaire that benevolence was important, the other who did not, can end up with identical ipsatized benevolence scores.

Although ipsative scoring is intended for specific purposes (controlling for response bias and representing the relative importance of values), the ipsative score has the potential to misrepresent the importance of values in certain cases. For example, when an individual rates most values as important, the ipsatized score will represent these important values as being of average importance (i.e., no different than most other values). The same is true of an individual who rates most values as unimportant: when ipsatized, each value appears to be of average importance. As a results, ipsative scores have the potential to equate individuals who identify strongly with many values with those who do not identify strongly with any values. This is a crucial point, especially in regards to how values are related to well-being outcomes. A clearly articulated value system likely has implications for well-being in terms of being able to enact important values in meaningful activities and behavior. A general lack of clearly defined guiding principles may in and of itself be related to reduced levels of well-being through a general lack of direction and lack of purpose in life. An important question, then, is whether one wishes to consider the tendency to rate many or few values as important as a type of acquiescent response bias or as a potentially important individual difference variable.

Beyond the issue of the conceptual implications of ipsatization, there are practical problems associated with ipsative scores in statistical analyses. After reviewing several issues regarding the implications of within-subject standardization for various forms of

statistical analyses, Fischer (2004) notes that within-subject ipsative scores, "have various undesirable properties, especially for statistical techniques involving correlations" (p. 278), and advises against the use of ipsative scores with factor analytical techniques. The undesirable properties include the way ipsative scores function in a covariance matrix (i.e., creating, "a singular matrix with no regular inverse which creates problems for factor analyses) as well as problems with inflated reliability (Fischer, 2004, p. 273). Regarding multivariate analyses, Fischer concludes that, "authors might be advised to refrain from using multivariate techniques with ipsative scores pending further investigation of the impact of ipsatization on these techniques" (p. 276). Fischer seems to provide, at best, only tentative support for within-subject standardization as proposed by Schwartz and Rubel (2005), noting that little is known about the performance of ipsative data with correlation-based analyses such as structural equation modeling, and suggesting that more research is required in this area.

A further issue not addressed by Fischer (2004) is the conceptual issue of comparing ipsative scores over time in longitudinal research. When raw mean scores for a value, for example for benevolence, are examined over time, the question is about whether there is change in the importance of that particular value. If ipsative scores are used in longitudinal research, then the question of change is not about change in how participants rated a particular value, but rather how they responded to that value as well as all of the other items on the questionnaire. While ipsative scores in longitudinal designs can answer questions about change in the relative importance of values (value priorities), there is a loss of specificity in terms of knowing where that change may have or have not occurred. An individual who valued benevolence moderately at one point

with an ipsative score of zero (3 on benevolence minus 3 across all items), who increases in benevolence over time to a score of 4, but also finds other values more important, could end up with the same ipsative score at the second point of measurement (4 on benevolence minus 4 across all items), suggesting no change in the value despite the fact that the individual indicated higher benevolence values at the second assessment. The question of change in particular values, rather than in the value system, would therefore be better served by an examination of raw scores rather than ipsative ones.

Despite the rather ubiquitous convention of using ipsative scores in research using the PVQ, the research in this dissertation is focused on the raw means (or absolute value importance) rather than ipsative scores (or relative value importance). This approach was chosen based on (a) the host of statistical issues regarding ipsative scores and correlational techniques raised by Fischer (2004); (b) the possibility that the overall mean score across all values may be a meaningful individual difference variable relative to well-being (i.e., representing the strength of identification with values in general), as opposed to a type of response bias; and (c) the longitudinal research question regarding change in specific values (which raw scores alone can answer) rather than change in value priorities.

Research objectives

Although S. H. Schwartz and colleagues have collected data from tens of thousands of participants the world over, very little of this research has focused on populations of older adults. The large samples studied are often referred to as "nationally-representative" but little information is provided on specific age ranges (e.g., Schwartz & Rubel, 2005). When non-student samples are included, they are often described as

"adults" without indicating mean age or age range (e.g., Sagiv & Schwartz, 2000). Although it is difficult to know for certain what age range the current literature on the Schwartz values represents, it is most likely representative of students and working adults under the age of 50 years. From the perspective of adult development and aging, much work remains to clarify to what extent one can generalize from the existing literature based on younger adults to middle and later stages of adulthood. This dissertation therefore seeks to extend the literature on the Schwartz value theory by addressing three main objectives. First, measurement and structural aspects of Schwartz's value theory were investigated in retired adults and compared to the measurement and structural properties found in a university student sample. Second, links were explored between values, demographic variables, and affective well-being in retirement. Third, changes in retirees' values over time were studied in terms of how subjective perceptions of change differ from objective (i.e., longitudinal) assessments of change, and how each of these types of change are related to well-being outcome measures. The remainder of this introductory section reviews the literature in general content areas (retirement, subjective well-being, and value change) relevant to these objectives.

Retirement

The study of retirement is growing in importance for a variety of reasons. Demographically, the oldest members of the large baby-boom cohort (born between 1946 and 1964 or 1965, depending on the source) reached the age of 60 in 2006 and have begun to retire (Callanan & Greenhaus, 2008; Statistics Canada, 2001; U.S. Census Bureau, 2006). The proportion of retirees in western society will therefore rise dramatically in coming years. In addition, advances in health and medicine have

contributed to an increased life expectancy, which translates into individuals spending a longer time in the retirement stage than ever before and in better health. This is historically novel. Third, retirement, while not typically a crisis, is a unique transition in the lifespan that involves changes in roles, relationships, and daily routines as well as shifts in income and in health. Retirees face the dual challenges of adjusting to the loss of the work role and its social ties as well as establishing a new and satisfying post-retirement lifestyle (van Solinge & Henkens, 2008). Retirement, in other words, is a multi-dimensional transition that affects both social and physical worlds (Kim & Moen, 2001).

Defining retirement. Defining retirement is not as straightforward as one might imagine and official policies defining retirement vary from country to country. The concept of retirement involves some degree of withdrawal from the workforce at the tail end of a career of work, but the age, length of career, and the extent of withdrawal (partial or complete) necessary to be considered retired are debatable and vary across definitions. Retirement can be defined either as a subjective, self-perceived status reported by an individual or based on objective criteria, such as being over a specific age, being out of the labor force for a specific amount of time, or receiving over a certain percentage of total income from retirement-income sources (Bowlby, 2007). Retirement is not, however, simply a clean break from full-time work. There is an increasing tendency toward "blurred" exits from the workforce involving multiple entrances and exits from the labor force as well as combinations of part-time work and retirement (Mutchler, Burr, Pienta, & Massagli, 1997). Traditional definitions of retirement, based on the idea of retirement as the end of employment and the beginning of receiving

pension benefits (Atchley, 1988) are too narrow to encompass the range of situations and experiences that are now encountered in later adulthood in the process of withdrawing from the workforce. Indeed, policy makers in Canada have recently begun to implement policy changes that would give people the choice to work later in life as well as to have more flexibility in balancing work, leisure, learning, and care giving throughout the life course (Stone, 2006).

The concept of retirement, even if it is an evolving one, does however rest on a few fundamental criteria: (a) retirement is a *process* of withdrawing from the workplace rather than a discrete event; (b) retirement does not necessarily mean economic inactivity; and (c) people of a relatively young age should not be considered retired (Bowlby, 2007). In Canada, the median retirement age, defined in a labor force survey as being over age 50, not having worked in the past year, and self-reporting retirement as the reason for not working, was 61 years in 2005 (Bowlby, 2007). Several decades prior in the 1970s, people in Canada were retiring at about age 65 but retirement age began dropping in the 1980s and 90s in conjunction with public sector early retirement incentives (Bowlby, 2007).

Retirement and well-being. While free time without the pressures of work may seem an inevitable boon to well-being, this is not necessarily the case. The impact of retirement on well-being has been a subject of much debate among researchers. In early research on retirement, Atchley (1976) proposed that retirees tend to move through several different stages of adaptation in the first few years of retirement, from a honeymoon phase, to disenchantment, to a re-orientation period, and eventually to a new stability in routine (Reitzes & Mutran, 2004). Subsequent research has supported some

components of this stage model, but has also demonstrated the complexity and variability in the retirement adaptation process. Some studies have reported that the retirement transition is accompanied by improved well-being (e.g., Gall, Evans, & Howard, 1997), while others have reported the opposite (e.g., Richardson & Kilty, 1991). Although a negative impact of retirement on well-being is not the norm, up to 30% of retirees have been estimated to experience adjustment difficulties (Braithewaite & Gibson, 1987; McGoldrick & Cooper, 1994). Different categories of responses to retirement have also been proposed, including the following four types of retirement transitions: (1) retirement as a transition to old age (a time to wind down, reflect, rest, and put one's life in order); (2) retirement as a new beginning (a time to energetically pursue long-awaited goals); (3) retirement as a continuation (continuing with valued activities in as less pressured manner); and (4) retirement as an imposed disruption (losing a part of the self as a result of forced retirement) (Hornstein & Wapner, 1985; Hanson & Wapner, 1994).

More recently, the retirement transition has been depicted by researchers as heterogeneous in nature, its impact depending upon a host of both contextual and psychological factors, including economic resources, personal resources, and social-relational resources (Drentea, 2002; Kim & Moen, 2002; Mein, Martikainen, Hemingway, Stansfeld, & Marmot, 2003; Pinquart & Schindler, 2007; Szinovacz & Davey, 2004; van Solinge & Henkens, 2008). Understood as a non-uniform transition, retirement may then represent a crisis for some and a relief for others. Satisfaction in retirement has been linked with retirees' access to key resources (finances, health, and a marital relationship), the characteristics of the transition (involuntary or voluntary), type of job from which people retire (physically demanding or intrinsically interesting), and

expectations about retirement (van Solinge & Henkens, 2008). In addition, age at retirement, duration of retirement, gender (Pinquart & Schindler, 2007) and finally quality of social relationships with spouse and family, personality characteristics (Kim & Moen, 2001), and spousal employment status (Szinovacz & Davey, 2004) have all been associated with the well-being of retirees. Personal values, however, have not yet been the focus of investigations regarding retirees' well-being. The following section addresses definitions of well-being and how different types of motivation, including the Schwartz values in particular, have been linked to well-being outcomes in prior research.

Subjective well-being

Defining subjective well-being. As opposed to what are often considered objective indicators of the quality of a person's life such as health and financial status, subjective well-being refers to individuals' experiences of positive and negative emotions and their cognitive judgments about how satisfied they are with their lives (Diener, Suh, Lucas, & Smith, 1999). Although related, positive and negative affect are considered independent constructs with distinct structures and different causes (for a review, see Schimmack, 2008). It is also worth noting that affective experiences and life satisfaction do not necessarily have the same determinants, and experts in the field have noted a poor understanding of the differential relations between predictor variables and the affective and cognitive components of subjective well-being (Diener et al., 1999). However, taken together the affective and cognitive components of subjective well-being represent people's feelings about and evaluations of their lives, and are usually understood, either separately or together, as indicators of happiness and quality of life.

The scientific study of subjective well-being over the past 30 years has identified a variety of biological, psychological, and social determinants of subjective well-being, but no single variable has emerged as both necessary and sufficient for well-being (Larsen & Eid, 2008). Subjective well-being has been found to vary with personality, social relations, genetics, environmental effects such as early family environment and the larger national environment; subjective well-being has also been found to vary with demographic characteristics such as education, health, income, employment, marriage, widowhood, age, and culture (for reviews, see Diener et al., 1999; Larsen & Eid, 2008). A recent model of the multiple determinants of subjective well-being suggests that both person and situation level variables make unique contributions (Sheldon & Hoon, 2007). Regarding subjective well-being and values, Sagiv, Roccas, and Hazan (2004) propose that there are three pathways through which values may impact on well-being. The first is through holding specific "healthy values" that in and of themselves are likely to promote well-being; the second is through making progress toward important goals; the third is through congruence between personal values and the prevailing environment or activities. In this dissertation, the focus is primarily on the first of these pathways — the direct effects of values on well-being, but these direct effects are considered from a developmental perspective in the sense that the impact of values on subjective well-being is considered dependent to some extent on position in the lifespan.

Intrinsic and extrinsic motivation. The literature on life strivings (e.g., Kasser & Ahuvia, 2002; Kasser & Ryan, 1993; 1996; Kasser, Ryan, Couchman, & Sheldon, 2004) provides a starting point for understanding how the values of the Schwartz paradigm might relate to aspects of subjective well-being. The life strivings literature posits that a

balance is required between intrinsic and extrinsic goals. According to self-determination theory (Deci & Ryan, 2000), intrinsic motivation can be understood as, "doing something because it is inherently interesting or enjoyable," whereas extrinsic motivation is, "doing something because it leads to a separable outcome" (i.e., in order to attain attractive environmental incentives or to avoid aversive consequences; Ryan & Deci, 2000, p. 55). Intrinsic motivation is thought to be especially beneficial because it leads to the fulfillment of fundamental human needs for competence, relatedness, and autonomy, which are, according to Deci and Ryan (2000) "innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being" (p. 229).

Several studies suggest that placing relatively high importance on intrinsic goals —goals derived from the basic psychological needs of autonomy, relatedness, competence, and community— tends to promote well-being; in contrast, placing relatively high importance on extrinsic goals — goals derived from the need for external approval, such as financial success, attractiveness, and fame — tends to be associated with lower well-being (Kasser & Ryan, 1993; 1996; Sheldon, Ryan, Deci, & Kasser, 2004; for a review, see Kasser, 2004). This pattern of associations between goal content and well-being has been observed in different age ranges (adolescents, students and working adults) and in several different cultures (Kasser, 2004), but notably no investigations have focused on older adults.

Intrinsic and extrinsic categories of motivation may represent, to some extent, an oversimplification of human motivation, as it is possible to pursue an action for both intrinsically satisfying and extrinsically rewarding reasons (e.g., becoming a psychologist in order to help others while at the same time gaining status and income potential). To

partially take into account the pluralism of human motivation, many of the studies above have studied the impact of intrinsic and extrinsic goals in terms of the ratio or balance between the two, rather than absolute levels of one or the other. Deci and Ryan (2000) also acknowledge the potential overlap between the two, and propose they exist on a continuum of self-determination. Extrinsic motivation can, therefore, be transformed into intrinsic motivation through a process of internalization involving the transformation of, "socially-sanctioned mores or requests into personally endorsed values and self-regulations" (p. 235). It seems possible, however, that both intrinsic and extrinsic motivation could simultaneously exist within the same individual without having to be simply one or the other.

Related to the construct of extrinsic values, a body of research has investigated the construct of materialistic values and their impact on well-being. Materialistic values (also referred to as materialism) can be understood generally as beliefs about the central importance of material possessions in one's life. Materialistic values by their nature are manifested in extrinsic goals. In addition to the desire for money and possessions, materialistic values have also been conceived of as pertaining to image and popularity (Kasser & Ahuvia, 2002; Kasser & Ryan, 2001). Placing a high importance on material goods (and therefore on extrinsic goals) has shown consistent associations with lower levels of happiness and life satisfaction (for a review, see Burroughs & Rindfleisch, 2002). The dominant conceptualization of materialism, therefore, is that it is a value orientation that is detrimental to well-being.

While the negative associations between materialism and well-being have been extensively documented (e.g., Kasser, Ryan, Couchman, & Sheldon, 2004), the

mechanism through which materialism is negatively associated with well-being has received less research attention. Existing studies suggest that materialism impedes well-being through interfering with the fulfillment of intrinsic psychological needs, especially needs for relatedness and community. People who highly value material goods are hypothesized to, in effect, replace people with objects in their lives (Kasser & Ryan, 1993, 1996).

Another conceptualization of the mediating mechanism between materialism and well-being is that materialistic values may stem from "experiential avoidance" (Kashdan & Breen, 2007). Kashdan and Breen suggest that in efforts to avoid psychological discomfort, people use maladaptive avoidance-based strategies such as suppression of internal distress through indulgence in immediate environmental stimuli (i.e., material goods). This narrowing of focus onto the acquisition of material goods in order to reduce psychological pain —termed experiential avoidance — is proposed to distance people from their longer-term goals and to interfere with, "movement toward intrinsically valued directions in life" (Kashdan & Breen, p. 523). Kashdan and Breen found that students with strong materialistic values reported lower well-being across a variety of both hedonic well-being (positive and negative emotions) and eudaimonic well-being measures (meaning in life, relatedness, competence, autonomy, and gratitude). Further, in support of experiential avoidance as a mechanism through which materialistic values are detrimental to well-being, Kashdan and Breen found that experiential avoidance fully mediated the relationship between materialism and each of the dimensions of well-being.

How do the values from the Schwartz (1992) value theory relate to intrinsic and extrinsic motivations? Sagiv & Scwhartz (2000) suggest that the value most clearly

conceptually linked to extrinsic goals is power. Power values involve a desire for money and expensive things, as well as control and dominance over others. Achievement values, though not described by Sagiv and Schwartz as representing extrinsic motivation, nonetheless appear to reflect extrinsic goals as they involve a competitive type of ambition (i.e., to do better than others) and desire for the external markings of success: admiration, impressing others, getting ahead in life, and demonstrating competence.

It is important to note here a difference in meaning of the term 'competence' in the Schwartz paradigm compared to self-determination theory, discussed earlier. According to self-determination theory, 'competence' is a fundamental psychological need that can be understood as "a propensity to have an effect on the environment as well as to attain valued outcomes within it" (Deci & Ryan, 2000, p. 231). In other words, people seek competence because it is inherently satisfying to feel effective in the world. The pursuit of competence as a component of achievement values in the Schwartz paradigm, however, has a different, more socially competitive connotation. Achievement is defined as placing importance on "personal success through demonstrating competence according to social standards" (Schwartz et al., 2001: see Table 1) and is assessed by items tapping ambition, desire to impress others, desire for admiration, and desire to be better than others (see Table 2). In other words, competence in the Schwartz paradigm is a demonstration of ability for the purpose of recognition as opposed to seeking success according to internal standards. Comparing the conceptualizations of 'competence' in self-determination theory and the achievement category of the Schwartz value theory, it appears that while the former is consistent with doing something because it is inherently

enjoyable (intrinsic motivation), the latter is more consistent with doing something because it leads to a separable outcome (extrinsic motivation).

Regarding intrinsic goals and values, Sagiv and Schwarz (2000) suggest that self-direction, benevolence, and universalism values correspond to the innate psychological needs represented by intrinsic goals. Self-direction involves the desire to be creative, independent, and curious; benevolence involves the desire to help close others, respond to their needs, and to be loyal and forgiving; and universalism involves the desire for equality, broad-mindedness, social justice, a world at peace, and environmental protection.

Despite the conceptual links between the values in the Schwartz theory and the categories of intrinsic and extrinsic motivation, the values have not shown a consistent pattern of association with well-being that would be predicted based on an intrinsic/extrinsic division of the values. That is to say, the a priori intrinsically oriented values (self-direction, benevolence, universalism) do not appear to be uniformly associated with higher well-being, nor do the a priori extrinsically oriented values (power, achievement) show consistent associations with lower well-being (Sagiv & Schwartz, 2000). These results will now be discussed in more detail.

Subjective well-being and the Schwartz value theory. Only one set of studies has investigated the association between values from the Schwartz theory and measures of subjective well-being (Sagiv & Schwartz, 2000). The participants in the first study were undergraduate students and adults in six different samples from Israel and the former West Germany and East Germany. Neither average age nor age range were reported, making judgments about the adults' stage in the lifespan difficult. Presuming, however,

that the results apply most directly to students and working adults, Sagiv and Schwartz (2000) found that across age groups and across three cultures, values showed weak but significant associations with the affective component of well-being (positive affect ratings), but no association with the cognitive component (ratings of life satisfaction). Achievement, self-direction, and stimulation positively correlated with higher positive affect, and may therefore represent "healthy values" in young adults. In contrast, tradition, conformity, and security values correlated with lower positive affect, and may therefore represent a less healthy value orientation associated with fewer positive emotions. Notably, neither benevolence nor universalism, both of which were hypothesized to represent intrinsic strivings, correlated with any of the measures of well-being. In addition, the extrinsically-oriented values power and achievement showed differential results: achievement was associated with higher positive affect while power showed links with reduced positive affect in two of the six samples, an effect which disappeared when results were averaged across all of the samples.

In the second part of their study, Sagiv and Schwartz argue that what may be more important for well-being than particular values is the fit between values and environment. Value-congruent environments allow individuals to express their values, attain their important goals, and consequently experience a sense of positive well-being (Sagiv et al., 2004). Sagiv and Schwartz (2000) found that particular values were more strongly associated with well-being when congruent with the prevailing value environment. The authors compared students of business administration and psychology, hypothesizing that each environment has a prevailing value hierarchy, with business training supporting power and achievement values and psychology training supporting

universalism and benevolence values. Among business students, those who reported higher power values and lower universalism values scored higher on measures of subjective well-being. In contrast, among psychology students, higher power values were associated with lower well-being.

Kasser and Ahuvia (2002) suggest that these findings, especially regarding power, contradict some previous consistent findings that extrinsic goals are associated with lower well-being. They argue that the difference in measurement tools accounts for this contradiction. Schwartz's construct of power assesses desire for money and possessions, but does not assess the full range of extrinsic strivings (i.e., money, possessions, image, and popularity).

To summarize, the values from the Schwartz theory show small but significant associations with well-being among younger and working adults. The amount of shared variance between each particular value and well-being outcome measures is small (generally between 1% and 2 %), with significant Pearson correlations ranging from .10 to a maximum of .24 (without taking into account corrections to significance levels for multiple comparisons: Sagiv & Schwartz, 2000). These findings are not entirely compatible with the goals/personal strivings literature, and the ten values do not uniformly predict well-being as would be expected based on their status as intrinsic or extrinsic goals.

Extending existing findings to older adulthood. Should we expect to find a similar pattern of healthy values in both younger adulthood and in retirement? While it is reasonable to assume that some of the same links between values and well-being might also emerge for retired adults, it is also reasonable to assume that the link between values

and well-being might depend on position in the lifespan. For example, achievement values may be important for young adults in the establishment of a career and in developing financial independence and in this way are positively related to the affective well-being of students (Sagiv & Schwartz, 2000). In retirement, however, without the context of the hierarchies and rewards of the workplace, achievement values may not serve the same adaptive function (Burr, 2008).

An additional consideration not taken into account by Sagiv and Schwartz (2000) are the multiple determinants of well-being. A wide variety of factors, including basic demographic variables, independently account for variability in well-being outcome measures (Sheldon & Hoon, 2007). It is important to ask, therefore, whether values, as motivational constructs, would account for the same small portion of the variance in affective well-being outcomes if basic demographic predictors of well-being were taken into account. These demographic control variables were not considered by Sagiv and Schwartz (2000), but are especially important to consider in older, retired adults, when constraints such as inadequate income and health problems can have a significant impact on well-being. The second manuscript in this dissertation, therefore, examines personal values, important demographic variables, and the interaction between the two in a longitudinal study of affective well-being among retirees.

Lifespan changes in goals and values

A key role for values as individuals retire may be their contribution to a sense of stable identity (Atchley, 1999). Maintaining important goals and values is likely to promote a sense of continuity in identity across changing life circumstances. At the same time, however, the importance placed on certain goals and values depends on

developmental context and position in the lifespan. Rokeach (1973) proposed that while values are generally stable, they could be modified in order to preserve a positive self-concept. Similarly, Schwartz (2005) suggests that although values are generally stable, it may be beneficial for individuals to adjust their values to the opportunities and constraints of different life stages. This could be achieved by upgrading the importance of values that can be readily attained, while downgrading the importance of values whose pursuit is blocked by life circumstances (Schwartz, 2005). Valuing what is attainable may facilitate the perception of one's self as capable of achieving desired outcomes and as living in accord with one's values, whereas valuing what is unattainable may have negative consequences for self-esteem (Johnson, 2001).

Adapting one's commitment to goals in order to meet situational and biological opportunities and constraints is considered a healthy life management strategy (Baltes & Baltes, 1990; Brandtstadter, 2002; Carstensen, Isaacowitz, & Charles, 1999; Heckhausen, 2002; Wrosch, Scheier, Carver, & Schultz, 2003). A growing body of research suggests that goal disengagement in the face of unattainable goals is beneficial for both physical and psychological health, especially in older adulthood (e.g., Wrosch, Heckhausen, & Lachman, 2006; Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Little is known, however, about the continuity of values across major transitions in the lifespan, or whether value continuity or adjustment across transitions is beneficial for older adults.

What do we know about the fluidity of values in general? There is evidence for both the general stability of values over time as well as changes in values during important times of transition. Some of this evidence comes from research that examines

goals, so it is worth first reviewing the similarities and differences between values and goals. Values are perhaps best conceptualized as goals in their most abstract form. Values are separable from goals in that goals represent concrete aspirations for the future whereas values represent more abstract, global aspirations of how to live based on what is most important in life. While goals may be accomplished as particular projects, values are unending projects and represent relatively stable motivational traits.

In some research on motivation elements of goals and values have been blended together in the measurement tools. For example, Atchley's (1999) personal goal inventory combines specific, concrete goals (e.g., having a comfortable place to live) with motivation at the more broad level of values (e.g., seeking new experiences: p. 45). Goals and values also overlap when goals are defined in broad terms, such as long-term life goals (e.g., Schmuck & Sheldon, 2001), personal strivings (e.g., Emmons, 1991), or aspirations (e.g., Lapierre, Bouffard, Dubé, Labelle, & Bastin, 2001; Plagnol & Easterlin, 2008). Life goals, personal strivings, and aspirations have much in common with values in that they are all motivational principles that help to guide behavior. Values, however, represent sets of beliefs and principles that tie together the themes of various concrete goals.

Longitudinal studies of goals and values. Given the conceptual overlap between goals and values, the literature on the stability of goals across time provides a good starting point for the development of hypotheses regarding value stability in older adulthood. In a longitudinal study across 20 years of older adulthood, Atchley (1999) examined the "developmental goals" of over 1000 older adults who were a minimum age of 50 years in 1975, and followed over 300 of them until 1995. Participants rated a list of

16 personal goals as to their importance in their lives. For example, "being well-read and informed", "having close ties with my family", and "having a substantial family income" were among the personal goals listed (Atchley, 1999, p. 45).

Results across 20 years indicated that the vast majority (79% of participants) showed stability or continuity in personal goals, while a minority (21%) showed discontinuity (Atchley, 1999). Reflecting life context, the goals most likely to be downgraded in importance were "having a satisfying job" (as most participants retired during the study) and "being prominent in community affairs", while those most likely to increase in importance were "forming long-lasting friendships" and "having a close, intimate relationship with another person" (p. 46). The goals that did not change for the majority of people across 20 years were focused on "personal qualities, human relationships, and supports for a comfortable lifestyle" (p. 136). In particular, these goals were "accept myself as I am," "be self-reliant", "have a comfortable place to live", "be dependable", "do things for others", "have close family ties", "be well read and informed", "have long lasting friendships", and "have substantial family income" (p. 135). Overall then, the personal goals of these older adults tended to show a general pattern of continuity, with the vast majority showing no significant change in their goals across 20 years. Where changes do occur, they relate to the downgrading of work-related goals or an increase in the importance placed on close personal relationships.

Moving now from goals to values, there are few existing investigations into the longitudinal stability of values. Sheldon (2005) found evidence of normative changes in young adults' values over the course of their college career. Large shifts were observed across four years in the form of the decreasing importance of extrinsic values (relating to

money, popularity, and appearance). Increases in intrinsic values were smaller, and occurred in the domain of emotional intimacy. Students, then, appear to normatively move away from extrinsically-motivated values as they approach graduation from college, and begin to place a higher importance on emotional intimacy as they mature.

There is also a body of longitudinal research specific to adults' work values across time. Work values refer to the general importance individuals place on various aspects of working in their lives (Isakson, Johansson, Bellaagh, & Sjoberg, 2004). Studies focused on the transition to adulthood have found that the work values of young adults are dynamic and tend to shift during the transition to the adult labor force and also tend to interact with work experiences and level of education attained (Johnson, 2001; Johnson & Elder, 2002). Further, in a study examining the influence of marriage and parenthood on work values, Johnson (2005) found that entering into family roles tended to alter the meaning of work and commitment to work. Upon family formation, the extrinsic rewards of working (pay, security, prestige) decreased in importance for wives, but not husbands, whereas for both men and women the importance they placed on the intrinsic rewards of work (interest, challenge, responsibility) decreased when they started a family. Particular developmental challenges of adulthood and the associated changes in life circumstances (e.g., entering the labour force, starting a family) have, then, been shown to have an impact on personal value systems. Exiting the workforce — a major normative transition involving significant changes in life circumstances— is an excellent opportunity, therefore, to examine potential value change in older adults.

Studies of value change in older adulthood. In one of the few studies of the values of older adults, Ryff (1982) found differences between women's retrospective, current,

and prospective reports of their values. Ryff concluded that these differences represent a self-perceived shift from an extrinsic to an intrinsic value orientation from middle age to old age. In middle age (age 40-55), women emphasized competence-focused instrumental values, whereas in old age (age 60 and up), women emphasized terminal values related to desirable end states such as inner harmony. Questions about veridical change in older adults' values, however, are not answered by this study, as the cross-sectional methodology only permits conclusions at the level of self-perceived differences between past, present, and future values.

Only one previous empirical study has focused specifically on values in the retirement transition, but its limited methodology prevents drawing any firm conclusions about value change. Thurnher (1974) compared the values of adults facing the transition to an empty nest (average age of 50 years) to a group of adults who were still working but facing the imminent transition to retirement (average age about 60 years). Results indicated that ease-contentment values predominated in the older, pre-retired group, while interpersonal-expressive values predominated in the younger, empty-nest group. Thurnher interprets these results as changes in the importance of certain value orientations from about age 50 to age 60. However, only within-subject longitudinal designs can offer strong conclusions regarding change within individuals over time, and such studies in the realm of value change in the retirement transition are lacking.

Value change within the Schwartz value paradigm. Longitudinal studies of Schwartz's (1992) values have not yet been conducted at any stage of the lifespan. No research to date, therefore, has examined the values of the Schwartz theory in the context of the retirement transition. Given the absence of longitudinal studies of Schwartz's

values, age differences in value priorities from cross-sectional studies allow us to begin to conceptualize how these values might change across middle and older adulthood, and across the retirement transition in particular. Schwartz and colleagues (2001) reported that in representative national samples from Italy ($N = 5,867$) and South Africa ($N = 3210$), age was positively associated with security, tradition, conformity values (conservation category), and universalism and benevolence values (self-transcendence category), whereas age was negatively associated with stimulation, self-direction, hedonism (openness to change category) and achievement and power values (self-enhancement category). In a recent Italian study, Caprara, Caprara, and Steca (2003) examined the four higher order values (as measured by the PVQ) of 145 men and 171 women from age 20 to 80, and divided the sample into four age groups: age 20-35; age 36-50; age 51-65; and age 66-80. Caprara and colleagues found value differences between the groups that were mostly consistent with the correlational findings of Schwartz and colleagues (2001): Openness to change and self-enhancement values declined from the youngest to the oldest groups, while conservation values increased from youngest to oldest. Unlike Schwartz and colleagues (2001), however, Caprara and colleagues did not find age differences for self-transcendence values.

Schwartz (2005) suggests that there are three sources of age differences in values: cohort effects, physical aging, and life stage. Schwartz speculates that younger cohorts are likely to place more importance on hedonism, stimulation, and self-direction values, and less on security, tradition, and conformity values, as a result of a general increase in prosperity over the past 50 years in many countries. He hypothesizes that these younger cohorts face fewer threats to economic and physical security than previous generations,

allowing for a shift away from materialist values and toward values focused on self-expression and quality of life. Schwartz also hypothesizes that age-related changes in physical and cognitive domains might also affect values, resulting in increases in the importance of security, conformity, and tradition values, and decreases in the importance of stimulation, hedonism, achievement, and power values. Finally, life stage may affect values due to the particular set of opportunities and constraints that occur at different points in the lifespan. In regards to retirement in particular, Schwartz (2005) hypothesizes that with the end of paid employment comes a decrease in opportunities to express achievement, power, stimulation, and hedonism values, and possibly an increase in the importance of security and tradition values. These hypotheses, however, are for the most part unsubstantiated and remain to be tested.

Continuity theory. Although retirement presents changes in life circumstances that create potential for adaptive value change, some theorists argue that values are less likely to change at this later point in adulthood than they are in early adulthood, when identity and life circumstances are more fluid and when much less life experience, upon which values are based, has been accumulated. For example, Glenn (1980) argues that change in values becomes less likely in older adulthood as older adults already have a well-established set of attitudes, values, and beliefs that provide them with a sense of understanding of their world and an ability to cope with their reality. Challenges to this system are likely resisted at a psychological level.

A general framework for understanding change and continuity through the aging process is Atchley's (1999) continuity theory. This theory proposes that aging individuals tend to seek both internal and external continuity in important goals, values, and activities

across changing life circumstances in order to maintain a coherent sense of self. With age, then, adults tend to show more consistency in their general patterns of thinking, behaving, relating to others, and in their living circumstances. At the same time, fluctuations in the details of these patterns may reflect adaptation to changing life context.

From the perspective of continuity theory, the maintenance of values across transitions can be conceptualized as potentially contributing to a sense of internal continuity. According to continuity theory, values that are most likely to remain stable across time are those that are most central to a sense of identity and self. Values that are more tied to particular contexts, such as work, may be more likely to shift with the end of full-time work. If particular values become less achievable due to changes in life circumstances, then some degree of value adjustment may be adaptive in times of transition. Putting together continuity theory with the possibility of adaptive value change, we can hypothesize that 1) most of the values from the Schwartz (1992) value theory are likely to show continuity across the early years of the retirement transition, as a function of the preservation of well-established identity across changing life circumstances; but that 2) the values related to the importance of extrinsic rewards associated with working (i.e., achievement and power) are the most likely to be the focus of change, particularly in the direction of declining importance, as these general goals may become less attainable and less relevant in a post-employment context.

Subjective change in the self over time

Individuals tend to perceive defining aspects of the self, such as personality, as changing to some extent across the adult lifespan (Fleeson & Heckhausen, 1997). There

is longitudinal evidence to suggest such changes in personality traits do actually occur to some extent (e.g., Terracciano, McCrae, Brant, & Costa, 2005). Research into the way that people remember their lives, however, has consistently shown that objective measures and recall are not always consistent and that memory for one's personal past in particular is a process of active reconstruction that is typically biased by a variety of factors (e.g., Ross & Buehler, 1994; Ross & Conway, 1986). Individuals' subjective perceptions of how they have changed, then, may or may not be correlated with how they have actually changed over time. Regarding subjective perceptions of change, temporal comparison theory (Albert, 1977) predicts that people are likely to perceive positive changes in the self (i.e., personal growth), especially in times of major life transitions.

Positive illusions of personal growth represent a type of memory bias in which the current self is evaluated favorably relative to the past self (Ross & Wilson, 2003; Wilson & Ross, 2001). There is some evidence for the illusory nature of such temporal self-comparisons (i.e., the tendency to see improvement in the self over time where none actually occurred: e.g., Woodruff & Birren, 1972). This bias toward perceiving an improving self may exist for several reasons: 1) People have a basic desire to perceive progressive improvement in themselves (Albert, 1977); 2) perception of change is derived at least in part from general beliefs and stereotypes about how people change with age and under what circumstances (McFarland, Ross, & Giltrow, 1992; Heckhausen, Dixon, & Baltes, 1989); and 3) perceptions of personal improvement can arise as a means of coping with negative and stressful experiences such as illness (McFarland & Alvaro, 2000; Ransom, Sheldon, & Jacobsen, 2008).

There is evidence to suggest that the way that people interpret their lives, especially over the course of major transitions or after traumatic events, has implications for psychological well-being. This evidence comes from narrative-based research into the types of stories that people tell about themselves in times of transition. In particular, the themes that individuals emphasize in describing how they have changed through challenging life transitions have shown links with psychological well-being. For example, Bauer and McAdams (2004) found that people whose stories of life transitions emphasized personal growth, in particular intrinsically-oriented directions (concerns for friendship and love, dialogue and sharing, connections with groups, society, humankind, or a god or higher power, and helping and caring for others), reported higher levels of well-being in general. The tendency to perceive negative events as having eventual positive outcomes in life stories is also associated with higher levels of psychological well-being and reduced depression (e.g., McAdams, Reynolds, Lewis, Patten and Bowman, 2001). The perception of positive life gains resulting from stressful events has become known as post-traumatic growth (Tedeschi & Calhoun, 1996), and has spawned a growing literature in the field of health psychology (e.g., Calhoun & Tedeschi, 2006). In sum, personal interpretations of life transitions, and especially the idea of growth through adversity, represent a temporal self-enhancement process and play an important role in subsequent psychological well-being. What has generally not been assessed in the narrative literature is the extent to which perceptions of personal growth are accurate and to what extent they therefore may be considered positive illusions. The third manuscript in this dissertation, then, focuses on perceived changes in retirees' personal values as indicative of positive illusions of personal growth, and examines perceived change in

values as an adaptive, meaning-making process preceded by life struggles but promoting psychological well-being.

Contributions to the literature

The three studies that follow combine research on values and lifespan development and as such are novel in several ways. First, they bring the values of older adults into focus, when the majority of existing research on personal values has been conducted with younger adults. Second, little is known from an empirical perspective about the impact of the retirement transition on personal values, or the impact of values on well-being during retirement. Third, the research herein represents the first application of a widely used value theory, the Schwartz (1992) value theory, to the study of lifespan transitions in older adults. These studies are timely in their relevance to our aging workforce, and will likely be of interest not only to lifespan development researchers, but also to those nearing or living the retirement transition. In terms of practical implications, the results of this research may provide a framework for the development of policy and interventions that support and engage retired adults in the community in ways that are meaningful and important to them. This is a goal of utmost importance in our rapidly aging society.

Table 1

Categories and Definitions of Values and Sample PVQ Items, Male Version (Adapted from Schwartz et al., 2001)

Self-Enhancement

POWER: Social status and prestige, control or dominance over people and resources. (It is important to him to be rich. He wants to have a lot of money and expensive things.)

ACHIEVEMENT: Personal success through demonstrating competence according to social standards. (Getting ahead in life is important to him. He strives to do better than others.)

Self-Transcendence

UNIVERSALISM: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature. (He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.)

BENEVOLENCE: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact. (It's very important to him to help the people around him. He wants to care for their well-being.)

Openness to Change

HEDONISM: Pleasure and sensuous gratification for oneself. (Enjoying life's pleasures is important to him. He likes to 'spoil' himself.)

STIMULATION: Excitement, novelty, and challenge in life. (He thinks it is important to do lots of different things in life. He always looks for new things to try.)

SELF-DIRECTION: Independent thought and action-choosing, creating, exploring. (Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.)

Conservation

TRADITION: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self. (Religious belief is important to him. He tries hard to do what his/her religion requires.)

CONFORMITY: Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms. (It is important to him to always to behave properly. He wants to avoid doing anything people would say is wrong.)

SECURITY: Safety, harmony and stability of society, of relationships, and of self. (Having a stable government is important to him. He is concerned that the social order be protected.)

Table 2

PVQ Items Representing the 10 Value Constructs (Male Version)

Power:

(#2): It is important to him to be rich. He wants to have a lot of money and expensive things.

(#17): It is important to him to be in charge and tell others what to do. He wants people to do what he says.

(#39): He always wants to be the one who makes the decisions. He likes to be the leader.

Achievement:

(# 4): It's very important to him to show his abilities. He wants people to admire what he does.

(#13) Being very successful is important to him. He likes to impress other people.

(#24): He thinks it is important to be ambitious. He wants to show how capable he is.

(#32): Getting ahead in life is important to him. He strives to do better than others.

Hedonism:

(#10): He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.

(#26): Enjoying life's pleasures is important to him. He likes to 'spoil' himself.

(#37): He really wants to enjoy life. Having a good time is very important to him.

Stimulation:

(#6): He thinks it is important to do lots of different things in life. He always looks for new things to try.

(#15): He likes to take risks. He is always looking for adventures.

(#30): He likes surprises. It is important to him to have an exciting life.

Self-Direction:

(#1): Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.

(#11): It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.

(#22): He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.

(#34): It is important to him to be independent. He likes to rely on himself.

Universalism:

(#3): He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.

(#8): It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.

(#19): He strongly believes that people should care for nature. Looking after the environment is important to him.

(#23): He believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him.

(#29): He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.

(#40): It is important to him to adapt to nature and to fit into it. He believes that people should not change nature.

Benevolence:

(#12): It's very important to him to help the people around him. He wants to care for their well-being.

(#18): It is important to him to be loyal to his friends. He wants to devote himself to people close to him.

(#27): It is important to him to respond to the needs of others. He tries to support those he knows.

(#33): Forgiving people who have hurt him is important to him. He tries to see what is good in them and not to hold a grudge.

Tradition:

(#9): He thinks it's important not to ask for more than what you have. He believes that people should be satisfied with what they have.

(#20): Religious belief is important to him. He tries hard to do what his religion requires.

(#25): He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.

(#38): It is important to him to be humble and modest. He tries not to draw attention to himself.

Conformity:

(#7): He believes that people should do what they're told. He thinks people should follow rules at all times, even when no-one is watching.

(#16): It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.

(#28): He believes he should always show respect to his parents and to older people. It is important to him to be obedient.

(#36): It is important to him to be polite to other people all the time. He tries never to disturb or irritate others.

Security:

(#5): It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.

(#14): It is very important to him that his country be safe. He thinks the state must be on watch against threats from within and without.

(#21): It is important to him that things be organized and clean. He really does **not** like things to be a mess.

(#31): He tries hard to avoid getting sick. Staying healthy is very important to him.

(#35): Having a stable government is important to him. He is concerned that the social order be protected.

Study 1

Investigating the Portrait Value Questionnaire (PVQ) in the Context of Retirement:

Testing Quasi-Circumplex Structure and Measurement Invariance.

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Investigating the Portrait Value Questionnaire (PVQ) in the Context of Older Adulthood:

Testing Quasi-Circumplex Structure and Measurement Invariance.

The Schwartz (1992) value theory postulates the existence of ten universal values (benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, tradition, and conformity) that exist for all people (see Table 1). Values in this theory are defined as desirable, trans-situational goals that serve as guiding principles in people's lives. The values and theoretical structure of relations among them were derived by Schwartz and Bilsky (1987, 1990) based on motivational theory suggesting that values stem from three universal needs of humans: biological needs of individuals; needs for interpersonal interaction; and needs to ensure the welfare and survival of groups. Ten values were derived a priori from these three universal human needs. Based on visual representations of data, the ten values appeared to represent distinct motivational domains (Schwartz, 1992). The first measurement tool developed to assess the theory was the Schwartz Value Survey (SVS; Schwartz, 1992), an instrument that asks respondents to rate 57 specific values that represent the ten higher-order value types in terms of how important each value is as a guiding principle in life. To address one important limitation of the SVS, namely its highly abstract nature, a second measurement tool, the Portrait Value Questionnaire (PVQ) (Schwartz, et al., 2001) was developed. The PVQ asks respondents to read 40 brief descriptions of individuals (portraits) in terms of their goals and what is important to them. Respondents on the PVQ rate the similarity of each portrait to themselves. While the SVS is a highly abstract and explicit measure of values, the PVQ is a shorter, more concrete task that does not explicitly identify values as the topic of investigation.

Both the SVS and the PVQ have been used widely in psychological research in cross-cultural (e.g., Schwartz & Rubel, 2005), social, (e.g., Caprara & Steca, 2007) and personality domains (e.g., Cohrs, Moschner, Maes, & Kielmann, 2005), as well as in management (e.g., Ralston, Egri, Stewart, Terpstra, & Yu, 1999), political (e.g., Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2006), and marketing research (e.g., Steenkamp, ter Hofstede, & Wedel, 1999). In addition, short versions of the PVQ are included in two on going large-scale international research programs, the European Social Survey and the World Values Survey (for details, see http://www.europeansocialsurvey.org/; http://www.worldvaluessurvey.org/). The PVQ is, in short, one of the most important and popular measures of values in current psychological and sociological research.

Each of the ten values in this theory is theoretically related to the others as a function of the degree of congruence or conflict with other values. This pattern of congruity and conflict forms a two-dimensional circular structure called a circumplex (Schwartz & Bilsky, 1987, 1990; Schwartz & Boehnke, 2004). A circumplex structure refers to a circular representation of related variables where the strength of association between variables increases the closer the variables are to one another on the circle. Within this circumplex structure, values adjacent to one another are the most compatible, while those on opposite sides of the circumplex are the most conflicting. For example, the values of power and achievement, which are based on enhancing the self, are closely related to one another but conflict with the values of benevolence and universalism, which are focused on concern and caring for others (see Figure 1). Schwartz (1992, 1994) found that a quasi-circumplex structure best fit the data he had collected. Tradition was

found to have a more peripheral location on the value circle than conformity, but that the two values were on the same polar angle (see Figure 1). This quasi-circumplex structure became the definitive version of the structure of human values (Schwartz & Boehnke, 2004).

The content and structural aspects of Schwartz's theory of the ten basic human values have been assessed and generally supported in over 200 samples in more than 60 countries (Schwartz & Boehnke, 2004). Upon close inspection of the existing support for the structural aspects of the value theory, however, two features stand out. First, there is an absence of clear support for the quasi-circumplex model when confirmatory factor analysis techniques are employed. The majority of the support for the quasi-circumplex value structure comes from exploratory methods of data analysis such as multi-dimensional scaling and smallest space analysis that describe patterns in the data but that involve no statistical tests for goodness of fit (Grunert & Juhl, 1995; Kozan & Ergin, 1999; Lindeman & Verkasalo, 2005; Schwartz & Bilsky, 1987, 1990; Spini & Doise, 1998). Second, there is an absence of data from older adults, and a resulting lack of studies focusing on values in older adulthood. It appears that no studies have examined the Schwartz value theory specifically in the context of older adulthood. Although Schwartz and colleagues have collected data on personal values using the SVS and PVQ from tens of thousands of participants around the world (e.g., Schwartz & Rubel, 2005), these samples consist for the most part of younger and working adults. The current study seeks to extend this literature on values by assessing the measurement and structural aspects of the Portrait Value Questionnaire (PVQ) in the context of retired adults.

Circumplex structures were first formalized by Guttman (1954), and have since been applied to a variety of research domains, including, personality, interpersonal relationships, and mood research (see Hinz, Brähler, Schmidt, & Albani, 2005 for a review of the development of circumplex models). Support for the quasi-circumplex structure of human values proposed by Schwartz (1992) rested, until recently, on visual plots of the relations among value items (Schwartz & Boehnke, 2004). These visual plots were typically produced by multi-dimensional scaling (MDS) analyses or similarity structure analyses (SSA) of SVS (e.g., Schwartz, 1992) or PVQ (e.g., Schwartz et al., 2001) data. What these analyses provided was a visual representation of how each of the values is related to the others in terms of two-dimensional space. The visual plots were useful in so far as they provided a location on a circular structure for each value, and therefore a sense of proximity or distance from other values. An important limitation of these visual plots, however, is that they did not involve any kind of statistical test to assess the goodness of fit of the circumplex structure to the observed data.

To address these limitations, Schwartz and Boehnke (2004) provided the first statistical test of the quasi-circumplex structure of the Schwartz (1992) value theory. They used a constrained confirmatory factor analysis with SVS data to test the quasi-circumplex structure, involving comparisons of the observed data with a reference matrix of expected factor intercorrelations, using 23 different samples from 27 countries ($N =$ 10, 857). The reference matrix of expected correlations among the values was generated through a data-driven approach. Average correlations were calculated across all pairs of adjacent values on the circumplex (.68), and between opposing sets of values (.08), and then the reduction in association for each of four steps from one value to its opposing

value was computed (.15). They tested 10 different variations on the circumplex structure, including models with nine rather than ten values (e.g., combining power and achievement) as well as teasing apart some values into sub-types (e.g., nature and social concern within universalism; personal and group security within security). Although fit indices were similar for several of these models, the definitive model was reported to be the original quasi-circumplex model, where tradition and conformity occupy a shared space on the circumplex but have particular positioning unlike the other values with tradition more peripheral on the circumplex (see Figure 1). Schwartz and Boehnke concluded that the quasi-circumplex model was supported through their confirmatory factor analyses. Some researchers, however, have questioned this conclusion (Perrinjaquet, Furrer, Usunier, Cestre, and Valette-Florence, 2007).

Perrinjaquet and colleagues (2007) note several limitations of the results reported by Schwartz and Boehnke (2004). First, the best of the fit indices reported in Schwartz and Boehnke (2004) were only marginally acceptable (Root Mean Square Error of Approximation (RMSEA) = .065; Standardized Root Mean Residual (SRMR) = .088), and other indices (chi square/df) indicated poor fit for most of the models tested. In addition, Perrinjaquet and colleagues argue that several important fit indices which would have allowed more conclusive assessment of the model were not reported (e.g., Comparative Fit Index (CFI)).

Only one other study (Perrinjaquet et al., 2007) has evaluated the quasi-circumplex structure of values with confirmatory factor analysis techniques. Perrinjaquet and colleagues tested the quasi-circumplex structure, based on SVS data, in large samples of French ($N = 1891$) and Swiss ($N = 1405$) respondents. They used a constrained

confirmatory factor analysis technique similar to the procedure employed by Schwartz and Boehnke (2004), although a different method for computing the reference matrix of expected factor inter-correlations was used. Three different reference matrices were tested, reflecting variations on circumplex structure. Consistent with previous findings, initial multi-dimensional scaling analyses showed support for the quasi-circumplex structure of values. When constrained confirmatory factor analyses were applied, however, support was lacking. None of the models tested came close to an acceptable level of fit. Perrinjaquet and colleagues suggest that the failure to support the quasi-circumplex may be due to problems of the SVS's construct and discriminant validity that result from too much overlap (i.e., multicollinearity) among the values.

The quasi-circumplex structure as assessed by the PVQ has received less research attention. In the original PVQ article, Schwartz and colleagues (2001) reported smallest space analyses of PVQ data from three countries (Italy, South Africa, and Uganda) and concluded that these spatially-mapped data supported the circular structure of the ten values. They also suggested that the PVQ data strengthened the value theory by replicating the structure that had originally been established with SVS data. Hinz and colleagues (2005), however, in the only other tests of value structure with PVQ data, failed to find support for the quasi-circumplex structure of values. Using a representative sample of the German population ($N = 1896$), Hinz and colleagues applied a variety of exploratory statistical techniques (including MDS and principal component analyses (PCA)) to investigate the quasi-circumplex structure of values as measured by the PVQ. MDS analyses that typically have supported the quasi-circumplex structure in this case

failed to support it. The values, when mapped in two-dimensional space, did not form a circular pattern. PCA analyses also failed to support a circular structure.

The Schwartz value theory, then, while having extensive support for the existence of the ten values, has mixed statistical support for the presence of a quasi-circumplex structure of relations among the values. Some studies evaluating the SVS and the PVQ have reported support for the quasi-circumplex, but the majority of that support comes from exploratory data analyses methods. Where stricter confirmatory factor analysis methods have been employed, results have been mixed, with one study supporting the circumplex structure (Schwartz & Boehnke, 2004) and the other failing to support it (Perrinjaquet et al., 2007).

Another important statistical issue facing the PVQ is the establishment of its measurement invariance (Byrne, Shavelson, & Muthén, 1989). Measurement invariance refers to the similarity of the measurement properties (i.e., item intercepts, factor loadings, and error covariances) across groups or across time, as well as to the similarity in the structure of a measure (i.e., the variances and co-variances of the latent variables) across groups or across time (Steinmetz, Schmidt, Tina-Booh, Schwartz, & Wieczorek, in press). Steinmetz and colleagues note that measurement invariance is often considered and tested in cross-cultural research but is rarely considered in within-society or longitudinal studies. They suggest that researchers have tended to assume that there is no systematic variation of the measurement structure across different sub-samples, nor across different stages of the lifespan. Steinmetz and colleagues argue that such assumptions are risky because without actually testing this assumption, any observed

differences between sub-samples or across time could be due to systematic differences in the measurement and structural properties of the measure.

Tests for measurement and structural invariance assess four types of questions: 1) whether the measurement parameters (factor loadings, measurement errors, etc.) are the same across groups or time; 2) whether there are pronounced response biases in a particular group or at a particular time point; 3) whether one can unambiguously interpret observed mean differences between groups or across time; and 4) whether the same construct was measured in all groups or at all time points (Steinmetz et al., in press).

The most widely used method to answer these questions (i.e., to test for measurement invariance) is multi-group confirmatory factor analyses (MGCFA). The particular tests for measurement invariance examine configural, metric, and scalar invariance, as well as invariance of factor variance, factor co-variance, latent means, and error variances (see Steinmetz et al., in press, for complete definitions of these tests of invariance). Steinmetz and colleagues (p. 5-6) describe the types of invariance that may be established, in the order that they should be tested: 1) *configural invariance*, a pre-requisite for all other tests of invariance, "implies the same number of factors in each group and the same pattern of fixed and free parameters"; 2) *metric invariance* "implies equal factor loadings across groups" and "concerns construct comparability; 3) *scalar invariance* "refers to invariance of the item intercepts in the regression equations that link the indicators to their latent variable"; 4) *invariance of factor variance* examines the homogeneity of the latent variables and "exists when groups have the same variances in their respective latent variables"; 5) *invariance of the factor covariances* " refers to the equality of the association among the latent variables across groups"; 6) *invariance of*

latent means refers to testing for "differences between groups (or points in time) in the latent means; and finally *invariance of error variance* "concerns the hypothesis that the measurement error in the manifest indicators is the same in all groups".

Full measurement invariance is demonstrated only if *all* of the parameters in a test of invariance are equal across groups or time. A less conservative approach to establishing measurement and structural invariance has also been proposed. Byrne and colleagues (1989) suggest that invariance in a minimum of two parameters indicates that latent mean comparisons between groups or across time are meaningful. In other words, a minimum of partial invariance must be established (i.e., at least two indicators must be invariant) in order to permit meaningful mean comparisons.

Support for the measurement invariance of the PVQ has begun to emerge through a shortened version of the PVQ that has been included in the on-going international and longitudinal European Social Survey (ESS). Research from the first waves of the ESS has begun to address the issue of measurement invariance across the 25 countries involved, and across time. Using MGCFA on the first wave of ESS data, configural and metric invariance of the short-form PVQ were established across 20 countries, but with a model of seven rather than ten values (Davidov, Schmidt, & Schwartz, in press). Several pairs of adjacent values (achievement/power; universalism/benevolence; conformity/tradition) had to be unified in order to achieve adequate fit indices. MGCFA of PVQ data from the second round of ESS (Davidov, 2008) did confirm the configural invariance of the seven-value model established at the first wave, but only for 14 of the 25 countries involved. For these 14 countries, at least, values as measured by the short PVQ can be validly compared across nations. Metric and scalar invariance were also established between the

first and second rounds of the ESS data collection, suggesting the short-form PVQ is appropriate for longitudinal research tracking values over time (Davidov, 2008).

Measurement and structural invariance of the PVQ has so far only been established between groups with different levels of education using MGCFA in a German sample (Steinmetz et al, in press) with a shortened version of the PVQ. Invariance of measurement and factor structure has not been tested in this manner, however, across age groups or across time with the full-length PVQ. A first step to ensure the validity of any observed mean differences in PVQ scores between age groups or across time would therefore be to use MGCFA to establish the similarity of the measurement properties and structure of the PVQ in both younger and older adults, and at two different time points for the same individuals.

To summarize, two important gaps exist in the statistical literature on the Schwartz value theory that relate to its application across the adult lifespan. First, the circumplex structure of values has mixed support when tested with confirmatory factor analysis, and has not been tested in a sample of older, post-employment adults. Second, although evidence is emerging from ESS data as to the measurement and structural invariance of the short-form PVQ across countries, tests of invariance have yet to be applied to the full-length, 40-item version of the PVQ across age groups and across time.

Rather than take a cross-country approach to the study of values with the PVQ, this study examines the properties of the PVQ within one country, but across different stages of the adult lifespan. Working within one city (Montreal, Canada), this study evaluated PVQ data from two age groups (retired adults and university students) from the same region.

The aims of the current study were as follows: 1) To test the validity of the quasi-circumplex structure of values in both retirees and students using exploratory MDS analyses as well as a constrained CFA approach; and 2) To test measurement invariance of the PVQ across age cohorts and across a one-year interval using MGCFA. These tests of the measurement and structural invariance of the PVQ are an important precursor to research questions addressing value comparisons of different age cohorts, for comparing the association among values and other variables across age groups, and for examinations of the stability of values across time.

Method

Participants

Older adults. Older participants were part of a larger longitudinal study investigating adjustment to life in retirement. Information about the retirement study was distributed by mail to recently retired employees of a major Quebec corporation through the corporations' retirees' association. Information about the study was also distributed to the wider Montreal community through other retirees' associations as well as ads in both French and English local newspapers over a period of one year. Criteria for participation in the study included fluency in French or English, having worked full-time for a minimum of 20 years, not currently being in paid employment for more than 10 hours per week, and mobility permitting attendance of annual testing sessions at Concordia University. A total of 446 retirees participated in the study. Of these, 13 (2.9%) were eliminated by the researchers because of difficulty understanding and/or following instructions, excessive missing data, or mistakes regarding date of retirement or previous participation, leaving a final sample size of 433 retired adults. Eighty-nine percent of the

final sample ($n = 385$) had been retired three years or less. The average duration of retirement upon entry to the study for the entire sample was 1.8 years ($SD = 1.8$).

Longitudinal retention. Of the 433 participants in the first year of the study (T1), 393 returned for the second year (T2) for a retention rate of 91%. Twenty-one of the 40 participants that did not return were either not reachable or did not respond when contacted; 15 withdrew voluntarily because they were too busy, were no longer interested, or had health problems; and four participants were eliminated by the researchers because of difficulty understanding and/or following instructions in the materials at T1.

Demographics. The demographic characteristics of this sample of older adults were as follows: 48.5% male ($n = 210$) and 51.5% female ($n = 223$); age ranged from 44 to 79 years, with a mean of 59.20 years (SD = 5.21). Participants were generally healthy and well-educated ($M = 14.8$ years of education, $SD = 2.52$), had worked full-time for an average of 34.16 years ($SD = 6.76$), and had been retired for an average of 1.8 years ($SD = 1.77$). Three-quarters (75.3%) of the sample were parents to at least one child. The majority of the sample was either married (52%) or had a common-law partner (10.9%); 20.3% were divorced; 12.7% were single; and 3.3% were widowed. In terms of language, 60.7% of participants completed the questionnaires in French and 39.3% in English.

Younger adults. A total of 199 students at Concordia University in Montreal, Canada, volunteered to complete a package of questionnaires. Only those age 30 or less ($N = 173$) were selected for these analyses, given the focus on age comparisons with older adults. The demographic characteristics of this sample of younger adults were as follows: 44.5% male ($n = 77$) and 55.5% female ($n = 96$); age ranged from 18 to 30 years,

with a mean age of 22.73 (SD = 2.67). In terms of marital status, 47.4% were single with no steady partner; 40% were dating a steady partner; 12% were either married or common-law; and 0.6% were divorced. Student participants were from a range of academic departments and completed the materials in English.

Materials

Participants in both the student and retired samples completed a consent form (see Appendix B) , demographic questionnaire (see Appendix C), the Portrait Value Questionnaire IV (PVQ: see Appendix D) as a measure of personal values, and a series of other self-report measures. Only the PVQ is described here in detail.

The Portrait Value Questionnaire IV (PVQ). The PVQ includes verbal portraits of 40 different people, gender matched with the participant. Both English and French versions of the PVQ were used, with the latter adapted for the linguistic context of Quebec from an existing French version. Each portrait describes a person in terms of their goals and what is important to them. For example: "It is very important to him to help the people around him. He wants to care for their well-being" describes a person for whom benevolence values are important. Participants indicate how much the portrait is similar to them on a 6-point scale, labeled from "very much like me" to "not like me at all." Each value is represented by between three and six items, depending on the conceptual breadth of the value. Possible scores on the PVQ range from 1 to 6 for each value, where 1 represents a value of no importance to an individual, and 6 represents a value of high importance. Each individual's score for a value represents their average score across the items representing that value.

Internal reliability coefficients for the 10 values as measured by 40 PVQ items in this study were as follows, indicated in terms of retired/student samples: conformity (.73/.71); tradition (.60/.59); benevolence (.67/.74); universalism (.77/.79); self-direction (.62/.60); stimulation (.70/.74); hedonism (.82/.72); achievement (.79/.78); power (.72/.71); security (.67/.68). Test-retest reliability of the PVQ has been reported to be moderate to high, depending on the value, ranging from .66 to .88 (Schwartz et al., 2001). Schwartz and colleagues (2001) reported that convergent and discriminant validity of the PVQ have been demonstrated to be adequate. In particular the values as measured by the PVQ have shown predictable associations with a variety of attitudes and behaviors, including age, gender, education, religiosity, field of study, political orientation, and alcohol use, across samples from several cultures (Schwartz et al., 2001). Schwartz and colleagues also reported support for convergent and discriminant validity of the ten values through a multi-trait multi-method analysis based on data from participants who completed two different measures of the same ten values (the PVQ and SVS, described earlier). The correlations between the two different measures of the same value ranged from .44 to .70, depending on the value. Schwartz and colleagues (2001) noted the problem of low internal reliabilities in the values measures, but concluded that the small number of items per value, especially in the PVQ, combined with the conceptual breadth of each value make the expectation of high reliabilities unreasonable for these measures. Perrinjaquet and colleagues (2007) also noted low levels of internal reliability and weak discriminant validity in the SVS resulting from multi-collinearity between value types. There remains some doubt, therefore, about the adequacy of the internal construct validity of both the SVS and the PVQ.

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Procedure

Older adults. Individuals interested in participating in the advertised retirement study contacted the researchers by telephone or email. Those who met inclusion criteria were given the choice of participating in either French or English, and then scheduled to come for testing at Concordia University in groups of up to 6 people. Upon completion of a battery of self-report questionnaires and cognitive tests that took approximately three hours, participants received a cheque for $50.

Younger adults. Student participants were recruited at a booth at Concordia University which advertised participation in psychology research in exchange for being entered into a draw for three cash prizes ($200; $100; $50). Completion of the battery of self-report questionnaires (in English only) took approximately 15 minutes. Upon completion of the battery, students' names were entered into the prize draw.

Statistical Analyses

Preliminary analyses were conducted using multi-dimensional scaling (MDS) in order to generate a visual representation of the data comparable to Schwartz and colleagues' (2001) theoretical quasi-circumplex model of relations among the ten values as measured by the PVQ. Subsequent statistical analyses for tests of quasi-circumplex structure and measurement invariance were performed using structural equation modeling (SEM) in M-Plus 5.0 (Muthén, & Muthén, 2006). The first step of the SEM analyses involved a confirmatory factor analysis to ensure that the individual items of the PVQ loaded solely onto each respective latent value for (1) the retired sample and (2) for the student sample. The second step of the analyses required fitting the predicted quasi-circumplex model (Schwartz & Boehnke, 2004) onto the latent factor covariance matrix

for (3) the retired sample and (4) for the student sample. Finally, tests of measurement invariance were conducted to ensure (5) invariance between the retired and student samples and (6) invariance across time.

Results

Observed values for each of the factors were calculated separately for the retired sample and the student sample. Table 2 illustrates the observed correlations between the 10 values well as means and standard deviations for each sample.

Preliminary MDS analyses

MDS creates a map in two-dimensional space, where the closer in space two points are from one another, the stronger their correlation. Proximity therefore represents degree of association. MDS was conducted separately for the retired (n = 433) and student (n = 170) samples using SPSS 11.0. Two-dimensional models based on Euclidean distance were requested using the raw mean scores of the ten values. In previous studies using MDS analyses of values (e.g., Schwartz, 1992) analyses were based on maps of all of the individual items representing the values. In this case, as in other cases where researchers wish to visually evaluate the structure of the ten values (e.g., Hinz et al., 2005) and not how the items themselves map onto each value, the ten mean value scores were used instead of all 40 individual PVQ items. As previously stated, the usefulness of MDS is primarily as a descriptive tool as it does not involve statistical tests to assess the goodness of fit of the theoretical quasi-circumplex structure to the observed data.

Based on visual comparison to Schwartz's theoretical circumplex model (Figure 1), both student and retired samples roughly approximate a circular structure (Figure 2).

There are also, however, some notable differences when each of these models is compared to the theoretical model and when student and retired models are compared to one another.

Compared to the theoretical model, the student MDS graph (Figure 2) generally shows the expected pattern of proximities for all the values except for achievement. Achievement in this sample of students does not appear to be as closely linked with power as the theoretical model would suggest. Achievement does not occupy the same opposite pole from benevolence and universalism as power does.

In the retired sample, the MDS graph (Figure 2) shows the expected pattern of proximities for most of the values except for the position of security, stimulation, and hedonism. Security appears between conformity and universalism, rather than between conformity and power, and hedonism appears between self-direction and stimulation rather than between stimulation and achievement.

Comparing the retired and student MDS graphs on the basis of visual inspection, one difference between these cohorts is worth noting. For the retirees, achievement and power appear closely linked, and they map in polar opposition to universalism and benevolence. For the students, however, achievement is more distant from power, and closer to hedonism, stimulation, and self-direction. This difference, though merely descriptive, suggests a different pattern of associations among certain values in younger compared to older adults, due either to the effects of lifespan development or to cohort differences in value systems. In any case, as in previous MDS analyses of the Schwartz value theory, the quasi-circumplex structure appears, for the most part, to be validated through these visual two-dimensional plots, with some minor differences between student

and retired samples. The next step, however, was to go beyond exploratory data analysis

and to conduct more comprehensive and rigorous tests of the fit of the theoretical quasi-

circumplex structure to the observed data in both retired and student samples. These tests

are outlined next.

1. Retired sample: Confirmatory Factor Analysis

Beginning with the retired sample, a latent factor model was tested in which the

40 items loaded onto a total of ten latent factors (i.e., the ten value constructs) as defined

by Schwartz and colleagues (2001). Compared to the standards for reasonably good fit

for SEM models (where CFI $\geq$ .90 and RMSEA $\leq$ .06: Kline, 2005) the overall fit

statistics for this model were poor (χ^2 (657) = 1806.81, p < 0.05, CFI = 0.802, RMSEA =

0.064). Lagrange multiplier tests revealed that a number of residuals would be reduced

(and therefore model fit improved) by loading PVQ items with weak coefficients to their

expected factors onto additional factors. There was, however, no theoretical justification

for allowing PVQ items to load onto multiple factors, given that each value is intended to

represent a distinct motivational domain. Instead, in an attempt to improve model fit, a

revised latent factor model was generated in which only PVQ items that were strong and

unique predictors of their respective factors were retained.

This revised latent factor model in which 26 items loaded onto a total of 10 latent

factors was then tested (see Appendix E for included and excluded items). The overall fit

statistics (χ^2(254) = 612.40, p < 0.05, CFI = 0.908, RMSEA = 0.057) were substantially

improved compared to the first model based on 40 PVQ items. The chi-square difference

test ($\Delta\chi^2$(403) = 1194.4, p < 0.05) revealed that the simplified model, based on 26 PVQ

items, was a significantly better fit to the observed covariance matrix. Table 3 provides a summary of these and all subsequent model fit indices.

2. Student sample: Confirmatory Factor Analysis

Consistent with the approach for the retired sample, a latent factor model was tested for the student sample in which the 40 items loaded onto a total of ten latent factors. The overall fit statistics were again poor ($\chi^2(657) = 1124.41$, $p < 0.05$, CFI = 0.795, RMSEA = 0.064). Similar to analyses in the retired sample, Lagrange multiplier tests revealed that a number of residuals would be reduced by loading PVQ items with weak coefficients to their expected factors onto additional factors. As with the retired sample, given that each value is intended to represent a distinct motivational domain, there was no theoretical justification for allowing PVQ items to load onto multiple factors.

In order to improve model fit, the same 26-item latent factor model that was generated on the retired sample was tested in the student sample. The overall fit statistics ($\chi^2(254) = 612.40$, $p < 0.05$, CFI = 0.908, RMSEA = 0.057) were substantially improved compared to the theoretical model. The chi-square difference test ($\Delta\chi^2(403) = 512.0$, $p < 0.05$) revealed that the 26-item model was a significantly better fit to the observed covariance matrix.

In both the student and retired samples, then, the original model of ten values based on 40 PVQ items was a poor fit to the observed co-variance matrix. Because the revised 26-item model showed the best fit indices for both retired and student samples, it was used for all subsequent analyses (see Table 3).

3 & 4. Testing the quasi-circumplex model using constrained CFA

To test the degree to which the Schwartz quasi-circumplex model fit the retired sample, the covariances between the latent factors were constrained to the values suggested by Schwartz and Boehnke (2004). It was not possible, however, to constrain the covariances between the factors according to the established criteria and maintain a working model. In other words, the predicted model and the observed data failed to converge. The same problem occurred when attempting to constrain the covariances in the student sample: the hypothesized associations did not match those in the current study enough to maintain a working model, and the models failed to converge. Applying the full 40-item model instead of the revised 26-item model made no difference. In other words, the quasi-circumplex model, when tested with constrained CFA, was not supported. The pattern of correlations among the ten values in the current sample and the pattern proposed by Schwartz and Boehnke varied substantially. The differential patterns of hypothesized and observed associations among the ten values are depicted visually in Figure 3.

5. Testing invariance across age groups

To ensure that the latent factors (i.e., the ten value constructs) were comparable between samples, it was necessary to test for measurement invariance, starting specifically with *configural, metric invariance, and scalar invariance*. The revised 26-item model was first constructed using the total sample (retirees and students, $N = 606$) with a reasonable fit ($\chi^2(254) = 635.99$, $p < 0.05$, CFI = 0.929, RMSEA = 0.050). To ensure *configural invariance* (i.e., same number of factors), *metric invariance* (i.e., same loading of items onto factors) and *scalar invariance* (i.e., same intercepts), the identical

ten-factor model was tested in each group constraining the item coefficients and item intercepts to be equal for both students and retirees ($\chi^2(540) = 1128.89$, $p < 0.05$, CFI = 0.89, RMSEA = 0.060). While this led to a significant decrease in the overall fit of the model ($\Delta\chi^2(286) = 492.9$, $p < 0.05$) largely due to a loss of parsimony through increased model complexity, the model itself was still acceptable. Therefore, *configural invariance, metric invariance and scalar invariance* were supported for both retired and student samples using the 26-item model.

The next test of measurement invariance across age groups, *invariance of error variance,* assessed whether measurement error in each of the PVQ items was the same for both younger and older adults. The error variances on the indicators were therefore constrained to be equal between both samples. The resulting model was a poorer fit than the previous model ($\chi^2(566) = 1269.88$, $p < 0.05$, CFI = 0.865, RMSEA = 0.064) and the difference between the models was significant ($\Delta\chi^2(26) = 140.999$, $p < 0.05$). However, once one error variance for the factors with at least two indicators were freed, the resulting model fit was acceptable ($\chi^2(559) = 1154.76$, $p < 0.05$, CFI = 0.89, RMSEA = 0.060) and the difference between this and the previous model was not significant ($\Delta\chi^2(19) = 25.11$, $p > 0.05$). Therefore, only partial *invariance of error variances* across age groups may be assumed in this dataset.

Finally, *invariance of factor variance* was tested by constraining the variance of each of the ten factors to be equal for student and retired samples. The resulting model fit was acceptable ($\chi^2(569) = 1179.80$, $p < 0.05$, CFI = 0.883, RMSEA = 0.060) though the difference between this and the previous model was significant ($\Delta\chi^2(10) = 25.80$, $p < 0.05$). Based on the above, the criteria for measurement invariance across the age groups

were met and therefore the idea that values can be measured similarly in each group was supported.

Although value measurement appears to occur in an invariant way across age groups when using the PVQ, there were large differences in the obtained means of the latent factors and in the pattern of factor covariance between the student and retired samples. It appears, then, that *latent value means* and *factor covariance* can be assumed to vary across the two age groups. To delineate these differences, a series of follow-up analyses were conducted.

In terms of similarity among the latent means of the values across age groups, only the means of benevolence (z-diff = -0.05, p = .72) and universalism (z-diff = 0.04, p = .65) were not significantly different between samples. Meanwhile, achievement (z-diff = 1.26, p < .05), stimulation (z-diff = 1.07, p < .05), self-direction (z-diff = 0.49, p < .05), hedonism (z-diff = 0.41, p < .05) and power (z-diff = 0.37, p < .05) were significantly higher in the student sample. On the other hand, conformity (z-diff = -0.35, p < .05), security (z-diff = -0.32, p < .05) and tradition (z-diff = -0.28, p < .05) were higher in the retired sample.

Moreover, there were large differences in the covariances of the factors between retirees and students (see Table 2 and Figure 3). In other words, the ten values did not hang together in exactly the same way for younger and older adults. A visual representation of the pattern of associations (Figure 3) reveals that the pattern of associations among the values differs between students and retirees, especially in terms of strength of association. To summarize the pattern depicted in Figure 3 in terms of strength of associations, the covariance between the factors were tabulated in terms of the

number of very large, large, medium, and small effect sizes based on Cohen's (1983) guidelines.

The strength of the covariances between the factors varied between the student and retired groups with the retired sample having generally more large and medium effects (one very large effect, 10 large effects, 17 medium effects and seven small effects with 10 non-significant effects) and the student sample having more small or non-significant effects (one very large effect, four large effects, six medium effects and 17 small effects with 17 non-significant effects). Retirees appear, therefore, to have greater interconnections among values than students, whose values show a lesser degree of inter-relatedness.

6. Comparing the retired sample across time

To ensure that the measurement and structural properties were stable over time, measurement invariance across a one-year interval was tested using only the retired sample, for whom longitudinal data was available. The revised 26-item model was constructed with a reasonable fit ($\chi^2(254) = 898.94$, $p < 0.05$, CFI = 0.92, RMSEA = 0.055). To ensure configural invariance, metric invariance, scalar invariance, invariance of factor variance, invariance of the factor covariances, invariance of latent means and invariance of error variances, the model was tested constraining the item coefficients, item intercepts, error variances, factor variances, factor covariances and means to be equal over time, across a one year interval ($\chi^2(631) = 1232.63$, $p < 0.05$, CFI = 0.92, RMSEA = 0.048). This led to a non-significant decrease in the overall fit of the model ($\Delta\chi^2(377) = 333.69$, $p = 0.95$) supporting all aspects of measurement invariance in the PVQ over time in the retired sample.

Discussion

We first investigated the validity of the quasi-circumplex structure of relations among the ten values in the Schwartz (1992) value theory as measured by the PVQ in a sample of younger and older adults. Consistent with previous research, preliminary exploratory MDS analyses suggested support for the quasi-circumplex structure in both retired and student samples, with some variation between older and younger adults appearing in the pattern of associations among the values. Further tests assessing goodness of fit of the observed data to the predicted pattern of associations through CFA analyses did not, however, support the circumplex model.

In order to achieve a good fitting model, 14 of the 40 items of the PVQ had to be dropped because they loaded weakly onto their respective factors and tended to be associated with other factors as well. The need to trim items from the PVQ in order to achieve a model with good fit is consistent with previous findings of a high degree of multi-collinearity among the values resulting in low levels of internal reliability and weak discriminant validity of SVS questionnaire items (Perrinjaquet et al., 2007). The resulting modified 26-item model loading onto ten factors (detailed in Appendix E) was found to have much improved fit indices over the poor fit of the 40-item model in both retired and student samples (Table 3), and was used for all subsequent tests.

When constrained CFA was used to test whether the observed pattern of value inter-correlations approximated that predicted by the modified quasi-circumplex model (Schwartz & Boehnke, 2004), it was not possible to maintain a working model. In other words, the models failed to converge. The quasi-circumplex structure, despite its emergence in descriptive exploratory MDS analyses, did not hold up to statistical tests for

goodness of fit using CFA. This goes against the findings of Schwartz and Boehnke (2004) who found support for the quasi-circumplex structure using a constrained CFA method, but is consistent with other findings where the quasi-circumplex structure of values has not been supported (Hinz et al., 2005; Perrinjaquet et al., 2007).

Following the tests of the quasi-circumplex structure, we then investigated the PVQ in terms of measurement invariance between student and retired samples. Using the modified 26-item model, support was found in both retired and student samples for most types of measurement invariance. In particular, these findings suggest that the PVQ, in a reduced 26-item format, has the following qualities related to its validity as a measure (Steinmetz et al., in press): (1) the same model structure in both younger and older adults (*configural invariance*); (2) the same factor loadings in both younger and older adults (*metric invariance*); (3) the same intercepts (and therefore same systemic response bias) in younger and older adults (*scalar invariance*); (4) the same variance within factors in both younger and older adults (*invariance of factor variance*); and (5) the same reliabilities in younger and older adults (*partial invariance of error variance*). All of this supports the validity of a 26-item version of the PVQ, and suggests, simply, that values can be measured in the same way across different stages of the lifespan using this measure. As a result, any differences observed in the values of younger compared to older adults can be interpreted as meaningful, and not as an artifact of differences in measurement or structural properties of the PVQ.

Consistent with previous reported correlations between age and values, (Schwartz et al., 2001), retirees reported higher scores on conformity, tradition, and security values, whereas students reported higher achievement, power, stimulation, hedonism, and self-

direction values. Only the latent means of benevolence and universalism showed no differences between younger and older adults. It is important to note that the observed differences in values between students and retirees may reflect development and changes associated with aging, but might equally represent generational cohort differences based on differing sets of historical events as a framework for value development. As this part of the study did not examine the same people over time, but rather two different cohorts of different ages, there is no way to tease apart these two potential explanations for age-related differences in the latent means of values.

Along with differing value means, retirees and students showed a differential pattern of associations among the ten values, as depicted in Figures 2 and 3. Of note, the pattern among older adults (summarized in Table 4 and Figure 3) suggests a higher degree of inter-relatedness among all values, even between theoretically contradictory values (e.g., achievement and benevolence). In younger adults, only values theoretically similar in motivation showed large or medium sized associations. This may be an indication of a higher degree of value pluralism in older adulthood, where multiple and theoretically competing values may co-exist to a greater extent than in younger adulthood, when values may be more disconnected from one another.

After testing measurement invariance across age groups, invariance of the PVQ across a one-year interval was also tested. Support was found for all types of previously mentioned measurement invariance suggesting, simply, that values can be measured in the same way at different points in time in the same people using the 26-item form of the PVQ. It is striking that even in a time of great transition – the early stages of retirement – that none of the latent means of the ten values showed any change across a one-year

interval among retirees. This suggests that values, even if they do change with development and aging, or differ from one generation to the next, are not likely to show much change in the short term within individuals.

Implications for value measurement

What does it mean if the quasi-circumplex structure of relations among the values of the Schwartz value theory does not hold up to statistical scrutiny? Is the theory itself reduced in importance or in usefulness in the field of values research? Despite the lack of support for the quasi-circumplex model based on statistical criteria, the PVQ remains a useful empirical measure of values. The PVQ captures the importance that individuals place on ten distinct values, in a format that does not require abstract thought about values, and that can be completed in a matter of minutes. In addition, it is appropriate for use in research with both younger and older adults as well as in longitudinal studies, as we have shown here, as well as across nations and cultures as shown elsewhere (e.g., Davidov, 2008). The lack of support for the quasi-circumplex model, found here and elsewhere (Hinz et al., 2005; Perrinjaquet et al., 2007) impacts how we understand the set of relations among the ten values, but not the capacity of the PVQ to measure values. There is no theoretical imperative to have a circumplex model of relations among values in order to have a valid measure of values.

Based on the results of this study, what appears to be more of a threat to the integrity of the PVQ is the problem of multi-collinearity among items and among factors, and the resulting lack of discriminant validity among the 40 items of the PVQ. This finding parallels similar problems reported with the SVS (Perrinjaquet et al., 2007). The necessity to eliminate 35% of the items of the PVQ (14 out of 40) in order to establish an

adequate fit of all items onto ten factors suggests that researchers consider using shorter forms of the PVQ, such as the one generated here, to avoid excessive overlap among the items and the constructs. The consequence of dropping items is, of course, the loss of some aspects of values in the service of having a more psychometrically valid instrument. For example, in the 26-item model, items measuring personal security (health, cleanliness, safe accommodation) are no longer represented, whereas those representing security at a social level (social order and national security) remain. Although some information is lost, a more precise and valid measure of the ten values as an entire system is gained, as conceptual and measurement overlap of the values are reduced. Further research is required to determine whether the 26-item model generated here represents the best fitting model in other types of samples.

There is a conceptual issue worth considering at this point regarding the problem of low discriminant validity among the PVQ items. The difficulties we encountered in finding items that load only on a single factor suggest that values in nature may not cleanly fall within the value categories of this model. Value items, rather, may be associated with multiple value categories, and the particular pattern of associations among items and value categories may be highly idiosyncratic. The question that follows is whether there is a better way to conceptualize values than dividing them up, somewhat arbitrarily, into ten categories. What alternatives are there for the measurement of such a complex motivational continuum?

The author of the PVQ, S. H. Schwartz (personal communication, July 11, 2008), suggests that the ten categories of values on the PVQ are unlikely to hold up as distinct according to the rigorous requirements of CFA, and this is for two reasons. First, with

only a few items per value and with multiple motivations contained in each value, it is impossible to achieve high internal reliability unless the number of items is increased and the breadth of each value is limited to only one central motivation. For example, universalism would have to be focused on only one of its three components — tolerance/understanding, concern for nature, or broad social concern. Second, each value, according to the theory of quasi-circumplex structure, should be correlated with adjacent values on the value circle, and some item loading onto multiple adjacent values is therefore to be expected. Unfortunately, this lack of clean loading of items onto only one construct inevitably plays havoc with CFA analyses.

One possible alternative to the use of ten value categories is the use of the two established higher-order value dimensions: openness to change vs. conservation and self-enhancement vs. self-transcendence. This is a method that has been employed in a few existing studies (e.g., Caprara, Caprara, & Steca, 2003; Ros, Schwartz, & Surkiss, 1999), and has recently been recommended as a strategy for improving reliability of the the 21-item PVQ data within the European Social Survey and of improving the ease of presenting the relationship of values to other variables (Verkasalo, Lönnqvist, Lipsanen, & Helkama, in press). While increasing the number of items in each factor does tend to increase the size of Chronbach's alpha (an indicator of internal reliability), reliability values based on a large number of items (e.g., 7-13 items representing each of the four higher order values for the 40-item PVQ) can be seen as inflated, given that the size of Cronbach's alpha tends to increase with number of items. Higher reliabilities for a smaller number of value categories does not necessarily translate into a better fit of the model to the data. In fact, Schwartz and Boehnke (2004), in their CFA tests of the

circumplex model, tested a model with the four higher-order value categories that showed slightly poorer fit indices compared to the ten-value model. In follow-up tests in our sample of older adults, combining the values into four higher order categories did improve alpha reliabilities to more acceptable levels (conservation .82; openness to change .79; self-enhancement .83; self-transcendence .81) but did not improve model fit indices over a ten-value model.

Limitations

This study involved some exploratory analyses, especially in the selection of PVQ items based on factor loadings, that may invalidate tests of fit that depend on the same relationships that were used to select the items. So while the application of the 26-item model to the student sample represents a legitimate test of fit, as it was not generated on that sample, the 26-item model as applied to the retired sample would technically need to be replicated in a different sample of retired adults in order to be fully supported.

Future directions

Our analyses suggest that the pattern of covariance among the ten factors differs between younger and older adults. In other words, while the means of particular values differed in expected ways between younger and older adults, the way in which values hang together as a system also differed across age groups. These differences may result from aging and developmental processes or from generational differences. If the observed differences in covariance among values are due to changes in values that occur with adult development across the lifespan, then values researchers should consider the possibility of investigating a shift in not only value priorities with age, but also of value *structure* with age. Our findings suggest that such an age-related change in value structure might

involve moving from rigidly ordered priorities in young adulthood to a more pluralistic, paradoxical value structure in older adulthood, where values with seemingly opposite motivational underpinnings may be held simultaneously and applied more flexibly than at earlier points in the lifespan.

Acknowledgments

Table 1

Definitions of 10 Values and Sample PVQ Items, Male Version (Adapted from Schwartz et al., 2001)

POWER: Social status and prestige, control or dominance over people and resources. (It is important to him to be rich. He wants to have a lot of money and expensive things.)

ACHIEVEMENT: Personal success through demonstrating competence according to social standards. (Getting ahead in life is important to him. He strives to do better than others.)

HEDONISM: Pleasure and sensuous gratification for oneself. (Enjoying life's pleasures is important to him. He/she likes to 'spoil' himself.)

STIMULATION: Excitement, novelty, and challenge in life. (He thinks it is important to do lots of different things in life. He always looks for new things to try.)

SELF-DIRECTION: Independent thought and action-choosing, creating, exploring. (Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.)

UNIVERSALISM: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature. (He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.)

BENEVOLENCE: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact. (It's very important to him to help the people around him. He wants to care for their well-being.)

TRADITION: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self. (Religious belief is important to him. He tries hard to do what his/her religion requires.)

CONFORMITY: Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms. (It is important to him to always to behave properly. He wants to avoid doing anything people would say is wrong.)

SECURITY: Safety, harmony and stability of society, of relationships, and of self. (Having a stable government is important to him. He is concerned that the social order be protected.)

Table 2

Observed and predicted correlations among values and descriptive statistics for retired and student samples

	CO	TR	BE	UN	SD	ST	HE	AC	PO	SE
CO	**1.0**	.59**/.88	.30**/.68	.28**/.48	-.09/.28	-.09/.08	.10*/.08	.21**/.28	.09/.48	.52**/.68
TR	.71**/.88	**1.0**	.25**/.68	.24**/.43	-.05/.18	-.04/-.07	.03/-.07	.12/.18	.01/.43	.40**/.68
BE	.20**/.68	.30**/.68	**1.0**	.46**/.68	.25**/.48	.20**/.28	.20**/.08	.17**/.08	.04/.28	.25**/.48
UN	.25**/.48	.32**/.43	.60**/.68	**1.0**	.32**/.68	.20**/.48	.10*/.28	.04/.08	-.06/.08	.35**/.28
SD	-.14/.28	-.04/.18	.46**/.48	.43**/.68	**1.0**	.47**/.68	.21**/.48	.26**/.28	.27**/.08	.12*/.08
ST	-.15/.08	-.10/-.07	.24**/.28	.23**/.48	.48**/.68	**1.0**	.47**/.68	.31**/.48	.25**/.28	-.06/.08
HE	.05/.08	.09/-.07	.20*/.08	.14/.28	.21**/.48	.43**/.68	**1.0**	.35**/.68	.24**/.48	.13*/.28
AC	.05/.28	.01/.18	.06/.08	-.03/.08	.20*/.28	.06/.48	.16*/.68	**1.0**	.59**/.68	.28**/.48
PO	.15*/.48	.12/.43	.10/.28	.08/.08	.15*/.08	.13/.28	.25**/.48	.59**/.68	**1.0**	.15**/.68
SE	.55**/.68	.39**/.68	.21**/.48	.28**/.28	.05/.08	-.13/.08	.21**/.28	.32**/.48	.40**/.68	**1.0**
Retirees										
M	4.27	3.07	5.01	4.95	4.74	3.64	4.41	3.20	2.95	4.07
SD	0.99	1.25	0.79	0.85	0.94	1.11	1.08	1.15	1.23	1.23
Students										
M	3.96	2.76	5.03	4.85	5.07	4.61	4.58	4.39	3.35	3.72
SD	1.04	1.36	0.81	1.0	0.93	1.01	0.96	1.06	1.30	1.39

Note: Upper diagonal of matrix represents the retired sample ($N = 433$); lower diagonal represents the student sample ($N = 173$); first set of numbers in each cell represent the observed correlation; the second represents the correlation predicted by the modified quasi-circumplex model (Schwarz & Boehnke, 2004, p. 241); $*p < .05$; $**p < .01$, two-tailed; CO = Conformity; TR = Tradition; BE = Benevolence; UN = Universalism; SD = Self-Direction; ST = Stimulation; HE = Hedonism; AC = Achievement; PO = Power; SE = Security; M and SD calculated based on 26-item model of the ten values.

Table 3

Summary of Model Fit Indices

Model description	χ^2	df	AIC	CFI	RMSEA	SRMR
1a. Retired sample: Confirmatory Factor Analysis	1806.81	657	49946.426	0.802	0.064	0.065
1b. Retired sample: Confirmatory Factor Analysis - 26-items	612.40	254	33356.261	0.908	0.057	0.049
2a. Student sample: Confirmatory Factor Analysis	1124.41	657	20396.546	0.795	0.064	0.079
2b. Student sample: Confirmatory Factor Analysis - 26-items	347.20	254	13558.499	0.930	0.046	0.064
3 & 4. Applying the hypothesized quasi-circumplex model	-	-	-	-	-	-
5 a. Comparing the retired sample to the student sample	635.99	254	47273.255	0.929	0.050	0.045
5 b. Configural invariance, metric invariance and scalar invariance	1128.89	540	47020.052	0.887	0.060	0.060
5c. Invariance of error variance	1269.89	566	47109.052	0.865	0.064	0.083
5d. Invariance of error variance (partial)	1154.76	559	47007.922	0.886	0.059	0.064
5e. Invariance of factor variance	1179.80	569	47012.959	0.883	0.060	0.077
6a. Comparing the retired sample across time	898.94	254	63051.048	0.913	0.055	0.045
6b. Complete invariance	1232.63	631	63051.048	0.919	0.048	0.056

Openness to change　　　　　　　　　　　**Self Transcendence**

Self Enhancement　　　　　　　　　　　**Conservation**
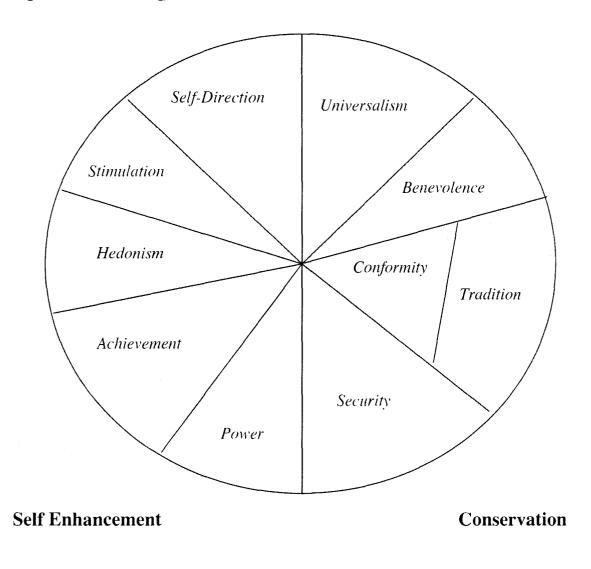
Figure 1. Theoretical model of relations among ten types of values (adapted from Schwartz & Rubel, 2005).

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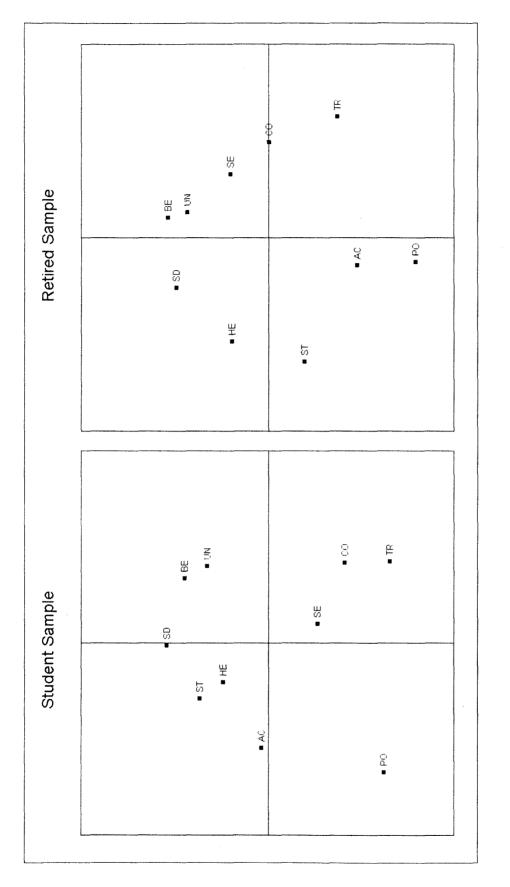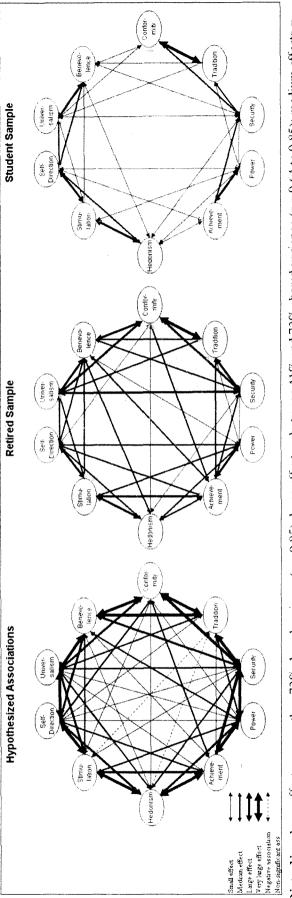
Figure 2. MDS analyses of student and retired samples. Note: CO = Conformity; TR = Tradition; BE = Benevolence; UN = Universalism; SD = Self-Direction; ST = Stimulation; HE = Hedonism; AC = Achievement; PO = Power; SE = Security

Figure 3. Associations among values predicted by the quasi-circumplex model (Schwartz & Boehnke, 2004) and the observed matrix in retired and student samples.

Note: Very large effects = more than 73% shared variance ($r > 0.85$); large effects = between 41% and 73% shared variance ($r = 0.64$ to 0.85): medium effects = between 18% and 41% shared variance ($r = 0.43$ to 0.64); small effects = less than 18% shared variance ($r < 0.43$).

Connecting Text: From Study 1 to Study 2

Results of the first study suggest that the PVQ can reliably be used to measure values in both younger and older adults and across time, although this was achieved using a trimmed version of the PVQ with fewer items. The trimming of items in the first study allowed for a confirmatory factor analysis of ten discrete value constructs with items that load cleanly onto their respective factors. The problem in using such a trimmed version of the PVQ, however, is the loss of content due to dropped items. Each value in itself is conceptually broad, and the loss of 14 of 40 items eliminates significant portions of the conceptual content of the values. In order to be consistent with prior research using the 40-item PVQ, data analysis in both the second and third studies in this dissertation involved the full 40-item version of the PVQ. Internal reliabilities of the values were improved by using the four higher-order value categories (self-transcendence, self-enhancement, openness to change, conservation) rather than the ten value categories. The second study, presented next, focuses on the impact of these four value types in addition to health and financial status, and the impact of this set of variables on affective well-being in retirement.

Study 2

Affective Well-Being in Retirement: The Influence of Values, Money, and Health Across

Three Years

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Affective Well-Being in Retirement: The Role of Values, Money, and Health Across

Three Years

The leading edge of the baby boom cohort (born between 1946 and 1964) turned

60 in 2006 and as a result, retirees will represent an increasingly large proportion of the

population over the next decades (Statistics Canada, 2005). Understanding well-being in

retirement is, therefore, an issue of growing importance for both researchers and for the

aging population. Retirement, while not typically a crisis, is a unique transition in the

lifespan that involves changes in roles, relationships, and daily routines as well as shifts

in income and in health. Retirement affords increased opportunities for living the good

life, such as spending time with friends and family and pursuing satisfying activities, but

it is also a hallmark of the transition to the later stages of life and an introduction to the

realities of aging. It brings with it an increased salience of age-related physical and

cognitive changes and of the mortality of relatives, friends, and the self.

While free time without the pressures of work may seem an inevitable boon to

well-being, this is not necessarily the case. The impact of retirement on well-being has

been a subject of much debate among researchers. Recent research has demonstrated that

the retirement transition is complex and variable and is characterized by non-uniformity

in adjustment patterns and by multiple pathways to well-being through both contextual

and psychological variables (e.g., Kim & Moen, 2001; 2002; Pinquart & Schindler, 2007;

Szinovacz & Davey, 2004; van Solinge & Henkens, 2008; Wang, 2007). Research has

consistently indicated the importance of health and adequate finances for well-being in

retirement (e.g., van Solinge & Henkens, 2008; Wang, 2007). Little research, however,

has focused on the motivational determinants of retirees' well-being. Given that retirement represents a shift from structured to unstructured time, motivational factors are likely an important determinant of how well retirees cope with the challenges of retirement. These include adjusting to the loss of the work role and associated social ties in addition to establishing a new and satisfying post-retirement lifestyle. Motivational factors such as personal values, then, in so far as they help to shape attitudes, coping styles, and behavior, are likely to play an important role in the subjective well-being of retired adults.

One of the primary theoretical frameworks for understanding happiness among aging adults, socio-emotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999), is based on motivational changes related to perception of future time. This theory proposes that when future time is perceived as limited, older adults tend to shift their priorities from future-oriented goals focused on expanding horizons to present-oriented goals aimed at emotion regulation and emotionally satisfying interactions and pursuits with close family members and friends. If retirement is understood as a hallmark of aging and the beginning of the later stages of life, it may be a time when the project of building for one's personal future becomes less important for well-being compared to an emotionally-meaningful present.

The aim of this paper is to examine how personal values as motivational factors may play a role in the affective component of subjective well-being of recent retirees. In particular, we investigate personal values from the Schwartz (1992) value theory and test how they, both directly and in combination with finances and health, are linked to the emotional experiences of retirees (positive and negative affect). Given the transitional

nature of the early years of retirement, we also test the stability of these patterns across a period of three years.

Values

Values represent abstract, global aspirations of how to live based on what is most important in life. Values are separable from goals in that goals represent more concrete aspirations for the future. While goals may be accomplished as particular projects, values are unending projects and represent relatively stable motivational traits. Values, then, can be understood as desirable, trans-situational goals that serve as guiding principles in people's lives (Schwartz, 1992). Despite conceptual overlap with research into goals, values represent a distinct and under-studied motivational construct, especially as they relate to well-being in general and to the well-being of older adults in particular.

The Schwartz (1992) Value Theory. Although a wide variety of value constructs and measurement tools have been developed to assess personal values, the Schwartz (1992) value theory is arguably the most empirically supported and widely used theory of personal values in the current literature. The Schwartz (1992) value theory was developed as an integration and extension of the diverse values literature that preceded it. It postulates the existence of ten universal values that exist for all people based on the fundamental needs of human beings. The ten values are benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, tradition, and conformity. The Schwartz (1992) model of values has been extensively investigated in terms of both structure and content. Due to space restrictions, this literature will not be reviewed here, but more comprehensive reviews are available elsewhere (e.g., Schwartz et al., 2001; Schwartz & Boehnke, 2004; Schwartz & Rubel, 2005).

The ten values have also been conceptualized as forming four higher-order value types (Schwartz, 1992; Schwartz & Boehnke, 2004): self-enhancement, self-transcendence, openness to change, and conservation. These four values are the focus of this study. Self-enhancement values (comprised of power and achievement) emphasize pursuit of status, success, and dominance over others and are consistent with materialistic values in other value paradigms (Burroughs & Rindfleisch, 2002). Self-transcendence values (comprised of universalism and benevolence) emphasize concern for the welfare of others and for the natural world, and are consistent with community values in other value paradigms (Burroughs & Rindfleisch, 2002). Conservation values (comprised of security, tradition, and conformity) emphasize self-restriction and the preservation of the status quo, and are consistent with religious and family values in other value paradigms (Burroughs & Rindfleisch, 2002). Finally, openness to change values (comprised of self-direction, stimulation, and hedonism) represent an emphasis on "the proactive and voluntary search for stimulation, novelty, and change and on free and autonomous thinking and behavior" Oreg et al., 2008, p. 937) and are consistent with variety-seeking values in other value paradigms (Burroughs & Rindfleisch, 2002).

Values and subjective well-being

Subjective well-being is usually conceived of as a broad domain of interest rather than a specific construct, and it encompasses multiple components including pleasant or positive affect, unpleasant or negative affect, and cognitive judgments about satisfaction with life (Diener et al., 1999). We focus here on the two affective components of subjective well-being - positive affect and negative affect, which are considered relatively independent constructs (Schimmack, 2008). The presence of positive affect reflects

pleasurable engagement in life, whereas its absence reflects sadness and lethargy (Watson, Clark, & Tellegen, 1988). The presence of negative affect represents a variety of forms of distress whereas its absence reflects calmness and serenity (Watson et al., 1988). High negative affect has been linked to depression and several anxiety disorders whereas low positive affect relates primarily to depression (Brown, Chorpita, & Barlow, 1998).

Specific types of aspirations (intrinsic and extrinsic) have been linked to subjective-well-being. The self-determination theory of subjective well-being (Ryan, Sheldon, Kasser, & Deci 1996; Deci & Ryan, 2000) proposes that intrinsic aspirations (i.e., pursuing self-acceptance, affiliation with others, and contribution to the community) promote well-being because they satisfy basic needs for competence, autonomy, and relatedness. Extrinsic aspirations (i.e., pursuing contingent approval or external signs of worth), on the other hand, are thought to interfere with basic needs satisfaction, and therefore be associated with reduced well-being (Deci & Ryan, 2000). Research into materialistic values (i.e., beliefs about the central importance in life of money, possessions, image, and popularity) (Kasser & Ahuvia, 2002; Kasser & Ryan, 2001) has supported the self-determination theory of subjective well-being. Materialism is associated with lower levels of happiness and life satisfaction (Chan & Joseph, 2000; Hellevik, 2003; Kashdan & Breen, 2007; Kasser & Ahuvia, 2002; Kasser, Ryan, Couchman, & Sheldon, 2004; for a review, see Burroughs & Rindfleisch, 2002) whereas intrinsic value orientations are associated with higher well-being (Brown & Kasser, 2005; Kasser, 2004; Kasser & Ryan, 1993; Sheldon, 2005; Sheldon et al., 2004; Sagiv, Roccas, & Hazan, 2004). Evidence also suggests that it is not just particular value orientations

that promote well-being, but in addition values act as a moderator of the link between activities and life satisfaction (Oishi, Diener, Suh, & Lucas, 1999). Activities are therefore satisfying to the extent that they are consistent with important values. Whether values function in an implicit or explicit manner in determining the everyday activities and behaviour of individuals, however, remains unclear. Recent research suggests that values tend to relate to more abstract and long-term planning than to concrete and short-term goals (Eyal, Sagristano, Trope, Liberman, & Chaiken, 2009; Torelli & Kaikati, 2009).

Within the Schwartz model of values, only one study has investigated associations among values and subjective well-being and it focused on younger and working adults. Sagiv and Schwartz (2000) assessed ratings of affect and life satisfaction among student and adult samples across three cultures (West Germany, the former East Germany, and Israel) and found that values were associated with only the affective component of subjective well-being (positive affect ratings). In all of these cultures, achievement, self-direction, and stimulation correlated with higher positive affect. In contrast, Sagiv and Schwartz (2000) found that tradition, conformity, and security values correlated with lower positive affect ratings. An effect of context was also established in that for business students power values were associated with increased positive affect while for psychology students power values were associated with reduced positive affect.

While Sagiv and Schwartz's (2000) study established theoretically sound links between values and well-being, it left several questions unanswered. Although the authors assessed negative affect, scores were not analyzed due to the poor reliability of the measure, and therefore no conclusions were possible about the link between values

and negative emotions. Further, demographic variables, which can explain up to 15% of variance in subjective well-being outcomes (Diener, Suh, Lucas, & Smith, 1999), were not examined, preventing conclusions as to whether values contribute to well-being above and beyond basic demographic characteristics. Our study attempts to address these limitations and the general lack of values research with older adults by providing an analysis of both positive and negative affect outcomes while controlling for relevant demographic variables using a sample of retired adults.

Lifespan and contextual considerations

The same set of "healthy" values (achievement, self-direction, stimulation) identified by Sagiv and Schwartz (2000) may not apply to older, retired adults. Similarly, the values associated with lower affective well-being (tradition, conformity, and security) may not have the same negative function for well-being under different life circumstances and at a later stage of life. Extrapolating from socio-emotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999), the priorities and goals of older adults stem from a longer personal history, different life context, and more time-limited future compared to younger adults. What constitutes "healthy values" for retirees may differ, then, compared to findings from younger and working populations.

Values were hypothesized to have direct links with well-being for retirees, but also to interact with other contextual variables to promote or diminish subjective well-being. In theory, some values may serve a protective function for retirees, buffering the effects of limitations in health and financial domains and in this way promoting and protecting well-being. Other values are potentially a source of frustration and contribute

to reduced well-being in the context of health and financial limitations. The particular hypothesized links and interactions are outlined below.

Openness to change values are related to the pursuit of flexibility, creativity, independence, and pleasure. Consistent with the notion of emotionally meaningful and present-oriented goals, openness to change values create an opportunity for the pursuit of satisfying interactions and activities that in turn are likely to promote positive emotions. Openness to change values may also protect well-being in retirement when health or financial difficulties are encountered through promoting flexibility and resilience in the face of challenging life circumstances. Openness values may be of less importance for affective well-being, however, under more stable life circumstances involving good health and high financial status when basic conditions of life provide fewer challenges to well-being.

Conservation values are related to the pursuit of conformity to social norms, upholding tradition and customs, and maintaining security of the individual person and of society. Conservation values have been found to be higher among older adults (Caprara, Caprara, & Steca, 2003), suggesting they have increasing importance across the lifespan. Among younger adults they are associated with lower affective well-being (Sagiv & Schwartz, 2000) and guilt-proneness (Silfver, Helkama, Lönnqvist, & Verkasalo, 2008). In contrast, among retirees conservation values may be linked to enhanced affective well-being through their emphasis on tradition or religion which may provide retirees with social connectedness, purpose, and meaning, as well as through their emphasis on maintaining health. As such, conservation values are also consistent with emotionally-meaningful present-oriented goals (Carstensen et al, 1999).

Self-enhancement values, herein referred to as *enhancement* values, are related to the pursuit of status, control over others, success and admiration. These values are associated with higher positive affect among younger and working adults (Sagiv & Schwartz, 2000), but conceptually overlap with materialistic and extrinsic goals that have shown links to reduced well-being (Deci & Ryan, 2000; Kasser, 2004). In the context of retirement enhancement values create a framework for potential goal frustration and associated negative emotions among retirees because valued goals, such as the accumulation of wealth, recognition for accomplishments, and control over others may become more difficult to attain in a post-employment lifestyle. When combined with health or financial difficulties, enhancement values were hypothesized to have a particularly deleterious effect in retirement as valued goals become increasingly unattainable. Enhancement values may have less impact on affective well-being, however, under more stable life circumstances involving good health and high financial status, when basic conditions of life do not conflict with the pursuit of valued goals.

Self-Transcendence values, herein referred to as *transcendence* values, are oriented toward ends larger than the individual, and involve concern for the welfare of others and of the natural world. Among younger and working adults, transcendence values are not associated with affective well-being (Sagiv & Schwartz, 2000) and are linked to guilt-proneness (Silfver, Helkama, Lönnqvist, & Verkasalo, 2008). For retired adults, however, these values are consistent with present-oriented and emotionally meaningful goals and may promote positive emotions given their pro-social and affiliation motives and their compatibility with Erikson's (1959) concept of generativity. Generativity involves a concern for future generations, represents a key developmental

challenge of middle adulthood, and is associated with a variety of measures of well-being among middle-aged adults (e.g., Ackerman, Zuroff, & Moskowitz, 2000; An & Cooney, 2006; McAdams, de St. Aubin, & Logan, 1993).

The current study

In light of the gaps in our knowledge about the links between values and well-being in retirement, the general goals of this study were 1) to investigate the direct associations between retirees' values and their reports of positive and negative affect, taking into account important demographic determinants of well-being (gender, finances, and health); 2) to test for interactions between financial/health status and values as a measure of values' potential protective and deleterious effects on affective well-being; and 3) to test the stability of these patterns longitudinally across three years. Four higher-order value categories from the Schwartz (1992) value theory were selected, rather than all ten personal values, in order to include all content of the Schwartz value system while keeping the number of variables to a manageable size for the sake of statistical model building using structural equation modeling. Based on the literature reviewed above, considering the particular opportunities and constraints of retirement, and taking into account the potential impact of retirement on future time perspective, we proposed the following hypotheses:

Hypothesis 1: Higher affective well-being will be associated with openness to change, transcendence, and conservation values, whereas lower affective well-being will be associated with enhancement values among retirees.

Hypothesis 2: Openness to change and enhancement values will interact with financial and health status in predicting affective well-being. Those low in openness or

high in enhancement values and simultaneously low in financial or health status are likely to experience reduced affective well-being.

In addition to testing these hypotheses, another aim was to explore the stability of the links between values and well-being and any interactions of values with context over time. Especially in the case of the retirement transition, adaptation to new financial and day-to-day realities occurs across several years. Do values, finances, and health status predict well-being in a static, trait-like pattern across time, or does the pattern evolve with the adjustments inherent in the early years of retirement? Further, do values continue to exert an effect on well-being across time, taking into account baseline measurements? The third part of this study explored the stability of direct effects and interactions across three years.

Method

Participants

Participants were part of a larger longitudinal study investigating adjustment to life in retirement. Information about the retirement study was distributed by mail to recently retired employees through retirees' associations as well as ads in both French and English local newspapers over a period of one year. Criteria for participation in the study included fluency in French or English, having worked full-time for a minimum of 20 years, not currently being in paid employment for more than ten hours per week, and mobility permitting attendance of annual testing sessions at Concordia University. A total of 446 retirees participated. Of these, 13 (2.9%) were eliminated by the researchers because of difficulty understanding and/or following instructions or due to mistakes regarding date of retirement, leaving a sample size of 433 retired adults. For the purpose

of longitudinal analyses, the sample for this study was restricted to the participants who were retained across three annual assessments, for a final sample size of 371, and a retention rate of 85%. MANOVA analyses revealed no significant differences between those who dropped out of the study and those who were retained through to T3 on demographics (age, gender, finance, illnesses) and outcome variables (positive and negative affect). Of 62 participants who were not retained for the second and third assessments, 35 were not reachable or did not respond when contacted; 22 withdrew because they were too busy, were no longer interested, or had health problems; 4 were eliminated by the researchers because they had difficulty understanding and/or following instructions in the materials; and one participant was known to have died.

Demographics. The demographic characteristics of the 371 retirees in this study were as follows: 47.4% male (n = 176) and 52.6% female (n = 195); age ranged from 44 to 77 years, with a mean age of 59.05 years (SD = 5.0). Although 59 years appears to be a relatively young mean age for a sample of retirees, the age of this sample is characteristic of Canadian age of retirement at the beginning of the 21st century (Statistics Canada, 2006) due in part to public sector early retirement incentives that began in the 1980s (Bowlby, 2007). Participants were generally healthy and well educated (M = 14.90 years of education, SD = 2.50), had worked full-time for an average of 34.02 years (SD = 6.62), and were recently retired, with an average duration of retirement of 1.9 years (SD = 1.81). Personal income in retirement, for the sub-sample that reported it (N = 280) ranged from 0 to $250,000 with a median retirement income of $41,250. The majority of the sample was either married (52%) or had a common-law partner (11.1%); 19.1% were divorced;

13.5% were single; and 3.8% were widowed. In terms of language, 61% of participants completed the questionnaires in French and 39% in English.

Materials

All participants completed a consent form (see Appendix B), demographic questionnaire (see Appendix C), and a series of other self-report measures. Only the materials relevant to the current study are described here. All English measures were translated into French appropriate to the Quebec linguistic context.

The Portrait Value Questionnaire IV (PVQ: Schwartz et al., 2001; see Appendix D). The PVQ includes verbal portraits of 40 different people, gender matched with the participant. Each portrait describes a person in terms of their goals and what is important to them. For example: "It is very important to him to help the people around him. He wants to care for their well-being" describes a person for whom benevolence values are important. Participants indicate how much the portrait is similar to them on a 6-point scale, labeled from "very much like me" to "not like me at all." Transcendence, enhancement, openness to change, and conservation values were measured by 10, 7, 10, and 13 items respectively, consistent with Caprara et al. (2003). Possible scores on the PVQ range from 1 to 6 for each value, where 1 represents a value of no importance to an individual, and 6 represents a value of high importance. Each individual's score for a value represents their average score across all of the items representing that value[1]. The

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[1] Ipsative scores are often used with the PVQ (Schwartz & Rubel, 2005). Ipsative scores are calculated by taking each individual's mean score across all 40 PVQ items and subtracting it from the individual's mean score for each value. The result is a deviation score representing the relative importance of each value in the system. In preliminary analyses, ipsative value scores showed almost no association with the outcome measures, whereas the raw mean scores showed robust associations. The raw mean scores were therefore used with the understanding that results should be interpreted in terms of the

Cronbach's α coefficients for the four higher-order value categories were as follows: transcendence (.81); enhancement (.82); openness to change (.79); and conservation (.81). Test-retest reliability of an earlier version of the PVQ has been reported to be moderate to high, ranging from .66 to .88 (Schwartz et al., 2001). The values as measured by the PVQ have shown predictable associations with a variety of attitudes and behaviours (Schwartz et al., 2001), as well as with a second method of measuring the same ten value constructs, the Schwartz Value Survey (Schwartz, 1992).

Positive and Negative Affect Scale (PANAS: Watson, Clark, & Tellegen, 1988; see Appendix F). The PANAS is a 20-item self-report questionnaire consisting of a list of words that describe different feelings and emotions. Participants were asked to rate the extent that they felt a given feeling or emotion during the past few weeks on a 5-point scale that ranges from "very slightly or not at all" to "extremely." Ten items reflect positive affect (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active); ten other items reflect negative affect (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid). The Cronbach α coefficients were .90 for positive affect and .88 for negative affect in the current study. The PANAS has shown adequate test-retest reliability and scale validity (Watson et al., 1988). Higher scores on the two affect subscales indicate higher levels of positive or negative emotions experienced in the past few weeks.

Financial and health status. Financial situation was assessed by one item on the demographic questionnaire (see Appendix C): "Compared to other people of your age that you know, how would you rate your financial situation?" Participants responded on a

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general importance of each value for an individual, not its importance relative to all other values.

7-point scale that ranged from "a lot worse that most" to "a lot better than most". Higher scores represent better self-rated financial status relative to other people of a similar age. This subjective measure of finances has been associated with retirement satisfaction (Pushkar et al., in press) as well as with favorable self-perception of current functioning for older adults (Pushkar, Arbuckle, Rousseau, & Bourque, 2003). Test-re-test reliability in the current sample across one year was $r = .68$, $p < .001$.

Health status was assessed by the total number of illnesses reported on a questionnaire (based on Wyler, Masuda, & Holmes, 1967: see Appendix G) that listed a wide variety of common health conditions. Higher scores represent a greater number of illnesses. In prior research with older adults this measure of health predicted non-verbal cognitive functioning and correlated negatively with neuroticism adjustment (Gold et al., 1995). Test-re-test reliability in the current sample across one year was $r = .69$, $p < .01$.

Procedure

Individuals interested in participating in the advertised retirement study contacted the researchers by telephone or email. Those who met inclusion criteria were given the choice of participating in either French or English, and then scheduled to come for testing at Concordia University in groups of up to six people. Upon completion of a battery of self-report questionnaires and cognitive tests that took approximately three hours, participants received a cheque for $50. After completing the first year's (T1) materials, participants were invited to return at approximately one-year intervals for the next two years (T2 and T3).

Results

Preliminary analyses.

Several of the predictor variables (financial status; number of illnesses;

transcendence values) and both outcome variables (positive affect and negative affect)

failed to meet strict criteria for normality of distribution. For these variables, appropriate

transformations were made to normalize the variables and models were re-tested with the

transformed data. The results based on the transformed data mirrored those based on the

raw data in both pattern of associations and variance accounted for. The results below

therefore represent analyses conducted on raw data. Descriptive statistics and a

correlation matrix for all study variables, using raw data, are reported in Table 1.

Structural Equation Modeling

Statistical analyses were performed using structural equation modeling (SEM) in

M-Plus (Muthén & Muthén, 2006). SEM analyses allowed us to examine the data in two

different ways. The first approach involved creating three separate SEM models in order

to examine significant paths between predictors and outcomes at each of three annual

assessments. This approach demonstrates whether the same pattern of associations

emerges at each assessment. The second and more sophisticated approach involved

creating one integrated longitudinal model incorporating all three assessments. This

integrated model indicates which predictors have an increasing impact on affective

outcomes above and beyond prior associations, essentially covarying out T1 associations

at T2 and, and covarying out both T1 and T2 associations at T3. Significant paths at T2 in

the integrated longitudinal model, then, indicate increased effects beyond T1; significant

paths at T3 indicate increased effects beyond T1 and T2. Non-significant paths at T2 and

T3, on the other hand, indicate the absence of increased association (i.e., the stability of associations) rather than no association at all. Taken together, these two approaches (separate and integrated models) provide a portrait of the stability of associations as well as an indication of the variables that have increasing effects on positive and negative emotions as time goes on.

The dependent variables used were positive and negative affect and the predictors included gender, finances, illnesses, enhancement, transcendence, openness to change, conservation, the finance-by-enhancement interaction and the finance-by-openness to change interaction.

The first step of the SEM analyses involved the creation of three separate models examining the pattern of associations at T1, T2 and T3 for both affective outcomes. The results of these models are described next and are represented visually in Figure 1. Below we report the standardized coefficients for each path in each model but in order to simplify the visual presentation, the coefficients do not appear in Figure 1.

We tested two alternate models on T1 data to ensure that the reported models represented the best fit to the data. The first of these tested the possibility that positive and negative affect, rather than emotional consequences of values, are emotional tendencies that lead to values. The second alternative model used a mediational approach to test whether the effects of the gender, health and finance on positive and negative affect occurred through values. Each of these alternative models was rejected separately on the basis that they had significant chi-square values of model fit ($p < .01$), low fit indices (CFI < .90) and high residuals (RMSEA > .06). Comparisons of each alternative model to the original revealed that they were of significantly worse fit to the data (Delta-

Chi-Square (4) = 25.99, $p < .05$ and Delta-Chi-Square (31) = 464.12, $p < .05$). The fit indices of the alternate models were unacceptable regardless of any post-hoc attempts to change paths to improve model fit. The original model with values and demographic variables predicting affective outcomes was therefore retained for all subsequent analyses.

Time 1. In terms of the demographic variables at T1, female gender (coded as men = 1, women = 2) ($\beta = .13$, $z_{(371)} = 2.73$, $p < .05$), better finances ($\beta = .17$, $z_{(371)} = 3.81$, $p < .05$), and fewer illness ($\beta = -.09$, $z_{(371, 1\text{-tailed})} = 1.87$, $p < .05$) were associated with higher positive affect. Consistent with the hypotheses for values, transcendence ($\beta = .14$, $z_{(371)} = 2.70$, $p < .05$), openness to change ($\beta = .35$, $z_{(371)} = 6.78$, $p < .05$), and conservation values ($\beta = .11$, $z_{(371)} = 2.24$, $p < .05$) were all associated with higher positive affect. Enhancement values showed no association with positive affect ($\beta = -.02$, $z_{(371)} = -.30$, $p > .05$). Also as hypothesized, the finance-by-enhancement interaction ($\beta = .10$, $z_{(371)} = 2.28$, $p < .05$) and the finance-by-openness to change interaction ($\beta = -.15$, $z_{(371)} = -3.33$, $p < .05$) uniquely contributed to the variance in positive affect. These interactions are illustrated in Figures 2 and 3 respectively, with low and high categories of each variable representing - 1 *SD* and + 1 *SD*.

Follow-up tests were conducted to analyze the significance of the slopes in each interaction. In the finance-by-enhancement interaction at T1, positive affect did not vary with financial status for those low in enhancement ($\beta = .14$, $p > .05$). However, for those high in enhancement, positive affect did vary according to financial status, such that those with lower financial status reported lower levels of positive affect ($\beta = .22$, $p < $

.05). In other words, enhancement values moderated the association between financial status and positive affect.

In the finance-by-openness to change interaction at T1, positive affect did not vary with financial status for those high in openness to change ($\beta = .03, p > .05$). However, for those low in openness to change, low financial status was associated with lower levels of positive affect ($\beta = .28, p < .05$). In other words, openness to change values moderated the association between financial status and positive affect.

In terms of negative affect at T1, female gender ($\beta = .10, z_{(371)} = 2.00, p < .05$) poorer finances ($\beta = -.13, z_{(371)} = 2.69, p < .05$), and a greater number of illnesses ($\beta = .25, z_{(371)} = 5.10, p < .05$) significantly predicted negative affect scores. Consistent with hypotheses for values, higher enhancement values ($\beta = .19, z_{(371)} = 3.52, p < .05$) and lower openness to change values ($\beta = -.19, z_{(371)} = 3.54, p < .05$) were also associated with increased negative affect.

The total set of predictor variables at T1 accounted for 29.50% of the variability in positive affect and 14.80% of the variability in negative affect. Fit indices suggested an excellent fit of the model to the data ($\chi^2_{(4)} = 1.74, p > .05$, CFI = 1.0, RMSEA = .00).

Time 2. The overall pattern of association between the demographic variables, values, interactions and well-being outcomes remained relatively stable from T1 to T2, although some associations that were present at T1 disappeared at T2 (Figure 1). Female gender continued to be associated with higher positive affect ($\beta = .09, z_{(371)} = 1.96, p < .05$), but was no longer associated with negative affect ($\beta = .06, z_{(371)} = 1.26, p < .05$). Finances continued to predict negative affect ($\beta = -.10, z_{(371, 1\text{-tailed})} = -1.89, p < .05$), but no longer predicted positive affect ($\beta = .06, z_{(371)} = 1.28, p > .05$). Number of illnesses

continued to predict both positive affect (β = -.16, $z_{(371)}$ = -3.32, p < .05) and negative affect (β = .25, $z_{(371)}$ = 5.15 , p < .05). Values continued to be associated in the hypothesized directions, with transcendence (β = .16, $z_{(371)}$ = 3.35, p < .05), openness to change (β = .29, $z_{(371)}$ = 5.20, p < .05), and conservation values (β = .10, $z_{(371, \text{1-tailed})}$ = 1.82, p < .05) all predicting positive affect, and with enhancement (β = .24, $z_{(371)}$ = 4.61, p < .05) and openness to change values (β = -.15, $z_{(371)}$ = -2.75, p < .05) predicting negative affect. Neither of the interactions observed at T1, however, were significant predictors at T2. The total set of predictor variables at T2 accounted for 21.3% of the variability in positive affect and 13.8% of the variability in negative affect. Fit indices suggested an excellent fit of the model to the data ($\chi^2_{(4)}$ = 6.64, p > .05, CFI = .98, RMSEA = .04).

Time 3. Again, the overall pattern of associations remained relatively stable from T2 to T3, although one significant association from T2 disappeared while others that had disappeared at T2 emerged again (Figure 1). Similar to T2, female gender predicted positive affect (β = .13, $z_{(371)}$ = 3.02, p < .05) but not negative affect (β = .04, $z_{(371)}$ = .77, p > .05); and number of illnesses predicted both positive affect (β = -.20, $z_{(371)}$ = -4.62, p < .05) and negative affect (β = .25, $z_{(371)}$ = 5.04, p < .05). Values showed the same pattern of associations, with transcendence (β = .17, $z_{(371)}$ = 3.19, p < .05), openness to change (β = .40, $z_{(371)}$ = 7.53, p < .05), and conservation values (β = .10, $z_{(371)}$ = 2.10, p < .05) all predicting positive affect, while enhancement (β = .18, $z_{(371)}$ = 3.25, p < .05) and openness to change values (β = -.14, $z_{(371)}$ = -2.53 , p < .05) predicted negative affect. Finances, which were predictive of both positive and negative affect at T1 but only negative affect at T2, were associated at T3 with only positive affect (β = .11, $z_{(371)}$ = 2.52, p < .05). Finally, although the interactions between values and finances from T1

had not emerged at T2, the finance-by-enhancement interaction returned at T3 for positive affect ($\beta = .12$, $z_{(371)} = 2.47$, $p < .05$. The total set of predictor variables at T3 accounted for 33.5% of the variability in positive affect and 10.3% of the variability in negative affect. Fit indices suggested an excellent fit of the model to the data ($\chi^2_{(4)} = 5.50$, $p > .05$, CFI = .99, RMSEA = .03).

Integrated longitudinal model. Following the three separate SEM models, a single longitudinal model was created to examine the associations at each time point while controlling for prior levels of each variable as well as prior associations among predictors and outcome variables. This strategy allowed for an examination of whether predictor and outcome variables were associated above and beyond associations observed in the previous year(s). Below we report the standardized coefficients for the integrated longitudinal model but in order to simplify the visual presentation, the coefficients do not appear in Figure 4.

Every variable was predicted based on the data from the previous time point (e.g., T2 positive affect predicted by T1 positive affect). The effect of gender was modeled only at T1. Finally, covariances between the predictors were also added to the model to account for shared method variance, though only in cases of theoretically sound associations within the same time points (e.g.: T2 enhancement with T2 transcendence). The integrated longitudinal model fit the data reasonably well ($\chi^2_{(352)} = 826.65$, $p < .05$, CFI = .90, RMSEA = .06). The T1 results were exactly the same as those reported for the T1 separate model as no prior levels are accounted for (see Figure 1).

Integrated model at T2. At T2, two values and one contextual variable were associated with affective outcomes above and beyond T1 levels and associations,

indicating that their effects on well-being became stronger over time. In the integrated longitudinal model, T2 positive affect was significantly predicted by T2 transcendence values ($\beta = .15$, $z_{(371)} = 3.34$, $p < .05$); T2 negative affect was predicted by T2 enhancement values ($\beta = .19$, $z_{(371)} = 3.91$, $p < .05$); and number of illnesses predicted both positive affect ($\beta = -.07$, $z_{(371, \text{1-tailed})} = 1.72$, $p < .05$) and negative affect ($\beta = .19$, $z_{(371)} = 3.41$, $p < .05$). In other words, higher transcendence values and fewer illnesses continued to predict positive affect while higher enhancement values and more numerous illnesses continued to predict negative affect above and beyond the levels of variables and the pattern of associations at T1. Taking into account all prior T1 levels and associations as well as these increased effects, 49% of variance in positive affect and 24.8% of negative affect were accounted for at T2.

Integrated model at T3. Finally, at T3 one value and one context variable contributed to affective outcomes above and beyond variable levels and associations at T1 and T2. First, positive affect at T3 was significantly predicted by higher openness to change values ($\beta = .26$, $z_{(371)} = 6.05$, $p < .05$). Second, having more illnesses predicted lower positive affect ($\beta = -.12$, $z_{(371)} = 3.28$, $p < .05$) and higher negative affect ($\beta = .13$, $z_{(371)} = 2.87$, $p < .05$). In other words, openness to change continued to predict positive affect while number of illnesses continued to predict both positive and negative affect even after controlling for all variable levels and associations at T2 and T1. All in all, 56.9% of the variability in T3 positive affect and 34.90% of the variability in T3 negative affect was accounted for. It is worth noting that positive affect and negative affect were significantly negatively correlated at T1 ($r = -.18$, $z = 3.51$, $p < .05$) and T2 ($r = -.20$, $z = 4.08$, $p < .05$) but not at T3 ($r = -.06$, $z = 1.05$, $p > .05$).

Discussion

This study contributes to the literature on subjective well-being and retirement by being the first to examine the links between values as measured by the Portrait Value Questionnaire (Schwartz et al, 2001) and affective well-being (positive and negative affect) among retirees. We also considered the interaction of values with financial and health status as well as the stability of the links between values and well-being across three years of retirement.

Direct effects and interactions

We hypothesized that values would show direct links with the affective well-being of retirees, even when important demographic predictors (gender, health, and financial status) were controlled for. Demographic variables played a significant role in affective outcomes, such that higher levels of both positive and negative affect were reported by women, and better financial and health status were significantly associated with higher levels of positive affect and lower levels of negative affect. These results, including the fact that women reported more of both positive and negative emotions compared to men, are consistent with previous findings (Diener et al., 1999). It is not clear whether this gender difference represents actual differences in the intensity of emotional life between men and women or differences in the style of self-report of emotional experience. In either case, these results support gender role stereotypes in which men tend to present themselves as experiencing a more restricted range of emotion than women (Diener et al., 1999).

Regarding the emotional impact of financial status, our results offer further support for the importance of subjective perception of financial status for affective well-

being. Although objective income tends to be related to well-being only at the lowest levels of revenue (e.g., Diener & Oishi, 2000; Diener & Seligman, 2004), subjective indicators of financial matters, such as the perception of adequacy of financial resources, are more robust and relevant predictors of well-being (Diener & Seligman, 2004; Sing-Manoux, Adler, & Marmot, 2003).

Regarding the emotional impact of illness, self-reported health has tended to be strongly correlated with subjective well-being (e.g., Diener et al, 1999; Piazza, Charles, & Almeida, 2007). Consistent with previous findings, our results indicate that having fewer illnesses is an important ingredient in affective well-being, contributing to both higher positive affect and lower negative affect among retirees.

Beyond these contextual variables, the results also indicated that certain value orientations appear to be beneficial for retirees' affective well-being while others may be detrimental. Higher openness to change values enhanced positive emotions and protected against negative emotions among retirees in our sample, while higher transcendence and conservation values predicted more positive emotions. This pattern differs from previous findings with younger and working adults (Sagiv & Schwartz, 2000) for whom affective well-being was associated with lower conservation values, and for whom transcendence values were not linked with positive emotions. These differing links between values and affective well-being might be partially explained by Sagiv and Schwartz's use of ipsative value scoring indicating the *relative* importance of values compared to the use of raw value means indicating the *absolute* importance of values in the current study. The differential patterns in these two studies may also, however, support the idea that the emotional benefits of particular value orientations depend on position in the lifespan. An

emphasis on conformity to social norms, upholding tradition and customs, and maintaining security of the individual person and of society (conservation values), while potentially detrimental for younger adults, appears beneficial for retired adults. Similarly, while focusing on ends larger than the individual and being concerned for the welfare of others and of the natural world (transcendence values) had no impact on emotions among younger adults (Sagiv & Schwartz, 2000), this value orientation has emotional benefits for retired adults, consistent with generativity theory (e.g., McAdams et al., 1993). The findings also support the emotional benefits of prioritizing of present-oriented and emotionally-meaningful goals in the context of limited future time as proposed by socio-emotional selectivity theory (Carstensen et al., 1999).

The pattern of links between values and well-being is also consistent with self-determination theory (Deci & Ryan, 2000), which posits that higher well-being should be associated with motivational content that supports basic psychological needs for competence, relatedness, and autonomy. The pursuit of these basic needs is generally reflected in the values that were associated with enhanced well-being (openness to change, transcendence, and conservation). The only value to have negative effects on well-being, enhancement, has an emphasis on status, power, and seeking the admiration of others and is largely consistent with the extrinsic aspirations proposed by self-determination theory to interfere with basic need satisfaction (Deci & Ryan, 2000). Our findings, in conjunction with a growing body of research on intrinsic and extrinsic goals (see review by Kasser, 2004), do seem to support the notion that prioritizing intrinsic value orientations (pursuing self-acceptance, affiliation with others, and

contribution to the community) has emotional benefits, whereas prioritizing extrinsic values (pursuing contingent approval or external signs of worth) has emotional costs.

Finally, the pattern of links between values and affective outcomes can be seen as reflecting the importance of an outward focus (e.g., transcendence values) for older adults' experience of positive affect as well as the negative effects of inward focus (e.g., enhancement values) in terms of increased negative affect (Kunzmann, 2008). An outward orientation (i.e., successfully engaging in the environment) has been shown to primarily predict positive affect among older adults, whereas an inward orientation (i.e., constant self-evaluation) primarily predicts negative affect among older adults (Kunzmann, 2008).

Beyond direct links with well-being, we also hypothesized that values would serve as either protective or risk factors in the context of lower health or financial status. Of note, there were no health-by-value interactions for either positive or negative affect, suggesting that values do not influence emotional well-being in the context of physical illness. In addition, no finance-by-value interactions emerged for negative affect, suggesting that in the context of financial difficulties, values do not protect individuals from negative emotions.

Values, on the other hand, did moderate the association between financial status and positive affect. The finance-by-enhancement interaction indicated that those higher in enhancement values who were in a poor financial situation experienced fewer positive emotions compared to those with better finances. High enhancement values, then, not only predict negative emotions directly among retirees, but also contribute to reduced positive emotions for retirees when financial resources are low. We interpret the negative

effects of enhancement values on well-being not as an indication that these values are ethically wrong, but rather as representing the difficulty of expressing enhancement values in activities in the context of retirement. Given that being able to express important values in behavior is a key ingredient in subjective well-being (Oishi et al., 1999), prioritizing enhancement in a post-employment stage of life may put retirees at risk for a reduced quality of emotional life. That is not to say that it is impossible to value enhancement and be happy. If enhancement-oriented retirees can find activities that support their drive for status and recognition, for example by getting involved in leadership of organizations, they are likely to be happier. The issue, however, is one of limited availability of such opportunities outside the hierarchies and rewards of the workplace.

The other way that values interacted with finances was through openness to change. Those higher in openness to change values tended to experience the same frequency of positive emotions regardless of their financial status. In contrast, those lower in openness to change values *and* who were in a poor financial situation tended to experience reduced levels of positive emotions. High openness to change values, then, not only directly predicted more positive and fewer negative emotions among retirees, but also contributed to higher levels of positive emotion when financial resources were low. Again we do not interpret the positive effects of openness to change on well-being as an indication that these values are ethically superior. Rather, our results indicate the goodness of fit between retirement, with its lack of structural constraints and greater opportunities for self-determination, and the constellation of motivations represented by the openness to change orientation.

Patterns of association across time.

The strength of the current study stems partly from the longitudinal design with measurements every year over three years but also from the statistical approach to data analysis. The longitudinal SEM model allows for the examination of associations between the variables while controlling for all of the links at previous time points. The primary advantage of this method of data analysis is the ability to examine change in patterns of association over time, rather than simply change in individual variables. This method provides an alternative to more traditional approaches to the analysis of change by creating a portrait of the evolving pattern of associations among a set of variables.

The initial separate SEM analyses across the three waves of data (see Figure 1) suggested that the pattern of associations among health, finances, values, and emotional well-being was generally consistent across three years, albeit with some temporal variations. Given that the same participants were included at each time point, these inconsistencies do not reflect attrition in participants. It appears that a process of adaptation to the circumstances of retirement over time occurs, especially in the domain of finances. The role of finances in affective well-being changed slightly from year to year, showing associations with both positive and negative affect at T1, then only one or the other in subsequent years (see Figure 1). This may reflect an evolving relationship with money (i.e., adaptation to generally reduced and fixed income) in a new stage of life. Similarly, the interactions of finances with values were inconsistent, perhaps also reflecting an evolving financial philosophy. Beyond these inconsistencies across three years, however, when all prior levels and associations among variables were taken into account in an integrated longitudinal model (see Figure 4), the effects of finances on

well-being did not change beyond T1 levels. This suggests that retirees in some way adjust to or cope with the effects of lower finances on well-being, as these effects do not increase over time. Finances are, therefore, a significant but constant predictor of well-being in retirement. This is in contrast to health and values, which showed increasing effects across three years. Having fewer illnesses was a significant and increasingly important ingredient in well-being across three years, as were lower enhancement and higher transcendence values (at T2) and higher openness to change values (at T3).

A speculative explanation for these increased effects is that values and health status manifest in patterns of activity and social engagement that may have accumulating benefits or deficits. For example, being concerned with helping others may result in reciprocated help that returns to the individual over time; placing high importance on status and wealth may lead to goal frustration, an effect that compounds over time; being creative and interested in seeking new experiences and pleasure may aid in establishing healthy activity patterns in retirement that promote positive experiences and prevent negative ones; and finally, having illnesses may result in activity restriction and social disengagement, the negative effects of which may multiply as years go by. In this way, the determinants of well-being described above may have evolving and cumulative effects as retiring adults adjust to the circumstances of retirement.

The total pattern of results raises some questions about the independence of positive and negative affect scales of the PANAS. Prior research has demonstrated that positive and negative affect are relatively independent affective dimensions and are generally related to different predictors (Schimmack, 2008). Our results indicate, however, that several factors (gender, finances, illness, and openness to change values)

predict both positive and negative affect. What does this say about the independence of these affective constructs? While it is true that they share some predictors in this study, (particularly at T1) there's more evidence to suggest that the two constructs could and should be seen as separate. First, although illness has typically been associated with both affective dimensions, strength of association is usually much stronger for negative affect (Schimmack, 2008), as is the case here. Like illness, openness to change values clearly show stronger links to one affective dimension than the other (in this case, to positive affect), also supporting the relative causal independence of the two affective dimensions. Only financial status and gender have approximately equal degree of association with both positive and negative affect.

In addition, the models have been constructed with the affective variables as separate and this approach resulted in a good fit with the data. Although not strictly orthogonal (i.e., $r = 0$), positive and negative affect were only moderately correlated at T1 and T2 (r's < -.20), and not significantly at T3, representing at most 4% of shared variance. Weak to moderate negative association between the affective dimensions is also consistent with prior research (Schimmack, 2008). Finally, evidence that the constructs should be seen as independent is seen in the different amounts of variability that was explained in each at T3, with 57% accounted for in positive affect and only 35% in negative affect by the total set of predictors in the integrated longitudinal model (see Figure 4).

What are the implications of our findings for those in or near retirement? Clearly, adequate finances and good health are an important foundation for emotional well-being in retirement. These are factors, however, that are difficult to modify for those already in

or approaching the retirement stage, as financial and health status in retirement depend to a large extent on patterns of living established over several decades prior to retirement. From a psychological perspective, the message for retirees is more interesting: personal values matter in terms of happiness, and may help to maintain well-being even in difficult situations involving less than satisfactory finances. Although value systems are thought to be relatively stable in the short term, major life transitions like retirement may be facilitated by an adjustment of values to match new opportunities and constraints. Eliciting and evaluating values as workers approach retirement and asking to what extent one's values will be consistent with the opportunities and resources available in retirement should be an important part of retirement planning from a psychological perspective.

Limitations and future directions

While this study is novel and timely in its relevance to our aging workforce, there are inevitable limitations in the methodology and sample that impact how the results of this study should be interpreted and to what extent they are generalizable. First, this data was collected between 2005 and 2007 just before the 2008 onset of a global economic crisis, and therefore does not represent the unstable financial climate that future retirees are facing. Second, despite the longitudinal design of this study, the results are nonetheless correlational in nature. It is plausible, therefore, that values do not play a causal role in well-being, as we have inferred, but are themselves the consequences of longstanding personality traits. To take this possibility into account, however, we tested alternative SEM models. In support of values as determinants of emotional outcomes, the model with values predicting affective outcomes was the best fit to the data. Third, there

was no comparison sample of non-retirees, so it is impossible to know whether the observed pattern of associations is unique to the context of retirement or more broadly applicable to older adults in general. Future retirement research would benefit from such comparison samples. Finally, participants in this study represent a sample of those interested and healthy enough to participate. While this sample does represent a wide range of occupations and income levels as well as both genders and two linguistic cultures, results are not necessarily generalizable to retired populations with more severe financial and health limitations.

Our use of the PANAS as a measure of affective well-being also comes with certain limitations. Despite the fact that the PANAS is a widely used and psychometrically sound instrument for measuring positive and negative affect, it nonetheless has certain disadvantages such as (a) a focus on only high-activation or high-arousal emotions; and (b) and the self-report nature of the scale (Pavot, 2008). Regarding the former, it is important to note that some low-arousal affective states (e.g., calm; worried), are not captured by the PANAS. Regarding the latter, self-reports of well-being come with the potential influence of contextual factors, biases, and response styles. Much research, however, has demonstrated that the influence of such confounding factors is limited and that self-report measures such as the PANAS are generally reliable and valid (Pavot, 2008). Finally, there is some debate as to the best way to conceptualize and measure affect as a component of subjective well-being. For example, there is evidence to suggest that it is the frequency rather than intensity of emotional experiences that determines happiness (Diener, Sandvik, & Pavot, 1991). The PANAS, with its instructions to rate the *extent* to which certain emotions were experienced, could be

interpreted as capturing either or both frequency and intensity. Due to this ambiguity we are unable to contribute to this debate. In addition, other researchers have found that it is more important to consider the *ratio* of positive affect to negative affect over time than absolute levels of either one (Larsen & Prizmic, 2008). Although this is not the approach that we have taken, this may be an important consideration and a useful alternative approach to analyzing PANAS data.

Future research into well-being in retirement would benefit from examining new samples of retirees that are facing the evolving economic realities of a global financial crisis. Retirement, especially in the future, is likely to be qualitatively different than it has been in the past due to multiple social and economic factors, including the recent drastic downturn in the global economy coupled with the increasing proportion of the population that is retired to that which is working.

Regarding the study of values in retirement, the mechanism through which values enhance or diminish affective well-being remains unknown. We found support for the self-determination theory (Deci & Ryan, 2000) in that specific intrinsically-oriented value content promotes well-being, whereas extrinsically-oriented values diminish well-being. We were not able to assess, however, whether value-activity congruence (as in Oishi et al., 1999) was more important for happiness than value content. Further research will be necessary to delineate the specific pathways from values to emotions.

ID# Child's name Mom's name Dad's name	Date Called	Comments Agreed, Refus specify
117102 Karl Boivert Sylvie Lemieux **Alain Boisvert**		
131212 Sabrina Loyer Chantal Savard **Stephane Loyer**		
131221 **Frederique Hurtubise** **Nathalie Dufresne** Andre Hurtubise		
154118 Valérie Séguin **Linda Laforce** Alain Séguin		
154205 **Tanya Tremblay** **Sylvie Faherty** Yvon Tremblay		
217111 Kelsy Duarte-Rebelo **Rosa-Maria Duarte** Jose Rebelo		
227302 Vicky Richard-Amesse Silvie Ricard **Claude Amesse**		
227304 **Marc-Andre Bellemare** Brigitte Duhamel (!) **Jocelyn Bellemare**		
227421 Caroline Lalumière-Lafrenière Francine Lalumière **Mario Lafrenière**		

231210 **Claudy Simard** **Claude Croteau** **Martin Simard**		
231217 Melissa Lagace-Herchel **Nadine Lagace** Benoit Herchel		
234106 Laurence Levesque France Hamel **Daniel Levesque**		
241213 Vincent Diaz Bolduc **Danielle Bolduc** Rony Diaz		
241224 Eric Fernandez-Yergeau **Chantal Yergeau**		
337618 Catherine Trudeau **Carole Gareau** François Trudeau		
347329 Joanel Demers **Céline Pilon** Sylvain Demers		
411413 Samuel Duchesneau **Isabelle Boutin** Benoit Audet		
441214 Kathy Levasseur **Martine Boucher** Yvon Levasseur		
454204 **Cederic Drapeau** Manon Bourque **Eric Drapeau**		

474105 Éric Dupont Chantal Dulude **Alain Dupont**		
474522 Guillaume Fournier **Martine Paul** Jacques Fournier (deceased)		
487323 Simon Dufresne-Couture **Martine Dufresne** Robert Couture		
487421 Jason Mantha **Sylvie Mantha** Mario Trépanier		
497111 Amélya Laperrière Sylvie Gendreau **Pierre Laperrière**		
524117 Laurie Delorme **Brigitte Hebert** Alain Gauthier		
537109 Jean-Sébastien Lépine Ghislaine Richer **Robert Lépine**		
537318 Félix Dubois **Anne Allaire** Christian Dubois		
537426 Sabrina Goulet **Céline Lafontaine** Eric Goulet		
567118 Ian Langevin **Louise Lekakis** Richard Deschênes		

567410 Joelle Trudeau Isabelle Payer **Stéphane Trudeau**		
567422 Audrey Fauteux **Diane Filion** Guy Fauteux		
567424 David Decarie **Diane Goulet** Daniel Decarie		
567808 Alexandre Reis Marie-Josée Drouin **Mario Reis**		
644206 Martin Dubeau Manon Rochon **Sylvain Dubeau**		
737117 Gabriel Vinet Chantal Delisle **Dominique Vinet**		
737211 Mélanie Martineau Nathalie Marien **Pierre Martineau**		
737419 Jessica Lahaie **Chantal Deziel** Guy Lahaie		
737429 Jessica Minten **Linda St-Onge** Guido Minten		

Table 1. *Correlations and descriptive statistics for all variables.*

Time 1	01.	02.	03.	04.	05.	06.	07.	08.	09.
01. Gender	-								
02. Positive Affect	.15*	-							
03. Negative Affect	.16*	-.20*	-						
04. Financial situation	-.21*	.18*	-.19*	-					
05. Number of Illnesses	.22*	-.08	.29*	-.15*	-				
06. Enhancement	.00	.19*	.10*	.15*	.03	-			
07. Transcendence	.17*	.29*	.05	-.12*	.07	.04	-		
08. Openness to Change	.14*	.43*	-.09	.13*	.01	.42*	.28*	-	
09. Conservation	.01	.15*	.08	-.02	.01	.20*	.40*	-.03	-
Means	1.53	37.65	15.33	4.81	4.27	3.04	4.78	4.43	3.94
Standard Deviations	.50	6.75	5.75	1.27	2.90	.94	.65	.72	.73

Time 2	01.	02.	03.	04.	05.	06.	07.	08.	09.
01. Gender	-								
02. Positive Affect	.13*	-							
03. Negative Affect	.10	-.22*	-						
04. Financial situation	-.18*	.09	-.14*	-					
05. Number of Illnesses	.17*	-.13*	.28*	-.21*	-				
06. Enhancement	-.02	.14*	.18*	.14*	.05	-			
07. Transcendence	.19*	.31*	-.02	-.11*	.08	-.01	-		
08. Openness to Change	.12*	.35*	-.04	.11*	.07	.40*	.31*	-	
09. Conservation	.03	.15*	.12*	.02	-.05	.19*	.35*	-.03	-
Means	1.53	37.63	15.83	4.78	3.79	3.06	4.76	4.39	3.94
Standard Deviations	.50	6.35	5.65	1.32	3.44	.94	.65	.70	.73

Time 3	01.	02.	03.	04.	05.	06.	07.	08.	09.
01. Gender	-								
02. Positive Affect	.15*	-							
03. Negative Affect	.06	-.15*	-						
04. Financial situation	-.19*	.17*	-.12*	-					
05. Number of Illnesses	.13*	-.19*	.27*	-.22*	-				
06. Enhancement	-.04	.19*	.11*	.12*	.02	-			
07. Transcendence	.17*	.34*	-.08	-.08	.09	.06	-		
08. Openness to Change	.08	.45*	-.05	.11*	.04	.48*	.34*	-	
09. Conservation	.00	.15*	.05	.01	-.01	.22*	.36*	-.01	-
Means	1.53	37.45	16.23	4.90	4.39	2.99	4.69	4.27	3.87
Standard Deviations	.50	6.30	5.69	1.24	4.06	.91	.67	.75	.74

* $p < .05$

Instructions for Mailing list

❖ **Date of Contact**: Write LAST date of contact, which is the date that you spoke with mom and agreed to the study

❖ **Mailed**: Leave blank. When I mail the package I will fill that spot in

❖ **Address**: Self-explanatory

❖ **Boxes of Consent**: Consent for me > SSHRC 4 testing (i.e. Questionnaires, visits)

        Consent for B4 > Medical consent (i.e. l'assurance maladies)

❖ **Envelope**: *Small envelope* > mom agrees to Consent form (s) (i.e. to visits only, no questions for her of child)

    Big envelope > mom agrees to questionnaires AND/OR Report cards

    *If she agrees to everything then check *BOTH* boxes*

❖ **Letter**: Circle everything they agreed to
1. MOM Questionnaire
2. Child Questionnaire
3. Teacher Pack
4. Cortisol Grid
5. Report Card
   - **RC** : Indicate which reports I should be recieving
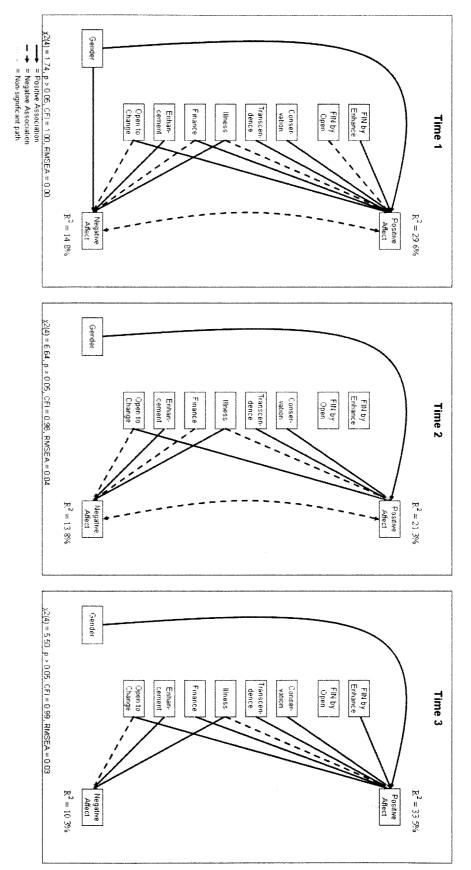
Fig. 1 Details of separate SEM models for predictors of positive and negative affect at T1, T2, and T3

Bonjour _____,

Mon nom est _____ et j'appelle de Concordia pour l'étude « L'individu dans son milieu ». Ca va bien?

Je vous appelle aujourd'hui pour vous poser quelques questions. Ca va prendre un dizaine de minutes. Est-ce que vous avez le temps de me parler maintenant? Parfait.

Tout d'abord, j'aimerais vous poser quelques questions juste pour m'assurer de l'information qu'on a à votre sujet. (Remplir le formulaire)

La deuxieme raison de mon appel c'est que ca serait maintenant le temps de revoir nom de l'enfant dans le cadre de notre étude. Alors pour ce volet-ci, Nadine irait faire 2 visites à l'ecole de nom de l'enfant qui durent entre 1h30 puis 2hrs chacune.

Ensuite, on vous enverrait 2 séries de questionnaire que vous allez devoir remplir. La même chose pour nom de l'enfant. Et puis finalement si vous acceptiez on enverrait un petit questionnaire à son professeur.

Alors, vous allez être récompensé pour votre temps.
Vous recevrez un chèque de 35,00$ pour chaque série de questionnaires complétée, pour un montant total de 70,00$.

Votre garcon/fille lui/elle va recevoir un chèque de 15,00 $ pour chaque série de questionnaires complétée, puis pour chaque rencontre qui va se faire à l'école, alors pour lui/elle ca sera un montant total de 60,00$.

Est-ce que vous avez des questions? Est-ce que vous accepteriez de participer a ce volet-ci ?

Parfait alors je vais vous faire parvenir 2 formulaires de consentement. Un va être pour la participation a l'étude et puis l'autre est a pour but de nous donner accès à des informations qui ont été collectés par le régime d'assurance maladie entre Janvier 2004 puis Décembre 2006. Ces informations-la vont nous servir à mesurer la fréquence de certaines maladies, comme l'asthme et les problèmes pulmonaires, puis on va essayer de les associer à différents facteurs, comme le stress par exemple.

Aussi, si c'est possible d'avoir les bulletins check list of RC needed de nom de l'enfant.

Je veux tout de suite vous assurer que les informations qui vont nous être transmis sont totalement confidentielles. A aucun moment votre nom ou celui d'un des membres de votre familles est associes avec cette information. On fonctionne avec des numéros.

Alors je vais vous faire parvenir les formulaires avec une enveloppe-retour que je vais vous demander de remplir et de me retourner par la poste le plus tôt possible. Puis une fois que je les aurai reçu je vais entrer en contact avec le directeur ou la directrice de nom de l'enfant pour céduler les rencontre avec Nadine, puis une fois que ca sera fait je vais vous envoyer une lettre de confirmation pour vous dire quand vont être les RDV. *** ask for address***

(KSAD) Aussi, Nadine va vous contacter juste avant les rencontres pour vous poser quelques questions au téléphone.

Ca vous va?
Alors merci beaucoup pour votre participation, ca nous aide énormément dans nos recherches.
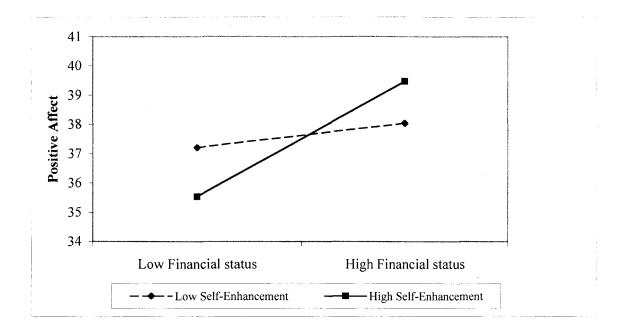
Fig. 2 Interaction of financial status with enhancement values for positive affect at T1.

Slope for high self-enhancement: $\beta = .32$, $p < .01$; slope for low self-enhancement: $\beta = .03$, $p = .60$
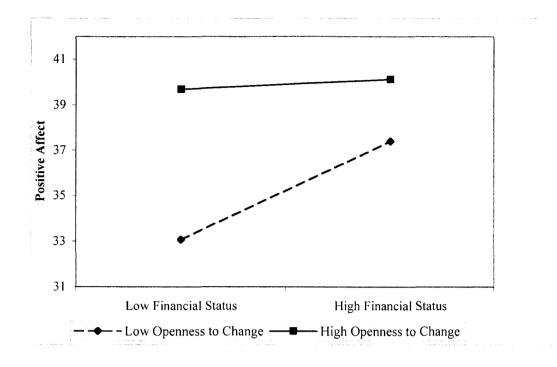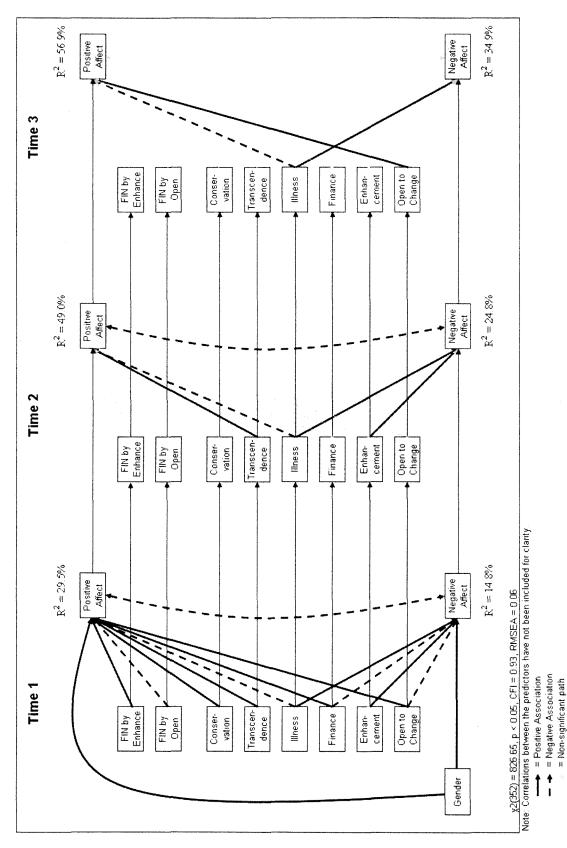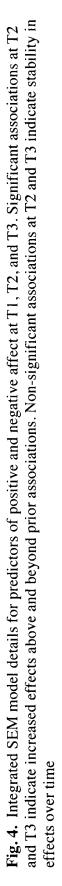
Fig. 3 Interaction of financial status with openness to change values for positive affect at

T1. Slope for low openness to change: $\beta = .29$, $p < .01$; slope for high openness to

change: $\beta = .06$, $p = .36$

Fig. 4. Integrated SEM model details for predictors of positive and negative affect at T1, T2, and T3. Significant associations at T2 and T3 indicate increased effects above and beyond prior associations. Non-significant associations at T2 and T3 indicate stability in effects over time

Connecting Text: From Study 2 to Study 3

The second study of this dissertation investigated the link between values, financial status, health status, and affective well-being among retirees. Although there was a longitudinal component to the data analysis, this involved examining change in the pattern of associations among a set of variables over time, as opposed to change in specific values across retirement. The third study in this dissertation addresses the question of whether and how values might change or be adapted to meet the new situational opportunities and constraints of retirement. In addition to the question of longitudinal change as measured by three annual administrations of the PVQ, the third study addresses subjective self-perceptions of change in values. By giving participants the opportunity to answer direct questions about how they saw their values as changing (upon their third annual testing session), we were able to assess subjective value change as potentially distinct from "objective" longitudinal measures of change. Given the potential discrepancy between perceived and actual change, hypotheses were developed to reflect the potentially adaptive nature of perceived improvement in the self over time (self-enhancing memory bias) in terms of well-being outcomes. The third and final study of this dissertation is presented next.

Study 3

Longitudinal and perceived change in values in retirement: Causes and consequences of

positive illusions of personal growth

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Longitudinal and perceived change in values in retirement: Causes and

consequences of positive illusions of growth

There is abundant evidence for self-enhancing biases, misconceptions, and

illusions at play when people evaluate themselves (Dunning, 2006; Dunning, Heath, &

Suls, 2004). Such biases and illusions are present not only in flawed assessments of

ability (Dunning, et al., 2004) but also in the way that people think of themselves as

having changed over time (e.g., Ross & Buehler, 1994; Ross & Conway, 1986). There is

debate, however, as to the consequences of unrealistically positive self-evaluations (i.e.,

positive illusions: Taylor & Brown, 1988). Some studies have found that positive

illusions are associated with better psychological adjustment (Taylor & Brown, 1988,

1994; Taylor, Lerner, Sherman, Sage, & McDowell, 2003), with health benefits in the

context of disease (Taylor, Kemeney, Reed, Bower, & Gruenewald, 2000), and with

better physical and mental health among older adults (Gana, Alaphilippe, & Bailly,

2004). Other researchers, however, have debated these findings (e.g., Block & Colvin,

1994; Colvin & Block, 1994) and several studies have demonstrated that although

positive illusions about the self may be beneficial in the short term (e.g., in terms of self-

esteem and positive emotions), they can be maladaptive over the long term (e.g., in terms

of negative interpersonal relations and declines in self-esteem: Paulhus, 1998; Robins &

Beer, 2001).

The adaptive benefits of positive illusions reported in the literature appear to be

tied to the optimistic perception of self as better than others in general on a given

dimension, whereas the maladaptive qualities of positive illusions are tied to positive

self-assessment that is discrepant with assessment by knowledgeable others such as peers (Paulhus, 1998). Neither of these definitions, however, reflect positive illusions in the temporal sense of perceiving positive change in self over time. This study differs from previous investigations into the consequences of positive illusions, therefore, by investigating positive illusions of personal growth over time.

Positive illusions of personal growth represent a type of memory bias, originally proposed by temporal comparison theory (Albert, 1977), in which the current self is evaluated favorably relative to the past self (Ross & Wilson, 2003; Wilson & Ross, 2001). There is some evidence for the illusory nature of such temporal self-comparisons (i.e., the tendency to see improvement in the self over time where none actually occurred: e.g., Woodruff & Birren, 1972). This bias toward perceiving an improving self may exist for several reasons: (1) People have a basic desire to perceive progressive improvement in themselves (Albert, 1977); (2) perception of change is derived at least in part from general beliefs and stereotypes about how people change with age and under what circumstances (McFarland, Ross, & Giltrow, 1992; Heckhausen, Dixon, & Baltes, 1989); and (3) perceptions of personal improvement can arise as a means of coping with negative and stressful experiences such as illness (McFarland & Alvaro, 2000; Ransom, Sheldon, & Jacobsen, 2008).

There is evidence to suggest that the perception of personal growth, especially over the course of major transitions or after traumatic events, has implications for psychological well-being. Perceptions of growth through adversity have been linked to higher levels of a variety of measures of well-being (e.g., Bauer & McAdams, 2004; Calhoun & Tedeschi, 2006; McAdams, Reynolds, Lewis, Patten and Bowman, 2001;

Tedeschi & Calhoun, 1996). It has also been argued that perceptions of post-traumatic growth reflect "motivated illusions" that help people to cope with traumatic experiences (McFarland & Alvaro, 2000, p. 330). Individuals accomplish this by derogating a past self relative to a present self, essentially creating room for improvement by reconstructing the past (McFarland & Alvaro, 2000). Perceptions of personal growth have also been conceptualized as a meaning making process stemming from trauma or major life disruptions. Such disruptions result first in a shattering of assumptions about the world, followed by a search for meaning (e.g., Janoff-Bulman, 1992; Calhoun & Tedeschi, 2006)

In addition to temporal comparison theory, another theoretical framework relevant to how people see themselves as changing over time is a theory of optimal life management involving the processes of selection, optimization, and compensation (SOC; Baltes & Baltes, 1990). The SOC model of adaptive resource allocation has typically been applied to the experience of aging, and for good reason. As adults grow older, they face inevitable declines in cognitive and physical domains, and yet research has consistently shown that older adulthood is associated with maintained or even improved psychological well-being, at least until very old age and frailty (Carstensen, Mikels, & Mather, 2006). The presence of simultaneous losses and gains in older adulthood has been referred to as "the paradox of aging" (Carstensen et al., 2006, p. 346), and SOC provides a conceptual framework in which to understand this paradox.

Adaptive development in the SOC framework is defined as, "a tendency toward simultaneous minimization of losses that impair effective functioning and maximization of gains that promote growth and maintenance" (Riedeger, Li, & Lindenberger, 2006, p.

293). The three general mechanisms through which this is achieved are the following: 1) *selection*, or the narrowing of goals and domains to which resources are allocated from the pool of available alternatives; 2) *optimization*, or attempts made to optimize available opportunities in order to improve functioning; and 3) *compensation*, or efforts made to compensate for restraints or losses (Reideger et al., 2006).

In the context of older adulthood, then, there may be beneficial ways in which to perceive the self as changing over time that would be representative of selection and optimization processes in particular. For example, perceiving increased specialization in areas that reflect core values (e.g., being helpful to others or being creative) may be a way of selecting and optimizing personal characteristics for emphasis and development, and as such a means of enhancing important of aspects of the self. In other words, individuals who perceive increases in desirable characteristics over time (through temporal comparisons) may be engaging in an adaptive means of coping with the many challenges and transitions of aging. Perceptions of positive change in the self, therefore, may represent a manifestation of SOC processes.

Given that self-improvement through temporal comparison is proposed to occur especially in major life transitions that involve shifts in roles, relationships, and occupation (Albert, 1977), retirement should be particularly fertile ground for the emergence of perceptions of positive change in the self. Retirement also represents a stage of life when actual adjustments in goal structures may occur, given the major life changes that accompany retirement. One way of representing such goal structures that are central to the self is in the construct of personal values, defined as desirable, trans-situational goals that serve as guiding principles in peoples' lives (Schwartz, 1992). How

values change over time in retirement, how people perceive them as having changed, and the consequences of both self-perceived and longitudinally-assessed value change are issues that we address in this study.

Schwartz's (1992, 1994) value theory proposes the existence of four higher order value categories that represent ten universal values: self-transcendence (benevolence, universalism); self-enhancement (achievement, power); openness to change (self-direction, stimulation, hedonism); and conservation (tradition, conformity, and security). Self-enhancement values emphasize pursuit of status, success, and dominance over others, whereas self-transcendence values emphasize concern for the welfare of others and for the natural world. Conservation values emphasize self-restriction and the preservation of the status quo through conformity to social norms, respect for traditions, and security of society, relationships, and the self. In contrast, openness to change values represent an emphasis on stimulation, novelty, and independent thought and behavior.

Life stage is proposed to influence values due to the particular set of opportunities and constraints that occur at different points in the lifespan. In regards to retirement in particular, Schwartz (2005) hypothesizes that with the end of paid employment comes a decrease in opportunities to express achievement and power (self-enhancement) and stimulation and hedonism (openness to change) values, and possibly an increase in the importance of security and tradition (conservation) values. From the perspective of adapting to opportunities for value expression, increases in conservation and decreases in self-enhancement and openness to change values could be expected in retirement.

From the perspective of continuity theory (Atchley, 1999), however, the maintenance of values across transitions can be conceptualized as potentially contributing

to a sense of internal continuity and therefore to a stable sense of self. According to continuity theory, values that are most likely to remain stable across time are those that are most central to a sense of identity and self. Values that are more tied to particular contexts, such as work, may be more likely to shift with the end of full-time work. If particular values become less achievable due to changes in life circumstances, then some degree of value adjustment may be adaptive in times of transition, but continuity in central values may also be seen as adaptive. Putting together continuity theory with the possibility of adaptive value change, we can hypothesize that (a) most of the values from the Schwartz (1992) value theory are likely to show continuity across the early years of the retirement transition, as a function of the preservation of well-established identity across changing life circumstances (e.g., self-transcendence, openness to change, conservation); but that (b) the values related to the importance of extrinsic rewards associated with working (i.e., achievement and power: self-enhancement) are the most likely to be the focus of change, particularly in the direction of declining importance, as these general goals may become less attainable and less relevant in a post-employment context.

We developed the following hypotheses regarding perceived and longitudinal value change in retirement: Hypothesis 1) Among recent retirees, objective longitudinal assessments of values (repeated administrations of a values questionnaire) are likely to reflect trait-like motivational patterns, and therefore show little to no change across three years, with the exception of work-related values (enhancement values) which are more likely to show decreases in importance. Hypothesis 2) Subjective reports of value change, assessed either through direct questions about change or by comparing current and

retrospective reports of values, are likely to reflect interpretations of growth and improvement in the self over time. The pattern of perceived value change was therefore predicted to differ from that of objective change, such that increases would be perceived in desirable values (openness to change and transcendence), and decreases in work-related, extrinsically oriented values (enhancement) Hypothesis 3): If perceived value change represents an adaptive positive illusion and meaning-making process that is distinct from longitudinal change, perceived value change should be associated with well-being (higher positive affect, lower negative affect, higher meaning in life) above and beyond any contribution of longitudinal value change to well-being. Hypothesis 4): If perceived change also represents an adjustment to loss and difficult circumstances, then self-perceived changes in desirable values should be predicted by markers of prior personal struggle (illness, negative affect and stress ratings). Hypothesis 5): Perceptions of change in desirable values represent adaptive SOC processes and as such overall SOC scores should predict self-perceived changes in desirable values.

Method

Participants

The participants were retirees in a larger longitudinal study investigating adjustment to life in retirement. Information about the retirement study was distributed by mail to recently retired employees through retirees' associations as well as ads in both French and English newspapers in the Montreal area. Criteria for participation in the study included fluency in French or English, having worked full-time for a minimum of 20 years, not currently being in paid employment for more than 10 hours per week, and mobility permitting attendance of three annual testing sessions at Concordia University

(T1, T2, and T3). A total of 446 retirees entered the study. Of these, 13 (2.9%) were eliminated by the researchers because of difficulty understanding and/or following instructions or due to mistakes regarding date of retirement, leaving a T1 sample size of 433 retired adults. Eighty-five percent of the T1 sample was retained for both the second and third wave of annual assessments, for a final T3 sample size of 371. Of the 15% ($n =$ 62) participants who were not retained for the second and third assessments, 35 were not reachable or did not respond when contacted; 22 withdrew because they were too busy, were no longer interested, or had health problems; four were eliminated by the researchers because they had difficulty understanding and/or following instructions in the materials; and one participant was known to have died.

Demographics. The demographic characteristics of the 371 retirees in this study were as follows: 47.4% male (n = 176) and 52.6% female (n = 195); mean age of 59.05 years (SD = 5.0). Participants were generally healthy and well educated (M = 14.90 years of education, SD = 2.50), had worked full-time for an average of 34.02 years (SD = 6.62), and were recently retired, with an average duration of retirement of 1.9 years (SD = 1.81). The majority of the sample was either married (52%) or had a common-law partner (11.1%); the remaining participants were either divorced (19.1%); single (13.5%); or widowed (3.8%). In terms of language, 61% of participants completed the questionnaires in French and 39% in English.

Materials

All participants completed a consent form (see Appendix B), demographic questionnaire (see Appendix C), and a series of other self-report measures. Only the

materials relevant to the current study are described here. All English measures were translated into French appropriate to the Quebec linguistic context.

The Portrait Value Questionnaire IV (PVQ; Schwartz et al., 2001; see Appendix D). The PVQ was administered at T1, T2, and T3 and these served as a measure of longitudinal change in personal values across three years of retirement. In addition, at T1 a retrospective version of the PVQ (see Appendix H) asked participants to respond to the same set of items as they remembered themselves ten years before they retired. The PVQ includes verbal portraits of 40 different people, gender matched with the participant, which assess ten values. Each portrait describes a person in terms of their goals and what is important to them. For example: "It is very important to him to help the people around him. He wants to care for their well-being" describes a person for whom benevolence values are important. Participants indicate how much the portrait is similar to them on a 6-point scale, labeled from "very much like me" to "not like me at all." The PVQ does not ask participants directly about their values, but rather infers values from similarity ratings. The ten values were combined into four higher-order value categories (Schwartz et al., 2001; Caprara, Caprara, & Steca, 2003) that have been established in prior research: self-transcendence (comprised of benevolence and universalism values); self-enhancement (comprised of power and achievement values); openness to change (comprised of self-direction, stimulation, and hedonism values); and conservation (comprised of security, conformity, and tradition values). These four values were measured by 10, 7, 10, and 13 items respectively. Possible scores on the PVQ range from 1 to 6 for each value, where 1 represents a value of no importance to an individual, and 6 represents a value of high importance. Each individual's score for a value represents their

average score across all of the items representing that value. The Cronbach α coefficients

for the four higher-order value categories were as follows: transcendence (.81);

enhancement (.82); openness to change (.79); and conservation (.81). Test-retest

reliability of an earlier version of the PVQ has been reported to be moderate to high,

ranging from .66 to .88 (Schwartz et al., 2001). The values as measured by the PVQ have

shown predictable associations with a variety of attitudes and behaviors (Schwartz et al.,

2001), as well as with a second method of measuring the same ten value constructs, the

Schwartz Value Survey (Schwartz, 1992).

Value Change Questionnaire (VCQ; see Appendix I). The VCQ, created for this

study, was administered at T3 only, and assessed perceived change in values. On the

VCQ participants read a definition of each of the ten values and respond to a direct

question about how they think their values have changed since they first entered the

study. The period of perceived change assessed by the VCQ therefore corresponded to

the time frame of the PVQ assessments at T1, T2, and T3. Participants first read a list of

the motivational aspects of a value (e.g., "Self-Direction: creativity, curiosity,

independence, choosing one's own goals") and then rate the extent to which each value

has changed in importance since they entered the study at T1. Response options were on

a seven-point scale ranging from "A great deal less important" to "no change" to "a great

deal more important". The response "no change" was represented by zero, an increasing

importance of values by positive numbers (+1, +2, +3), and a decreasing importance of

values by negative numbers (-1, -2, -3). Perceived change scores for each of the four

higher order value categories (transcendence, enhancement, openness to change,

conservation) were calculated by computing the mean change score for each of the values

representing it. The Cronbach's α coefficients for perceived changes in each of the four value categories were as follows: transcendence (.63); enhancement (.80); openness to change (.73); and conservation (.75).

Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988; see Appendix F). The PANAS, administered at T1, T2, and T3, is a 20-item self-report questionnaire consisting of a list of words that describe different feelings and emotions. Participants were asked to rate the extent that they felt a given feeling or emotion during the past few weeks on a 5-point scale that ranges from "very slightly or not at all" to "extremely." Ten items reflect positive affect (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active); ten other items reflect negative affect (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid). The Cronbach's α coefficients were .90 for positive affect and .88 for negative affect in the current study. The PANAS has shown adequate test-retest reliability and scale validity (Watson et al., 1988). Higher scores on the two affect subscales indicate higher levels of positive or negative emotions experienced in the past few weeks.

Orientations to Happiness Measure (OHM; Peterson, Park, & Seligman, 2005; see Appendix J). The six-item meaning subscale from the OHM scale was the measure of meaning in life, administered at T3 only. Participants read statements on the meaning subscale such as "What I do matters to society"; "My life serves a higher purpose"; and "I have spent a lot of time thinking about what life means and how I fit into its big picture. They then rate the extent to which each statement applies to them on a 5-point likert scale, ranging from "very much unlike me" to "very much like me." Means represent the average score across the six meaning items. Subscale means range from 1 to

5, where 5 represents higher levels of meaningful living. Internal reliability coefficients have been reported to be adequate (Peterson et al., 2005) and in this sample the Cronbach alpha coefficient for the meaning subscale was .83.

Financial and health status. Financial situation was assessed by one item at T1, T2, and T3 (see Appendix C): "Compared to other people of your age that you know, how would you rate your financial situation?" Participants responded on a 7-point scale that ranged from "a lot worse that most" to "a lot better than most". Higher scores represent better self-rated financial status relative to other people of a similar age. Health status was assessed at T1 by the total number of illnesses experienced over the past five years reported on a questionnaire (based on Wyler, Masuda, & Holmes, 1967: see Appendix G) that listed a wide variety of common health conditions. At T2 and T3, the number of illnesses reported related only to those experienced in the previous year. Higher scores represent a greater number of illnesses.

Stressful life events (SLE; Sarason, Johnson, & Siegel, 1982; see Appendix K). The SLE, administered at T2, asks participants to indicate what types of stressors they have experienced in the past five years. Participants mark stressors from a list or add their own stressors as necessary, and rate the degree of stress each event caused them. The total SLE score represents the sum of the stressfulness ratings (not the number of stressful events listed), and is therefore a measure of the subjective impact of stressful life events. A higher score represents a higher degree of stress experienced over approximately the five years leading up to the T2 assessment.

Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984, 1991; see Appendix L). The BIDR is a 40-item questionnaire that was administered at T3. It

comprises two subscales: (a) the Self-Deception subscale (20 items) is designed to measure overly positive self-evaluations of being capable and well-adjusted (e.g., "I don't care to know what other people think of me"); and (b) the Impression Management subscale (20 items) is designed to tap a tendency to enhance one's public impression by presenting a socially conventional and dependable persona (e.g., "I have never dropped litter on the street"). Participants respond to what extent they agree with each statement on a 7-point likert scale ranging from "not true" to "somewhat true" to "very true." According to the BIDR scoring protocol (Paulhus, 1991), once reverse scored items are recoded, only extreme scores (6 or 7) are counted and these are summed for each subscale so that the total score for each subscale can range from 0 to 20. This scoring method ensures that high scores represent only exaggeratedly desirable responses (Paulhus, 1991). The BIDR has shown adequate levels of reliability (internal consistency and test-retest) and validity (convergent and discriminant) (see Paulhus, 1991 for a review).

Selection, Optimization, and Compensation (SOC; Baltes, Baltes, Freund, & Lang, 1999; see Appendix M). This 12-item version of the original 48-item SOC questionnaire was administered at T3 only. It assesses four aspects of adaptive life management strategies (elective selection, loss-based selection, optimization, and compensation) with three items for each, presented in random order. Participants are presented with a forced-choice format. Examples of two different ways that people might behave in terms of approaching life goals are listed (a distractor, representing a non-SOC related strategy, and a target, describing a behavior that reflects SOC strategies). Participants are asked to choose the description to which they are most similar. For

example, an optimization item presents the following options: "I prefer to wait for a while and see if things will work out by themselves" (distractor) and " I make every effort to achieve a given goal" (target). Target responses are coded "1" while distractor responses are coded "0". The total SOC score is the sum of all target responses across the 12 items. A higher score is interpreted as an indicator of the general processes of selection, optimization, and compensation. Each subscale of the 12-item short version has shown high correlations with those of the longer version, ranging from .79 to .87 (Baltes et al., 1999), and the full version has shown adequate reliability and re-test stability (Freund & Baltes, 2002). Internal reliability of the 12-item SOC questionnaire in this sample (Cronbach's alpha = .48), however, was below typical standards for adequate reliability (.70 or higher).

Procedure

Individuals interested in participating in the advertised retirement study contacted the researchers by telephone or email. Those who met inclusion criteria were given the choice of participating in either French or English, and then scheduled to come for testing at Concordia University in groups of up to 6 people. Upon completion of a battery of self-report questionnaires and cognitive tests that took approximately three hours, participants received a cheque for $50. After completing the first year's (T1) materials, participants were invited to return at approximately one-year intervals for the next two years (T2 and T3).

Results

Longitudinal and Perceived Value Change

Longitudinal change in PVQ scores was assessed by conducting four separate one-way ANOVA to test the effect of time on each of the values across four PVQ assessments: retrospective pre-retirement, T1, T2, and T3. ANOVA results (details presented in Table 1) indicated that there was a significant main effect of time for all four values. Post hoc comparisons with Bonferroni adjustment for multiple comparisons indicated that three of four values showed significant differences between retrospective and T1 versions of the PVQ, suggesting retirees perceived changes in their values from work to retirement. In particular, retirees reported being higher at T1 in openness to change and transcendence compared to ten years earlier, and lower in enhancement values, but no different in terms of conservation values. In terms of longitudinal change (PVQ scores for T1, T2, and T3), contrary to predictions there were small but significant differences across time points in raw scores such that for openness to change, conservation, and transcendence, mean scores decreased from T1 to T3 as well as from T2 to T3, but no change occurred from T1 to T2.

To assess perceived value change as assessed at T3 by the VCQ, one-sample t-tests of the mean for perceived change in each of four value categories were conducted. Responses on the VCQ were coded such that perceived value increases were scored as positive values, decreases as negative values, and no change as zero. These tests indicated that mean perceived change scores in all four of the value categories were significantly different than zero, suggesting that on average retirees perceived their values as changing. Consistent with hypothesis two, perceived change differed from longitudinally assessed change such that on average since entering the study, retirees perceived increases in openness to change values ($M = .65$, $SD = .80$; $t(370) = 15.67$, $p < .001$) and

transcendence values ($M = .78$, $SD = .77$; $t(370) = 19.42$, $p < .001$), whereas longitudinal analyses (above) indicated small decreases in these values. Retirees also perceived decreases in enhancement values ($M = -.43.$, $SD = .97.$; $t(370) = -8.61$, $p < .001$), whereas longitudinal analyses (above) indicated no change in enhancement values from T1 to T3. In addition, retirees on average perceived increases in their conservation values ($M = .49$, $SD = .73$; $t(370) = 13.00$, $p < .001$), whereas longitudinal analyses (above) indicated decreases in conservation values. In all cases, therefore, perceived value changes did not correspond to the longitudinal pattern of PVQ responses from T1 to T3. In addition, the pattern of perceived changes from T1 to T3 closely resembled the pattern of differences reported between the retrospective pre-retirement PVQ and T1 PVQ. In both cases retirees perceived increases over time in openness to change and transcendence values, and decreases in enhancement values.

In order to statistically compare individuals' longitudinally measured change in PVQ scores with their perceived change across the same period, we first calculated difference scores (herein referred to as *longitudinal change* scores) for each value. In order to be consistent with the coding of perceived change scores on the VCQ, longitudinal change scores were calculated (using raw scores) as T3 minus T1 so that a positive number indicated increased importance of the value over time, a negative number indicated decreased importance of the value over time, and zero indicated no change. No significant correlations emerged between longitudinal change and perceived change scores. Using Bonferonni correction for multiple comparisons ($p < .01$), there were no significant associations between perceived and longitudinal change scores for

enhancement ($r = .08$, ns), transcendence ($r = .02$, ns), conservation ($r = .02$, ns), or openness to change values ($r = .10$, ns).

Value Change Predicting Well-Being.

Next, hierarchical multiple regressions were conducted to assess the extent to which longitudinal change and self-perceived change were associated with three components of well-being (positive affect, negative affect, and meaning in life). Important demographic control variables (gender, health, and financial status) were entered in the first step of each regression, follow by longitudinal change scores for each of the four values in the second step, followed by perceived change scores for each of the four values in the final step. Results, outlined below, indicate that perceived value change was associated with all three of these T3 outcome measures beyond the effects of demographic control variables and longitudinal change. In addition, perceived and longitudinal value changes scores were associated with changes in positive affect across three years (see below). All analyses were performed with raw variables first, and then compared to analyses performed with variables transformed to compensate for skewed distributions. Results with skewness transformations mirrored the results with raw data in terms of both the pattern of predictors and the amount of variance accounted for. Only the results with the raw data are therefore presented here.

For T3 positive affect (PA), demographic variables accounted for 9.0% percent of the variance, with female gender, better financial situation at T3, and fewer number of illnesses at T3 all predicting higher levels of positive emotions. At the second step, longitudinal change in openness to change values accounted for an additional 3.7% of variance in PA, with increases in this value over time predicting higher levels of PA at

T3. At the third step, perceived change in openness to change values accounted for an additional 6.4% of variance in PA, with perceived increases in this value also predicting higher levels of PA. The total variance explained by all variables in this model predicting PA was 19.1%. The details of this regression are presented in Table 2.

For the regression predicting T3 negative affect (NA), only one demographic variable (number of illnesses) accounted for 7.7% of the variance, with more illnesses associated with higher levels of negative emotions. At the second step, longitudinal value change showed no association with NA. At the third step, perceived change in conservation values accounted for an additional 3.3% of the variance in NA, but in a direction contrary to hypotheses. Perceived increases in conservation values predicted higher rather than lower levels of NA, suggesting this type of perceived change may be less of a growth-oriented process and more of a reaction to ongoing life struggles, likely related to health given the focus on preserving health in the security component of conservation values. The total variance explained by all variables in this model predicting NA was 11.5 %. The details of this regression are presented in Table 3.

For the regression predicting T3 meaning, none of the demographic variables (gender, finance, and illnesses) were significant predictors at the first step, nor were longitudinal value change scores at the second step. Perceived change in values, at the third step, were significant predictors of meaning, with perceived increases in transcendence and openness to change values associated with higher levels of meaning, accounting for 10% of the variance in meaning at T3. These results are summarized in Table 4.

To summarize, well-being outcomes at T3 were predicted primarily by perceived changes in values rather than longitudinally assessed change, with one exception. For openness to change values, both perceived and longitudinal change scores were associated with higher levels of T3 positive affect.

In addition to examining longitudinal and perceived value change as predictors of T3 well-being, these variable were also tested as predictors of change in well-being from T1 to T3. The meaning variable was not measured longitudinally, so it could not be assessed for change. For both positive affect and negative affect, T3 scores were residualized (controlling for T1 levels) and then used as outcome variables for regressions using the same three-step model used for the other regressions described earlier.

Change in negative affect was not predicted by either longitudinal or perceived value change scores. Change in positive affect across three years, however, was associated with both longitudinal and perceived value change scores. At the first step, none of the demographic predictors were significantly associated with change in positive affect, though a trend emerged for an association between having more illnesses and showing reductions in positive affect over time. At the second step, longitudinal value change accounted for 10% of the variance, with increases in both openness to change and, paradoxically, conservation values predicting increases in positive affect across three years. The positive effect of longitudinal change in conservation values stands in contrast to the regression findings (see above) for perceived change, in which changes in conservation predicted higher negative affect. Finally, at the third step, perceived change in values accounted for an additional 5% of the variance, with perceived increases in

openness to change values predicting increases in positive affect across time, but no effect of perceived change in conservation. The total variance accounted for in change in positive affect from T1 to T3 was 17%. These results are summarized in Table 5.

As a follow up to the contradictory findings for self-perceived and longitudinal changes in conservation values (the former linked to negative affect, the latter linked to increases in positive affect), regression analyses were conducted to determine which components of conservation (i.e., security, conformity, or tradition) were responsible for these associations. For both perceived and longitudinal changes in conservation, security was the only component of conservation significantly associated with the well-being outcome. Self-perceived change in security predicted 4% of variance in scores in T3 negative affect while longitudinal change in security predicted 4% of variance in residualized positive affect scores (T3 controlling for T1). These results are summarized in Tables 6 and 7 respectively.

Self-perceived change in desirable values: Predictors and consequences

Following regression analyses, an overall score for self-perceived change in desirable values was calculated to reflect overall perceptions of personal growth. To establish what would constitute desirable value change, three methods were used. A priori, transcendence and openness to change are values that most people would likely agree represent positive qualities. However, in order to provide an additional empirical basis for what would constitute desirable value change, PVQ scores were also examined in terms of their overall hierarchy as well as their relationship with socially desirable responding. The hierarchies of PVQ-assessed values for T1, T2, and T3 were identical, therefore only T3 value hierarchy is reported. The value with the highest overall rating at

T3 was transcendence ($M = 4.69$, $SD = .67$), followed by openness to change ($M = 4.27$, $SD = .75$), followed by conservation ($M = 3.87$, $SD = .74$). The value with the lowest overall rating was enhancement ($M = 2.99$, $SD = .91$). As a second method of assessing the desirability of the values, Pearson correlations were calculated between the four value categories using the PVQ at T3 and the BIDR and its subscales, impression management and self-deception. Openness to change was associated with self-deception ($r = .17$, $p = .001$); conservation was associated with impression management ($r = .12$, $p = .02$); transcendence was associated with both impression management ($r = .25$, $p < .001$) and self-deception ($r = .18$, $p < .001$); and finally enhancement was associated (negatively) with impression management ($r = -.23$, $p < .001$). Given the convergence between the overall importance of the values and associations with the BIDR scale, self-perceived change in desirable values was defined as perceived increases in openness to change, conservation, and transcendence values. Rather than consider decreases in enhancement as desirable, we eliminated enhancement values from the calculation of the self-perceived changes in desirable values score (PCDV). PCDV was calculated by taking the mean score across the eight items representing transcendence, openness to change, and conservation values from the Perceptions of Value Change questionnaire, with a higher score indicating a greater degree of perceived increases in desirable values.

Structural Equation Modeling (SEM). To consider the total pattern of both predictors and consequences of perceptions of desirable value change (PCDV), an SEM model was created with a total of eight variables that included PCDV as well as measures of prior life struggle (T1 illnesses, T2 stress, mean negative affect T1-T2), SOC strategies at T3, and T3 well-being outcomes (positive and negative affect, meaning). Given that

several of these variables had significant skew in their distributions, analyses were run with both raw data and data transformed for skewness. The pattern of associations differed between the two types of analyses, and to remove the possibility of mistaken conclusions based on violations of the assumption of normality, the transformed data is presented here. SEM results are therefore reported with the appropriate transformed variables. The correlation matrix and descriptive statistics for these variables are presented in Table 8. To improve model fit, additional theoretically sound paths between variables were also added based on modification indices provided by M-Plus. The results for the final model are described below, and are represented visually in Figure 1.

SEM results. Fit indices suggested a good fit of the model to the data ($\chi^2_{(9)}$ = 14.12, $p = .12$, CFI = .99, RMSEA = .04), and provided support for both hypotheses 4 and 5 (i.e., that perceptions of desirable value change stem from life struggle and are related to SOC strategies). Higher levels of PCDV were predicted by having greater number of illnesses at T1 ($\beta = .13$, $z_{(371)} = 2.47$, $p = .01$), as well as by higher stress levels at T2 ($\beta = .13$, $z_{(371)} = 2.47$, $p = .01$). PCDV was not, however, predicted by prior levels of negative affect ($\beta = .07$, $z_{(371)} = 1.22$, $p = .22$). Selection, optimization, and compensation (SOC) scores predicted PCDV as hypothesized, with higher SOC scores predicting higher levels of PCDV ($\beta = .14$, $z_{(371)} = 2.70$, $p = < .01$).

Both PCDV and SOC contributed to well-being outcomes at T3. Consistent with regressions described earlier, PCDV showed paradoxical associations with well-being variables, predicting both higher levels of T3 positive affect ($\beta = .19$, $z_{(371)} = 4.09$, $p <$ .001) and T3 meaning ($\beta = .21$, $z_{(371)} = 4.34$, $p < .001$) at the same time as higher levels of T3 negative affect ($\beta = .11$, $z_{(371)} = 2.77$, $p < .01$). SOC scores were associated with

well-being in a more consistent manner, predicting higher levels of both T3 positive affect ($\beta = .26$ $z_{(371)} = 5.63$, $p <.001$) and T3 meaning ($\beta = .24$, $z_{(371)} = 4.90$, $p = < .001$), but showing no association with negative affect.

The prior life struggle variables also contributed to T3 well-being outcomes. Prior negative affect predicted reduced levels of positive affect at T3 ($\beta = -.18$, $z_{(371)} = -3.82$, $p < .001$) as well as higher levels of T3 negative affect ($\beta = .64$, $z_{(371)} = 21.11$, $p < .001$). Finally, the well-being variables themselves were inter-related with T3 positive affect showing a positive association with T3 meaning ($\beta = .27$, $z_{(371)} = 5.54$, $p < .001$) and a trend toward negative association with T3 negative affect ($\beta = .-.09$, $z_{(371)} = -1.91$, $p = .06$).

In terms of effect sizes, the model accounted for 14.4% of the variance in T3 positive affect, 44.2% of the variance in T3 negative affect, 11.2% of the variance in T3 meaning, and 6.8% of the variance in PCDV. The large amount of variance explained in T3 negative affect is due to having prior levels of negative affect in the model, suggesting that the tendency to experience negative affect at one point in time is highly predictive of having similar experiences several years later.

Discussion

In this study we examined three different methods of assessing change in personal values over time in a sample of recently retired adults, as well as the links of different types of change assessment to measures of well-being. To begin with, longitudinal assessments of values and subjective perceptions of value change over the same time period were discrepant. Contrary to hypotheses, the longitudinal method (repeated administrations of the PVQ at one-year intervals) indicated small decreases in the

importance of three of four value categories (openness to change, transcendence, conservation), and no change in the one category that was predicted as most likely to show change in retirement due to its status-related emphasis (enhancement). In contrast, a subjective method of assessing value change (direct questions about value change on the VCQ) indicated perceived increases in values desirable to retirees (openness to change, transcendence, and conservation values) and decreases in status-oriented enhancement values. No association was found between longitudinal change scores and perceived change scores. Further, a second method of assessing subjective perceptions of value change (differences between T1 and retrospective pre-retirement versions of the PVQ) supported the notion that retirees perceive themselves as gradually increasing in desirable values (openness to change and transcendence) and decreasing in status-oriented values (enhancement).

An important consideration at this point is the explanation for the discrepancies between longitudinal and perceived change scores. Given that, on average, retirees perceived increases in desirable values over three years but their longitudinal reports contradicted these perceptions, it is tempting to conclude that subjective perceptions of value change represent positive illusions (i.e., unrealistically positive appraisals of change in self over time). However, an alternative explanation for these discrepancies is possible in that there were important differences in the response format for longitudinal and subjective change. In one case, participants filled out the same questionnaire three times annually (an indirect format which does not name values as the topic of investigation); in the other, participants were given a list of the same values (direct format), and asked directly how these may have changed since entering the study. Values

measured with a direct format might differ from values measured with an indirect format because of different types of responding (e.g., desirable response bias). Follow-up correlational analyses suggest, however, that this does not appear to be the case here, at least in terms of differences in the social desirability of the response format. Neither longitudinal change nor perceived change measures were associated with socially desirable responding (BIDR scores), with one exception: longitudinal decrease in enhancement values was associated with higher impression management scores ($r = -.12$, $p = .02$).

What can we conclude, then, about perceptions of value change and positive illusions? The nature of the difference between repeated measures designs compared to retrospective temporal self-comparison is of critical importance to the issue of positive illusions. While repeated administrations of the PVQ at long intervals (e.g., one year in this study) likely represent relatively stable motivational traits (as participants do not have the opportunity to compare their answers from one year to the next), perceptions of value change over time are presumed to tap into individuals' efforts to adapt to their changing circumstances, and to construct a narrative about the self that is growth-oriented. Evidence from both the VCQ (perceived value change questionnaire) and the retrospective version of the PVQ supports the idea of retrospective temporal self-comparison as growth-oriented. When participants did have the opportunity to respond to the full PVQ in a retrospective manner, and could compare their responses to the current (T1) version of the PVQ, they responded in a manner largely consistent with the perceived changes from T1 to T3: they saw themselves as increasing in desirable values

(openness to change and transcendence) and decreasing in status-oriented, arguably narcissistic values (enhancement).

In addition to providing evidence supporting the existence of positive illusions in the form of temporal self-comparisons, our findings add to the debate over the costs and benefits of such positive illusions (see Block & Colvin, 1994; Colvin & Block, 1994; Paulhus, 1998; Robins & Beer, 2001). Our results suggest (a) that benefits do stem from such positive illusions, but also (b) that positive illusions are linked to distress. How is this paradox best understood? The costs and benefits of positive illusions about value change, in particular, appear to depend on the value. Perceived increases in openness to change and transcendence values were the most beneficial, predicting higher levels of positive affect and meaning as well as increases in positive affect (openness only for the latter). Perceived increases in conservation values, however, showed paradoxical links to well-being. On one hand, perceived increases in conservation values predicted higher levels of current distress (negative affect). Security values appear to be primarily responsible for the link between perceived changes in conservation values and negative affect. Follow up regression analyses revealed that perceived changes in security, but not in tradition or conformity, predicted negative affect. Notably, security values include a "staying healthy" component, which seems the most likely driving force behind security's links to well-being outcomes among retirees (as opposed to the other components "personal safety, national security, and organization").

In contrast to the findings for subjective change in conservation values, however, longitudinal increases in conservation values predicted higher well-being (increases in positive affect over time). Again security values alone were found to be responsible for

the link between conservation and change in positive affect. This contradictory pattern may indicate differences between the process of subjective retrospection about values compared to longitudinal assessment. Subjective increases in security values (presumably health-related) could be an a ego-protective response to a current salient stressor, thereby linking subjective change with current distress: "I am more concerned with my health now because I have health problems." On the other hand, those who encounter illness and actually adapt by increasing the importance of health-related behaviors over time are those more likely to see increases in well-being.

Perceived value change, therefore, may represent both the expansion of positive qualities (in the cases of openness to change, transcendence), with links to enhanced well-being, as well as reaction to struggle (in the case of conservation values), with links to distress. SEM analyses supported this notion, showing that self-perceived desirable value change stems from prior life struggle (illness and stress ratings) but also predicts higher current levels of both positive affect and negative affect. Positive illusions about personal growth, therefore, appear to be born of prior struggle and related to current distress, but also to have an adaptive effect in the present in terms of higher levels of positive emotions and a deeper sense of meaning in life.

The potential maladaptive nature of positive illusions in prior research (e.g., negative interpersonal relations and declines in self-esteem: Paulhus, 1998; Robins & Beer, 2001) relates largely to the social consequences of misjudging one's own abilities. In the case of positive illusions based on temporal comparison of the self over time, the link with lower well-being is likely more representative of the life difficulties that give rise to the need for growth narratives (e.g., illness, stress) rather than representing

negative social consequences of self-misperception. In other words, people's self-narratives of growth are born of both prior and current struggle but also appear to provide a more positive and meaningful experience of life simultaneously.

How do the above findings regarding changes in values map onto the theoretical circumplex structure of values? In other words, as a value at one end of a dimension increases, does the value at the opposing end of the dimension decrease? If this were so, then an increase in transcendence values should be accompanied by a decrease in enhancement values; similarly, an increase in openness should be accompanied by a decrease in conservation. Depending on how one looks at the results, there is at best only partial support for circumplex-consistent value change. Longitudinally-assessed patterns of change did not reflect such a structure of changes, as three of four values showed decreases, and one did not change. The perceived change scores in the openness-conservation dimensions also did not reflect the circumplex structure, as both of these theoretically opposing values showed overall perceived increases (whereas the circumplex structure predicts change in opposite directions). In addition, the correlation between perceived change in openness and conservation was $r = .30, p < .001$, suggesting that these supposedly opposing types of values were seen as changing in a partially consistent direction. However, transcendence and enhancement values, theoretically opposing in terms of motivation were seen as increasing and decreasing respectively, which lends some support to the idea of circumplex-consistent value change (although there was no association between change in one and change in the other ($r = -.04, p = .41$). On the whole, only perceived change on the transcendence-enhancement dimension reflected theoretical opposing motivations in values.

How should the overall changes in values be understood in terms of shifts in value priorities? The minor longitudinal shifts in values do not appear to indicate any kind of substantial rearrangement of value priorities in retirement. Transcendence at all points of assessment remained the most important value on average for retirees, followed by openness to change, conservation and enhancement values (see Table 1). The perceived change scores mirror this pattern, with retirees perceiving the largest increases in the most important value (transcendence), and decreases in the least important value on average (enhancement). To their benefit, then, retirees report (a) holding as most important and (b) perceiving growth in the two values that here and elsewhere (Burr, Santo, & Pushkar, 2009) are most strongly linked to well-being.

How can one explain that most values would decrease in absolute importance in retirement? One possible explanation is something akin to a practice effect, whereby repeated administrations of the PVQ changed the overall response tendency away from strong identification with the portraits. A speculative reason for this might be an increasing sense on the part of participants, as they returned each year, that the complexity of self and of one's motivations is not always captured by the PVQ. When participants asked questions of the researchers, it was often to express frustration in that they did not relate the same way to the two components of each PVQ item (e.g., "He believes he should always show respect to his parents and to older people. It is important to him to be obedient"). In other words, being "very much like" a short, two-pronged description of another person may become too simplistic a statement with repeated administrations, and rating portraits as less similar to the self could have been a

manifestation of participants increasingly acknowledging their own motivational complexity, not necessarily being one way all the time in all situations with all people.

Finally, it was hypothesized that self-perceived changes in desirable values would reflect adaptive selection, optimization, and compensation (SOC) processes. Our results supported this hypothesis, although SOC strategies accounted for only a small portion (about 2%) of the variance in perceived desirable value change. The SEM model employed only the total SOC score, but follow up correlational analyses indicated that PCDV were linked with only two of the four components of SOC. In particular, PCDV was associated with optimization ($r = .11, p < .05$) and elective selection ($r = .16, p < .01$) subscales, but not with loss based selection or compensation subscales. This suggests that as a coping process, perceiving personal growth in values has more to do with selective attention to improvements in one's positive traits and motives than it does with compensating for losses. As such, perceiving positive change in values may represent a kind of selective attention for the evolution of one's positive traits over time, a process which appears adaptive for well-being regardless of whether growth actually occurred or not. SOC strategies have been shown to be predictors of a variety of general and domain-specific indicators of adaptive development at various points of the adult lifespan (see citations in Riediger et al., 2006, p. 295). The average age (59 years at T1) represented in this study is younger than that of many other investigations that examine SOC processes in young-old and old-old adults (e.g., Jopp & Smith, 2006). However, our results are consistent with other research involving middle-aged samples in which SOC strategies were related to a variety of components of well-being, including a sense of purpose in life (Ryff inventory) as well as to positive emotions (Freund & Baltes, 2002). Where we

extend this research is by suggesting that positive illusions of personal growth may represent a manifestation of SOC strategies in the unique form of temporal self-comparisons focused on selecting and optimizing one's positive qualities over time.

Limitations and future directions

We have inferred that perceptions of positive change in values for retirees represent positive illusions of personal growth, but it is also possible that these types of changes represent as well a different process involving stereotypes about aging. In two types of subjective change assessment in this study, retirees reported increases in desirable values and decreasing in status-oriented values. It is possible that such subjective perceptions of change in the self are at least in part due to stereotypes about how values change with age and stage of life. This possibility cannot be ruled out, and future research should examine the contributions of stereotypes to perceived change through assessing the views of both younger and older adults about qualities that change with age and position in the lifespan. However, if stereotypes were the sole contributor to perceived value change, then it is unlikely that this type of subjective change would show associations with enhanced levels of well-being. The links to flourishing suggest that perceived personal growth is more than a stereotype of aging, and that it represents an adaptive reaction to challenge and transition, perhaps best conceptualized as a meaning-making process. Future research could also extend the importance of subjective growth to other normative transitions (e.g., becoming a parent, immigration, career transition), and consider the clinical implications of how to foster such growth perspectives.

Acknowledgments

Table 1

Descriptive statistics for longitudinal (PVQ scores) and perceived (VCQ scores) value change; results of within-subject ANOVA for effect of time (N = 371).

	Openness to Change		Conservation		Transcendence		Enhancement	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
PVQ scores Retro	4.35	(.82)	3.91	(.75)	4.64	(.72)	3.58	(1.15)
T1	4.43	(.72)	3.94	(.73)	4.78	(.65)	3.04	(.94)
T2	4.39	(.70)	3.94	(.73)	4.76	(.65)	3.06	(.93)
T3	4.27	(.75)	3.87	(.74)	4.69	(.67)	2.99	(.91)
Time effect	$F(1,369) = 17.18, p < .001$		$F(1,369) = 5.02, p = .002$		$F(1,369) = 16.80, p < .001$		$F(1,370) = 72.04, p < .001$	
Pairwise Comparisons	Retro to T1: $p = .02$ T1 to T2: ns T2 to T3: $p < .001$ T1 to T3: $p < .001$		Retro to T1: ns T1 to T2: ns T2 to T3: $p = .005$ T1 to T3: $p = .006$		Retro to T1: ns T1 to T2: ns T2 to T3: $p = .001$ T1 to T3: $p < .001$		Retro to T1: $p < .001$ T1 to T2: ns T2 to T3: ns T1 to T3: ns	
VCQ scores	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
	.65	(.80)	.49	(.73)	.78	(.77)	-.43	(.97)

Note: Retro = retrospective PVQ scores representing participants' recall of ten years before retirement

Table 2

Summary of Hierarchical Regression for Longitudinal Change and Perceived Change in

Values Predicting Positive Affect at T3

Variable	B	SEB	β	p
*Step 1: Demographic controls (R² = .09**)*				
Gender	2.44	.63	.19**	<.001
T3 Finance	.82	.26	.16**	<.001
T3 Illnesses	-.26	.08	-.17**	<.001
Step 2: Longitudinal Value Change (R² = .13.; ΔR² = .04)*				
LC Openness to Change	1.61	.73	.12*	.03
LC Conservation	.90	.77	.06	.24
LC Enhancement	.01	.56	.01	.99
LC Transcendence	.47	.77	.03	.54
*Step 3: Perceived Value Change (R² = .19; ΔR² = .06**)*				
PC Openness to Change	1.77	.41	.23**	<.001
PC Conservation	-.15	.53	-.02	.77
PC Enhancement	.07	.32	.01	.84
PC Transcendence	.62	.50	.08	.22

*p < .05 **p < .001. Note: LC = longitudinal change scores (T3 minus T1); PC = perceived change scores at T3.

Table 3

Summary of Hierarchical Regression for Longitudinal Change and Perceived Change in Values Predicting Negative Affect at T3

Variable	B	SEB	β	p
Step 1: Demographic controls (R² = .08**)				
Gender	-.02	.59	.002	.97
T3 Finance	-.29	.24	-.06	.22
T3 Illnesses	.341	.07	.24**	< .001
Step 2: Longitudinal Value Change (R² = .08; ΔR² ns)				
LC Openness to Change	-.32	.69	-.03	.64
LC Conservation	-.41	.73	-.03	.57
LC Enhancement	.28	.53	.03	.60
LC Transcendence	-.52	.73	-.04	.47
Step 3: Perceived Value Change (R² = .12; ΔR² = .033*)				
PC Openness to Change	.34	.39	.05	.38
PC Conservation	1.31	.49	.17*	.01
PC Enhancement	-.20	.31	-.04	.51
PC Transcendence	-.02	.48	-.004	.95

*$p < .05$ **$p < .001$. Note: LC = longitudinal change scores (T3 minus T1); PC = perceived change scores at T3.

Table 4

Summary of Hierarchical Regression for Longitudinal Change and Perceived Change in Values Predicting Meaning at T3

Variable	B	SEB	β	p
Step 1: Demographic controls (R² = .01, ns)				
Gender	.26	.57	.02	.65
T3 Finance	.05	.23	.01	.82
T3 Illnesses	.13	.07	.09	.08
Step 2: Longitudinal Value Change (R² = .02.; ΔR² = .01, ns)				
LC Openness to Change	.59	.66	.05	.38
LC Conservation	-.42	.69	-.03	.55
LC Enhancement	.12	.50	.01	.82
LC Transcendence	.73	.70	.06	.30
Step 3: Perceived Value Change (R² = .12; ΔR² = .10**)				
PC Openness to Change	.82	.37	.12*	.03
PC Conservation	.29	.48	.04	.55
PC Enhancement	.53	.29	.09	.07
PC Transcendence	1.46	.46	.21**	.001

*p < .05 **p < .001. Note: LC = longitudinal change scores (T3 minus T1); PC = perceived change scores at T3.

Table 5

Summary of Hierarchical Regression for Longitudinal Change and Perceived Change in Values Predicting Change in Positive Affect from T1 to T3

Variable	B	SEB	β	p
Step 1: Demographic controls (R^2 = .02)				
Gender	.17	.10	.09	.10
T3 Finance	.01	.04	.02	.51
T3 Illnesses	-.02	.01	-.10*	.03
*Step 2: Longitudinal Value Change (R^2 = .12; ΔR^2 = .10**)*				
LC Openness to Change	.45	.12	.21**	<.001
LC Conservation	.26	.12	.13*	.03
LC Enhancement	.14	.09	.08	.11
LC Transcendence	.03	.12	.02	.78
*Step 3: Perceived Value Change (R^2 = .17; ΔR^2 = .05**)*				
PC Openness to Change	.24	.07	.20**	<.001
PC Conservation	.002	.08	.002	.98
PC Enhancement	-.05	.05	-.06	.25
PC Transcendence	.03	.08	.03	.63

*p < .05 **p < .001. Note: LC = longitudinal change scores (T3 minus T1); PC = perceived change scores at T3.

Table 6

Summary of Hierarchical Regression for Components of Self-Perceived Change in

Conservation (Security, Tradition, Conformity) predicting T3 Negative Affect

Variable	B	SEB	β	p
Step 1: Demographic controls ($R^2 = .08^{**}$)				
Gender	-.03	.58	-.003	.96
T3 Finance	-.26	.24	-.06	.27
T3 Illnesses	.33	.07	.24**	< .001
Step 2: Components of Conservation ($R^2 = .12$; $\Delta R^2 = .04^{**}$)				
PC Security	1.22	.35	.20**	.001
PC Conformity	-.20	.47	-.03	.70
PC Tradition	.38	.44	.06	.38

**$p < .01$. Note: PC = perceived change score

Table 7

Summary of Hierarchical Regression for Components of Longitudinal Change in

Conservation (Security, Tradition, Conformity) Predicting Changes in Positive Affect

Variable	B	SEB	β	p
Step 1: Demographic controls ($R^2 = .02$, ns)				
Gender	.17	.10	.08	.11
T3 Finance	.01	.04	.02	.73
T3 Illnesses	-.02	.01	-.10	.07
Step 2: Components of Conservation ($R^2 = .06$; $\Delta R^2 = .04**$)				
PC Security	.28	.09	.16**	< .01
PC Conformity	.09	.08	.07	.22
PC Tradition	.10	.09	.06	.26

**$p < .01$. Note: PC = perceived change score

Table 8.

Correlation matrix and descriptive statistics for all variables used in SEM analyses.

	01.	02.	03.	04.	05.	06.	07.	08.
01. PCDV T3[b]	-							
02. Illnesses T1 [a]	.17**	-						
03. Stress T2 [a]	.16**	.17**	-					
04. NA T1-T2 [b]	.14**	.30**	.24**	-				
05. SOC [a]	.12*	-.07	-.02	-.01	-			
06. Positive Affect T3	.21**	-.08	-.04	-.16**	.29**	-		
07. Negative Affect T3 [b]	.20**	.28**	.22**	.65**	-.01	-.14**	-	
08. Meaning T3	.24**	.07	.15**	.01	.27**	.35**	.06	-
Mean[c]	.62	4.33	13.02	15.68	7.70	37.45	16.23	17.85
Standard Deviation[c]	.60	3.02	7.89	5.30	1.96	6.30	5.69	5.49

Note: PCDV = Self-perceived changes in desirable values; SOC = Selection, Optimization, and Compensation; NA = Negative Affect; [a] square root transformation for skew; [b] inverse (with reflection) transformation for skew; [c] based on raw data; * $p < .05$; ** $p < .01$, two-tailed.
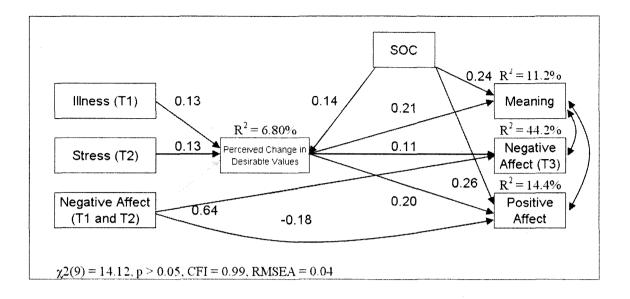
Figure 1. SEM model for correlates of self-perceived change in desirable values.

General Discussion

To briefly summarize the preceding manuscripts, all three studies comprising this dissertation were based on data collected between 2005 and 2008 as a part of the Concordia Longitudinal Retirement Study (Dolores Pushkar, principal investigator). The first study investigated age differences in the structural and measurement properties of a popular value measure, the Portrait Value Questionnaire (PVQ: Schwartz et al., 2001); the second study examined the emotional consequences of retirees' values and the interaction of values with life circumstances; the third study focused on different ways of assessing change in values, the idea of self-perceived value change as a positive illusion of growth, and the correlates of both objective and subjective methods of change measurement.

Relevance of findings to theories of aging

These three studies on the values of retired adults raise several issues for values research in general, as well as having implications for a variety of theories related to successful aging. Before proceeding to general issues, let us consider the relevance of the findings herein to current theories of aging. Riediger, Li, and Lindenberger (2006) review current conceptual frameworks for adaptive lifespan development, and identify a key theme across frameworks. The theme relates to changes across the lifespan in the availability of certain limited resources, and how people use the available resources to their advantage. Riediger and colleagues cite four frameworks in the current literature that specifically address adaptation to changing resources across the lifespan. These include, "socio-emotional selectivity theory (SST: Carstensen, Isaacowitz, & Charles, 1999); assimilative and accommodative coping (Brandtsadter & Renner, 1990);

optimization in primary and secondary control (Heckhausen & Schulz, 1995); and

selection, optimization, and compensation (SOC: Baltes & Baltes, 1990)" (p. 291). Each

of these frameworks describe methods of adapting to and allocating limited resources that

are particularly relevant to later stages of adult development, which can be understood as,

"a life phase that is characterized by a wealth of objective and subjective resource losses"

(Riediger et al., 2006). How then do the results of the studies herein relate to the theme of

adaptive use of limited and declining resources?

Study 1. Results of the first study indicated tentative evidence for age-related

shifts in value priorities that can be understood as motivational adaptation in reaction to

changing life stages. The means of most of the ten values measured by the PVQ differed

between university students (age 30 or under) and retirees (average age 59 years),

suggesting that there are age-related changes in values over time (assuming these

differences do not represent cohort differences in values based on differing historical

contexts for value development). The observed age-related value differences were

consistent with the different developmental challenges faced by students (career,

relationship, and identity exploration) compared to retirees (maintenance of established

relationships, health, and activity levels). In particular, the students reported higher scores

on achievement, power, stimulation, hedonism, and self-direction compared to retirees,

whereas retirees reported higher scores on conformity, tradition, and security compared

to the students. There were no differences in terms of benevolence and universalism

values.

As young adults move through the career and family life cycle and toward

retirement, then, they may naturally move from exploration and status-oriented values

toward more preservation-oriented values. This process would be consistent with the adjustment of preferences and goals to situational constraints represented by accommodative coping (Brandtsadter & Renner, 1990), the process of disengaging from unattainable goals and compensatory secondary control processes (Heckhausen & Schulz, 1995), as well as with the minimization of losses and maximization of gains represented by selection, optimization, and compensation processes (Baltes & Baltes, 1990). The findings of the first study are less conclusive regarding SST's proposed increase of focus on emotion-related goals through connection to close others when the future is perceived as time-limited (as might be the case for retirees). If such a shift in priorities was actually occurring, then benevolence in particular would be expected to be higher among retirees compared to students, but this was not the case.

There were a few important findings related to the issues of measurement invariance and the circumplex structure of the ten values, but these have little relevance to theories of aging. First, tests of measurement invariance supported the notion that values can be measured in the same way at different points in the adult lifespan. Second, tests of the circumplex structure suggest that the theoretical structure of relations among the values appears descriptively (i.e., in multi-dimensional scaling analyses) in both younger and older samples, but not when using strict statistical criteria (i.e., constrained confirmatory factor analyses).

A final finding of note from the first study that is important regarding theories of aging was the differing pattern of covariance among the ten values between younger and older adults. This differential pattern in the structure of values may have implications for conceptualizing values across the lifespan. In particular, retirees showed a higher degree

of inter-relatedness among all values, even between theoretically contradictory ones. A greater capacity to hold multiple competing values (i.e., a pluralistic value system) for older adults might represent a type of motivational flexibility that is consistent with the importance of adaptation in theories of successful aging and adaptive resource management.

Study 2. The second study regarding the emotional consequences of values provides further support for the benefits of motivational flexibility for successful aging (openness to change values), as well as the benefits of an other-oriented motivational focus (transcendence values). Openness to change values were the most important value category for well-being in that they were linked to both positive emotions and less distress (negative affect), whereas transcendence values predicted positive emotions. The values that would most benefit from adjustment in retirement appear to be the status-oriented enhancement values (power and achievement). Although value systems are thought to be relatively stable in the short term, results of the second study suggest that major life transitions like retirement may be facilitated by an adjustment of enhancement values to match new opportunities and constraints of retirement in order to protect and enhance emotional well-being. In other words, letting go of the importance of that which is no longer modifiable is likely a beneficial strategy, and such motivational adjustment is again consistent with the above theories of adaptive resource allocation in successful aging. Insofar as retirement may represent a signal of limited future time, the importance of openness to change and transcendence values for affective well-being can be seen as reflecting the benefits of holding present-oriented and emotionally meaningful goals in

the context of limited future time as proposed by socio-emotional selectivity theory (Carstensen et al., 1999).

Finally, the links between transcendence values (benevolence and universalism) and positive affect are consistent with prior research showing the benefits of generative concern for older adults. The construct of generativity, originally proposed by Erikson (1959) as a crucial stage of development in mid to later adulthood, involves caring for and contributing to future generations. Although generativity is not typically described as a value, it nonetheless functions as a value in the sense that it represents a set of principles that guide attitudes and behavior toward concern for others and the broader social good. At the same time as it is pro-social and outwardly focused, generativity is proposed to have benefits for the generative adult, and is conceived of as a mark of, "maturity and successful adaptation in the middle adult years" with benefits for health and well-being (McAdams, 2008). An empirical measure of generativity was developed by McAdams and colleagues (McAdams & de St. Aubin, 1992; McAdams, de St. Aubin, & Logan, 1993) and has since been linked, in a variety of studies, to measures of subjective well-being and mental health, as well as broader networks of social support and friendship (e.g., Ackerman, Zuroff, & Moskowitz, 2000; McAdams, 2001, 2008; McAdams & de St. Aubin, 1995; Huta & Zuroff, 2007).

One of the reasons that generativity and transcendence values both show links to higher levels of well-being may be that they involve an integration of meeting needs of both self and others. McAdams (2008) suggests that generativity is not about transcending self-interest, but rather integrating an other-orientation into self-serving motivations so that, for example, the products of generativity (e.g., children,

grandchildren, reputation, accomplishments) become a self-rewarding legacy and function as a kind of symbolic immortality ultimately serving both the common good as well as the self. Although the values of benevolence and universalism carry the label of self-transcendence, their underlying motivations, similar to generativity, may not be entirely altruistic and likely integrate both other-orientation and self-interest. The links between self-transcendence values and affective well-being certainly support the idea that there is personal gain in being concerned about others.

Study 3. The third study, focused as it is on different ways of assessing value change, adds some complexity to the issue of whether value adjustment is adaptive for retirees, and what value adjustment actually consists of. One thing is clear: retirees on average see in themselves positive personal growth over time. They reported seeing themselves as becoming more concerned about close others (benevolence) and the world in general (universalism); more creative, independent, novelty-seeking, and hedonistic (openness to change); and less concerned with money, control of others, success, and demonstrating competence (power and achievement: enhancement values). They also perceive themselves as placing increasing importance on their general health, safety, and security, on their traditions, and on maintaining the status quo (conservation values).

The remarkable thing about these perceptions of change in values is that (a) they showed no link to more objective measures of change through repeated administrations of the PVQ; and more importantly (b) it was the subjective rather than objective measures of change that were the strongest predictors of experiencing positive emotions and a sense of meaning in life. Self-perceived change in desirable values also turned out to be correlated with SOC strategies, to a small degree. In other words, regardless of whether

perceived value changes are illusory or not, they appear to be an adaptive reaction to challenge and transition and are perhaps best conceptualized as a meaning-making process. The findings from the third study, then, support theories of adaptive resource allocation for successful aging, but in a novel way, by demonstrating the benefits of temporal self-comparisons focused on selecting and optimizing one's positive qualities over time.

Questions, concerns, and areas for future investigation

Turning now to the general issues about values raised by this program of research, a host of questions, concerns, and areas for future investigation can be identified. These include (1) questions about the specifics of the best way to measure values across adulthood, and the pros and cons of the PVQ as a measurement tool; (2) the distinction between values as researchers define them and how the average person thinks about values; (3) the question of when values actually matter to people in their day to day lives; (4) how morality and ethics can be brought into a discussion of values; (5) contradictory findings regarding the role of money, status-oriented values, and happiness; and finally (6) the question of whether and how a focus on personal values might be useful in psychological intervention for older adults. These questions and concerns are outlined in greater detail in this final section.

(1) How best to measure values? The PVQ is an instrument born of the prolific cross-cultural research program of S. H. Schwartz. It is designed to be quick to administer, appropriate across a wide range of ages and levels of education, a concrete as opposed to abstract task, and appropriate for inclusion in large-scale sociological research programs. To these ends, it serves its purpose well, as demonstrated by its inclusion in

large-scale research projects such as the on-going World Values Survey and the European Social Survey. Completing the PVQ is a task that, relative to the laborious value-ranking tasks on older values surveys (e.g., Rokeach Value Survey), is straightforward, requiring only that respondents think about their similarity to short descriptions of different types of people. Further, it does not ask participants about their values directly, making it, in theory, less susceptible to socially-desirable responding. As a brief measure of values, then, the PVQ is a strong measurement tool.

That being said, the PVQ is not without its drawbacks. First, although inter-relatedness of all values and all items is a part of Schwartz's theory of values as existing on a motivational continuum, the measurement properties of the PVQ as a whole are only marginally adequate, as the first study suggests. This is largely due to problems of internal discriminant validity caused by the measurement of ten inter-related constructs, resulting in items that load onto multiple factors. In addition, each value category is conceptually broad in and of itself (e.g., security representing safety, stability, and harmony of society, of relationships, and of the self). Conceptual breadth does not lend itself well to precise measurement, and none of the ten value categories have strong internal validity co-efficients as a result.

The second drawback of the PVQ, and perhaps more so of the Schwartz value theory in general, is the highly abstract nature of the values it measures, and its lack of focus on value-expressive behaviors. If researchers want to know what types of activities or decisions are representative of specific value types, they must investigate this as a separate and distinct question. Value-expressive behavior is a crucial component of understanding how values are central to human motivation and unfortunately the PVQ

provides no insight in and of itself as to what people actually do that reflects their values, or if they engage in any value-related activity. The PVQ begs the following question: "So you say that it is important to you to be benevolent, but what do you actually do that shows that you are?" The PVQ can tell us as much as that a benevolent person is concerned for close others and cares for their well-being, but does not answer the question "In what way and how?" Other much longer and more comprehensive value assessments, such as those used in the European Values Survey (http://www.europeanvaluestudy.eu/) and the World Values Survey (http://www.worldvaluessurvey.org/) include a wide variety of value measurements, from the abstract to the highly concrete and behavioral. These include questions about morality and the nature of good and evil (e.g., rating agreement with statements such as "There are absolutely clear guidelines about what is good and evil. These apply to everyone, whatever the circumstances"); face valid and concrete questions about what is most important in life (e.g., work, family, friends and acquaintances, leisure time, politics, and religion); participation in different types of voluntary organizations; attendance of religious services; beliefs about the roles of men and women in society; beliefs about parenting; interest in contemporary social issues; and ratings of the desirability of different types of people (e.g., homosexuals, Muslims, right-wing extremists) as potential neighbours. In sum, the PVQ captures values only at the most abstract level, and as such does not represent a truly comprehensive assessment of values. Comprehensive values assessment should include a variety of measures of beliefs and behaviors, each of which contribute to an overall value system. The measurement of values at only the abstract level is perhaps the most significant limitation of the PVQ.

The final measurement issue that merits revisiting here is the use of ipsative scoring. Schwartz has advocated for the exclusive use of ipsative scores, except in certain cases such as with factor analytical techniques, because of the importance of considering values as a part of a system, and as a means of controlling for individual differences in use of the response scale. The usefulness of raw, or absolute, value scores, however, has been demonstrated in the second and third studies here, as they are important considering well-being (because overall strength of identification with values, which is partialled out with ipsative scores, is significantly related to well-being outcomes). Further, raw scores are useful when considering change over time because change in the entire value system may differ from change in the importance of a particular value. A compromise approach may be best when considering ipsative scoring; that is to consider both forms of scoring as complimentary sources of information about values (Ovadia, 2004).

(2) Research and lay definitions of values. The highly abstract nature of values as measured by the PVQ is useful for psychological researchers insofar as examining the association between abstract motivational principles and other variables and how these principles differ across groups or time. But the PVQ may not capture values as the average person thinks about them. For example, when asked directly about what is most important in life, people are likely to respond with categories such as 'my family, my children, my health, my relationship, my career, my friendships, my faith, protecting the environment.' In the language of the Schwartz value theory, most of these would be subsumed into higher order categories of guiding principles, or be considered concrete manifestations of values. For example, the importance of "family" can be subsumed into the category of benevolence, or, "preservation and enhancement of the welfare of people

with whom one is in frequent personal contact." A disjoint between lay and scientific

definitions of values is not in and of itself a problem unless one wishes to bring values to

the table as a focus of clinical work or public policy initiatives, in which case the ability

to discuss values in lay terms is essential. An individual is unlikely to identify with the

abstraction of "benevolence", but knows exactly what "family" means.

(3) When do values matter? The extent to which values play a conscious role in

activities, decision-making, and the allocation of time and resources is an important issue

for consideration in terms of understanding value-behavior relations. Prior research has

found mixed results regarding how well values predict behaviour (e.g., Bardi &

Schwartz, 2003; Kristiansen & Hotte, 1996). Recent evidence from experimental research

paradigms suggests that the abstract nature of values is linked to behavior only at more

abstract levels, and less so at more concrete levels. For example, Eyal, Sagristano, Trope,

Liberman, and Chaiken (2009) found that values are better predictors of behavioural

intentions in the distant future compared to the near future. If planned behaviour is

construed in an abstract, de-contextualized way (as in thinking about the distant future), it

appears to be more strongly related to values than planned behavior in a concrete, short

term way (which involves focusing on feasibility and pragmatic details). Similarly,

Torelli and Kaikati (2009) found that values are most likely to influence behavioral

intentions when people have been primed to think about and interpret their actions with

an abstract mindset (focused on the "why" behind their goals) compared to a concrete

mindset (focused on the "how" of achieving goals).

The question that arises, then, for the impact of values in retirement, is the extent

to which retirees take a long-term, abstract and de-contextualized perspective on their

retirement, or whether they are focused on short-term, concrete details of this major life transition. Clearly, both approaches are important to some extent. What these recent studies suggest, however, is that older adults are more likely to plan value-congruent behavior for the distant future, whereas short-term goals and day-to-day activities may not necessarily be value-expressive. The implications of these findings for retirement planning are discussed further below.

A final issue in terms of when values matter is that of how people deal with conflict among values, or value trade-offs. The Schwartz value theory is built on the principle that people hold a variety of values, each of which is compatible or conflicting with other values to varying degrees. People must regularly deal with situations in which decisions rest on competing values, and the prioritization of a particular value over another depends to a large extent on the particular demands of the situation. In other words, even if an individual's general value hierarchy can be established through a measurement tool such as the PVQ, there is no guarantee that the top ranked value will always apply across all situations. In the words of psychologist and philosopher William James (1891), "Every real dilemma is in literal strictness a unique situation; the exact combination of ideals realized and ideals disappointed which each decision creates is always a universe without precedent, and for which no adequate previous rules exist" (p. 350). Although values may be conceived of as generally stable over time, the application of values to real life decisions and planning is nuanced, complex, and relative to each new situation. As such, a descriptive understanding of values is more easily arrived at than knowledge of how values function in our lives.

(4) Values, morality, and ethics. While philosophers have tended to examine the inherent worth of certain values as a function of what a *morally* good life consists of, psychologists, especially in the recent movement of positive psychology, have taken a different approach. Avoiding the question of what is morally good, psychologists (including the author of this dissertation) have asked what kinds of value systems are associated with positive outcomes such as personal happiness. The conclusions that can be made about values based on their associations with happiness have to do with how psychologically healthy values are for individuals. A larger question not generally addressed by psychologists is to what extent psychological health as an outcome can be considered a proxy for moral goodness. If certain values are linked to higher levels of psychological well-being, does that make those values a moral imperative? Should those values be prescribed for all as a means to the good life? The link between personal values and morality has not been clearly defined by psychologists, and, especially in the case of the Schwartz value theory, moral statements about values are notably absent. The ten values are not defined or organized in terms of their moral worth, but simply as a function of their underlying motivations. But values play a central role in the issue of morality because they potentially provide the path toward the good life. In the words of social psychologist Jonathan Haidt (2006), when people ask the moral question "What should I do to have a good, happy, fulfilling, and meaningful life? ... one of the things they are hoping for is a set of principles or goals that can guide their actions and give their choices meaning or value" (p. 218). How might psychologists bring values into focus, then, on the issue of morality?

Recent developments in moral psychology may be paving the way towards an answer to this question. For a long time the study of morality in psychology was based on the assumption of rational models of moral judgment (Kohlberg, 1969; Piaget, 1965: Turiel, 1983) that assumed moral judgments are reached through rational processes and that focus heavily on the principle of justice (Haidt, 2001). More recently, psychological research focused on morality has highlighted the role of emotion and intuition, derived from social and cultural factors, in moral judgments (the social intuitionist model: Haidt, 2001, 2008).

In the context of this latter perspective, two recent studies (Janoff-Bulman, Sheikh, & Baldacci, 2008; Janoff-Bulman, Sheikh, & Hepp, 2009) focus on morality through the lens of motivation, and are therefore relevant to the issue of values inherent in morality. Janoff-Bulman and colleagues (2008) proposed a model of moral motives with two-bipolar dimensions and four resulting categories of moral motives that is remarkably similar to both the structure and content of the Schwartz value theory. The bi-polar dimensions of motivation (approach vs. avoidance; self-focus vs. other-focus) overlap to a high degree with Schwartz's four higher-order value categories (openness to change vs. conservation; self-transcendence vs. self-enhancement), and are good predictors of political orientation (avoidance motives associated with political conservatism; approach motives with political liberalism). Janoff-Bulman and colleagues (2009) also propose two forms of morality that stem from the approach-avoidance dimension. The first of these is a prescriptive morality that is approach-based and focused around what we *should* do, while the second is a proscriptive avoidance-based morality that is focused around what we should *not* do. Also discussed is the merit of moral

behavior that stems from a sense of desire compared to a sense of duty. Given the conceptual similarity between the four higher-order categories of values in the Schwartz paradigm and the four categories of moral motives proposed by Janoff-Bullman and colleagues, future research into the moral implications of values would benefit from examining the links between these motivational theories and their respective measurement tools.

(5) Status, money, and happiness. There are some paradoxical findings regarding the enhancement values (achievement and power), money, and the links between these variables and affective well-being. There is substantial evidence that money does not make people happier beyond a modest amount of annual income and that the rising levels of income have not made people happier in prosperous nations (Diener & Seligman, 2004). Further, over-valuing extrinsic goals has been shown to relate to reduced levels of well-being (Kasser et al., 2004) and the related construct of enhancement values (power and achievement) have been found to have a negative impact on affective well-being (study 2). A focus on the accumulation of money, then, appears to not only be insufficient for happiness, but also to erode it to some extent. In contrast to these findings, however, is the link between higher subjective ratings of financial adequacy and higher affective well-being (study 2). This link is consistent with previous findings that subjective indicators of financial matters are not entirely consistent with objective financial indicators (such as income) and that subjective financial ratings are more robust and relevant predictors of well-being (Diener & Seligman, 2004; Sing-Manoux, Adler, & Marmot, 2003). In the current sample of retirees, actual income accounted for only 25 to 36% of the variance in perceived financial adequacy scores. Putting all of these findings

together, although a materialistic, status and wealth-oriented set of motivations appears detrimental to well-being, and although having more money beyond a modest threshold does not increase happiness, the perception of having more money than others is linked to higher well-being. If people think they have more or less money than others, this perceived discrepancy plays an important role in emotional life.

(6) Values and psychological intervention. The PVQ was not designed as a clinical tool, but if there is to be any practical application of basic values research then abstract value constructs must be translated, to some extent, into lay terms and useful clinical technologies. What kinds of examples exist of the application of the values construct at a clinical level? In terms of the former, helping individuals to articulate what is most important in their lives and subsequently bringing behavior into line with values is a strategy for enhancing motivation for change that has recently been formalized by two recent models of psychological intervention. The first is motivational interviewing (Miller & Rollnick, 2002), in which a key principle is developing discrepancy between how things are and how the client would like them to be. Discrepancy is developed through evoking the perceived importance of change relative to the clients' general life goals and personal values. A second clinical framework in which values loom large is a recent development in cognitive-behavioral therapy know as acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), which is based on mindfulness and acceptance techniques as well as values-based behavior change strategies. ACT attempts to foster acceptance of uncomfortable thoughts, emotions, and physical sensations, as well as helping clients to identify, commit to, and act out important values, despite discomfort and anxiety.

Specific value-eliciting questionnaires (Eifert & Forsyth, 2005, p. 174) help clients to first identify which among ten areas of life are most important to them (family; intimate relationships; parenting; friends and social life; work and career; education and training; recreation and fun; spirituality; citizenship and community life; health and physical self-care). Subsequently, clients rate their satisfaction with the quality and depth of experience in areas they deem important, and indicate how often they have taken action in the past week that represent each important domain. Thus, value-activity discrepancy is elicited, and value-activity congruence is promoted through a variety of other strategies. The definition of values in the ACT framework are clearly much more suitable for lay discussion of what is most important in life compared to the highly abstract and research-oriented definitions of the Schwartz value theory.

How might the research literature on values and the findings from the studies herein contribute to psychological interventions for those in or nearing retirement? Findings reviewed above (Eyal et al., 2009; Torelli & Kaikati, 2009) suggest that older adults are more likely to plan value-congruent behavior for the distant future, but may have difficulty seeing short-term goals and day-to-day activities as value-expressive. Given that value-activity congruence has been shown to be predictive of well-being (Oishi et al., 1999), finding ways to help retirees think about their concrete day-to-day activities as opportunities for value expression might be a way to promote both healthy activities and social engagement as well as to promote general well-being. Further, a process of expressing one's core values has been shown among younger adults to help to counteract threats to self-regard as well as to fortify the self-concept and boost capacity for self-regulation (Schmeichel & Vohs, 2009). Insofar as retirees face challenges related

to finding new ways to express long-standing values amid fundamental changes in life circumstances, an intervention based on the expression, elaboration, and explanation of core values in and of itself might be a simple way to help older workers prepare for retirement and recent retirees to adjust to retirement.

As retirees age, the major values-related challenge becomes finding ways to continue to express cherished values in the context of ongoing losses in physical, financial, and social resources. The particular concrete manifestation of values in activities may require some adjustment, but fundamental value adjustment only seems to be called for in the case of the status-oriented values. Of particular interest to the clinician working with older adults and to public policy makers should be the challenge of helping aging adults to find value-consistent activities that promote competent and independent aging. If retirees can find self-regulatory strength in their values in order to stay physically, cognitively, and socially active, and thereby maintain emotional competence with age (Pushkar & Arbuckle, 1998), then values may be seen as an important tool in building the foundation of an autonomous, competent lifestyle in older adulthood.

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Appendix A

Unpublished Scoring Key for 40-item PVQ (Shalom H. Schwartz)

	PVQ #
Individual Level	
Conformity	7,16,28,36
Tradition	9,20,25,38
Benevolence	12,18,27,33
Universalism	3,8,19,23,29,40
Self-Direction	1,11,22,34
Stimulation	6,15,30
Hedonism	10,26,37
Achievement	4,13,24,32
Power	2,17,39
Security	5,14,21,31,35

The score for each value is the mean of the raw ratings given to the items listed above for that value. For most purposes, it is necessary to make a correction for individual differences in use of the response scale before performing analyses. Below are instructions for making the correction that is appropriate to various types of analyses. **Failure to make the necessary scale use correction typically leads to mistaken conclusions!**

Individuals and cultural groups differ in their use of the response scale.[1] Scale use differences often distort findings and lead to incorrect conclusions.[2] To correct for scale use:

(A) Compute scores for the 10 values by taking the means of the items that index it (above). If you wish to check internal reliabilities, do so for these value scores.
(B) Compute each individual's mean score across all 40 value items. Call this MRAT.[3]
(C) Center scores of each of the 10 values for an individual (computed in A) around that individual's MRAT (i.e., subtract MRAT from each of the 10 value scores)

1. For correlation analyses: Use the centered value scores (C).

2. For group mean comparisons, analysis of variance or of covariance (t- tests, ANOVA, MANOVA, ANCOVA, MANCOVA): Use the centered value scores as the dependent variables.

3. For regression:

    a. If the value is your dependent variable, use the centered value score.

    b. If the values are predictor variables:
        1. Enter **up to 8** centered values as predictors in the regression.
            a' If all 10 values are included, the regression coefficients for the values may be inaccurate and uninterpretable due to multicolinearity.
            b' Choose the values to exclude as predictors *a priori* on theoretical
            grounds because they are irrelevant to the topic.
        2. If you are interested **only** in the total variance accounted for by values and not in the regression coefficients, you may include all 10 values as predictors. The R^2 is meaningful but, because the 10 values are exactly linearly dependent, the coefficients for each value are not precisely interpretable.
    c. In publications, it is advisable to provide a table with the correlations between the centered values and the dependent variables in addition to any regression. These correlations will aid in understanding results and reduce confusion due either to multicolinearity or to intercorrelations among the values.

4. For multidimensional scaling, canonical, discriminant, or confirmatory factor analyses:
Use raw value scores for the items or 10 value means.[4]

5. Exploratory factor analysis is not suitable for discovering the theorized set of relations among values because they form a quasi-circumplex, which EFA does not reveal. Factors obtained in an EFA with rotation will only partly overlap with the 10 values and will exploit chance associations. The first unrotated factor represents scale use or acquiescence. It is not a substantive common factor. A crude representation of the circular structure of values can be obtained using EFA by plotting the value items in a two-dimensional space according to their loadings on factors 2 and 3 of the unrotated solution.

Footnotes

1. For a discussion of the general issue, see Saris (1988). Schwartz, et al. (1997) examine meanings of such scale use as an individual difference variable. Smith (2004) discusses correlates of scale use differences at the level of cultures.

2. Two critical assumptions underlie these corrections.

(1) The set of ten individual level values is reasonably comprehensive of the major motivationally distinct values recognized across individuals and cultural groups. Empirical evidence supports this assumption (Schwartz, 1992, 2004).

(2) Studies of value priorities are concerned with the importance of particular values as part of the value system of a person or group. This is because the way values affect cognition, emotion, and behavior is through a trade-off or balancing among multiple values that are simultaneously relevant to action. The relevant values often have opposing implications for the action. The absolute importance of a single value across individuals or across groups ignores the fact that values function as a system (Schwartz, 1996, 2004a,b). The scale use correction converts absolute value scores into scores that indicate the relative importance of each value in the value system, i.e., the individual's value priorities.[5]

3. When centering, do not divide by individuals' standard deviation across the 40 items. This is because individual differences in variances of value ratings are usually meaningful. Even if, on average, individuals attribute the same mean importance to the set of values, some individuals discriminate more sharply among their values and others discriminate less sharply. Standardizing that makes everyone's variance the same (i.e., 1) would eliminate these real differences in the extent to which individuals discriminate among their values.

4. Centering creates linear dependence among the items. This is problematic in these analyses The scale use problem is avoided or eliminated by other aspects of these analyses without centering.

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Appendix B

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 C

Demographic Questionnaire (T1)

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. What was your occupation? _____

6. When did you retire? Year _____ Month _____ Date _____

7. How many years were you employed? _____

8. Do you receive a pension from your employer? Yes _____ No _____

9. At the time of your retirement, what was your annual salary? _____

10. What is your present annual income (include all sources, e.g. RRSP's, etc.)? _____

11. What is your total family income from all sources? _____

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

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

13. What languages do you speak?

    French _____

    English _____

    Other (please specify): _____

14. What languages do you read and write?

    French _____

    English _____

    Other (please specify): _____

15. What is your civil status?

    Married _____

    Single _____

    Divorced _____

    Widowed _____

    Common-Law _____

16. How many times have you been married? _____

17. Do you have children?   Yes _____   No _____

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

19. Who do you live with?

    Alone _____

    Spouse _____

    Brother/Sister _____

    Friend _____

    Child(ren) _____

    Other (please specify): _____

20. How did you find out about this study? _____

Appendix D

Portrait Value Questionnaire (PVQ; Male Version; Schwartz et al., 2001)

|PVQ-M

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Put an X in the box to the right that shows how much the person in the description is like you.

HOW MUCH LIKE YOU IS THIS PERSON?

not like me at all	not like me	a little like me	some-what like me	like me	very much like me

1. Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.

2. It is important to him to be rich. He wants to have a lot of money and expensive things.

3. He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.

4. It's very important to him to show his abilities. He wants people to admire what he does.

5. It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.

6. He thinks it is important to do lots of different things in life. He always looks for new things to try.

7. He believes that people should do what they're told. He thinks people should follow rules at all times, even when no-one is watching.

8. It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.

9. He thinks it's important **not** to ask for more than what you have. He believes that people should be satisfied with what they have.

10. He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.

11. It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.

12. It's very important to him to help the people around him. He wants to care for their well-being.

HOW MUCH LIKE YOU IS THIS PERSON?

not like me at all	not like me	a little like me	some-what like me	like me	very much like me

13. Being very successful is important to him. He likes to impress other people.

14. It is very important to him that his country be safe. He thinks the state must be on watch against threats from within and without.

15. He likes to take risks. He is always looking for adventures.

16. It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.

17. It is important to him to be in charge and tell others what to do. He wants people to do what he says.

18. It is important to him to be loyal to his friends. He wants to devote himself to people close to him.

19. He strongly believes that people should care for nature. Looking after the environment is important to him.

20. Religious belief is important to him. He tries hard to do what his religion requires.

21. It is important to him that things be organized and clean. He really does **not** like things to be a mess.

22. He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.

23. He believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him.

24. He thinks it is important to be ambitious. He wants to show how capable he is.

25. He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.

26. Enjoying life's pleasures is important to him. He likes to 'spoil' himself.

27. It is important to him to respond to the needs of others. He tries to support those he knows.

not like me at all	not like me	a little like me	some what like me	like me	very much like me

28. He believes he should always show respect to his parents and to older people. It is important to him to be obedient.

29. He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.

30. He likes surprises. It is important to him to have an exciting life.

31. He tries hard to avoid getting sick. Staying healthy is very important to him.

32. Getting ahead in life is important to him. He strives to do better than others.

33. Forgiving people who have hurt him is important to him. He tries to see what is good in them and not to hold a grudge.

34. It is important to him to be independent. He likes to rely on himself.

35. Having a stable government is important to him. He is concerned that the social order be protected.

36. It is important to him to be polite to other people all the time. He tries never to disturb or irritate others.

37. He really wants to enjoy life. Having a good time is very important to him.

38. It is important to him to be humble and modest. He tries not to draw attention to himself.

39. He always wants to be the one who makes the decisions. He likes to be the leader.

40. It is important to him to adapt to nature and to fit into it. He believes that people should not change nature.

Appendix E

Modified 26-item PVQ: Items included and excluded from original 40-item version of the

PVQ (male version: Schwartz et al., 2001)

Value	PVQ items
Power	(#17): It is important to him to be in charge and tell others what to do. He wants people to do what he says.
	(#39): He always wants to be the one who makes the decisions. He likes to be the leader.
	Excluded (#2): It is important to him to be rich. He wants to have a lot of money and expensive things.
Achievement	(#13) Being very successful is important to him. He likes to impress other people.
	(#24): He thinks it is important to be ambitious. He wants to show how capable he is.
	(#32): Getting ahead in life is important to him. He strives to do better than others.
	Excluded (# 4): It's very important to him to show his abilities. He wants people to admire what he does.
Hedonism	(#10): He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.
	(#26): Enjoying life's pleasures is important to him. He likes to 'spoil' himself.
	(#37): He really wants to enjoy life. Having a good time is very important to him.
Stimulation	(#6): He thinks it is important to do lots of different things in life. He always looks for new things to try.
	(#15): He likes to take risks. He is always looking for adventures.
	(#30): He likes surprises. It is important to him to have an exciting life.
Self-Direction	(#1): Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.
	(#22): He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.
	Excluded (#11): It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.
	Excluded (#34): It is important to him to be independent. He likes to rely on himself.
Universalism	(#19): He strongly believes that people should care for nature. Looking after the environment is important to him.
	(#23): He believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him.
	(#29): He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.
	Excluded (#3): He thinks it is important that every person in the world be

treated equally. He believes everyone should have equal opportunities in life.

Excluded (#8): It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.

Excluded (#40): It is important to him to adapt to nature and to fit into it. He believes that people should not change nature.

Benevolence	(#12): It's very important to him to help the people around him. He wants to care for their well-being.

(#18): It is important to him to be loyal to his friends. He wants to devote himself to people close to him.

(#27): It is important to him to respond to the needs of others. He tries to support those he knows.

Excluded (#33): Forgiving people who have hurt him is important to him. He tries to see what is good in them and not to hold a grudge.

Tradition	(#20): Religious belief is important to him. He tries hard to do what his religion requires.

(#25): He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.

Excluded (#9): He thinks it's important not to ask for more than what you have. He believes that people should be satisfied with what they have.

Excluded (#38): It is important to him to be humble and modest. He tries not to draw attention to himself.

Conformity	(#16): It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.

(#28): He believes he should always show respect to his parents and to older people. It is important to him to be obedient.

(#36): It is important to him to be polite to other people all the time. He tries never to disturb or irritate others.

Excluded (#7): He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching.

Security	(#14): It is very important to him that his country be safe. He thinks the state must be on watch against threats from within and without.

(#35): Having a stable government is important to him. He is concerned that the social order be protected.

Excluded (#5): It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.

Excluded (#21): It is important to him that things be organized and clean. He really does not like things to be a mess.

Excluded (#31): He tries hard to avoid getting sick. Staying healthy is very important to him.

Appendix F

Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988)

PANAS

This scale consists of a list 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 Very slightly or not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely

	1	2	3	4	5
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 G

Health Measure (based on Wyler, Masuda, & Holmes, 1967)

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	43. Alcoholism
2. Dizziness	44. Drug addiction
3. Varicose veins	45. Cirrhosis of the liver
4. Hemorrhoids	46. Parkinson's
5. Low blood pressure	47. Blindness
6. Drug allergy	48. Stroke
7. Bronchitis	49. Muscular dystrophy
8. Hyperventilation	50. Cerebral palsy
9. Bursitis	51. Heart failure
10. Lumbago	52. Heart attack
11. Migraine	53. Brain infection
12. Hernia	54. Multiple sclerosis
13. Irregular heart beats	55. Bleeding brain
14. Overweight/Obesity	56. Uremia
15. Anemia	57. Cancer
16. Anxiety reaction	58. Leukemia
17. Gout	59. Cataracts
18. Pneumonia	60. Difficulty with vision
19. Depression	61. Rheumatism
20. Kidney/Urinary infection	62. Uterine/Breast fibroids
21. Sexual intercourse difficulties	63. Breast inflammation
22. Thyroid Problems	64. Pelvic inflammation
23. Asthma	65. Vaginal infection
24. Glaucoma	66. Cyst
25. Gallstones	67. Other (please describe)
26. Arthritis/Osteoarthritis	68. Colour Blindness
27. Slipped disk	69. Tendonitis
28. Hepatitis	70. Cardiomyopathy
29. Kidney stones	71. Prostate Problems
30. Peptic ulcer	72. Shingles
31. Pancreatitis	73. Degeneration of the eye
32. High blood pressure	74. Chicken Pox
33. Deafness	75. Cholesterol Problems
34. Collapsed lung	76. Internal Bleeding
35. Epilepsy	77. Allergies/Hives
36. Chest pain	78. Osteoporosis
37. Nervous breakdown	79. Gastric Reflux/Gastroenteritis
38. Diabetes	80. Psoriasis/Exema
39. Blood clots	81. Sleep Apnea
40. Hardening arteries	82. Carpal Tunnel Syndrome
41. Emphysema	83. Muscle/Ligament/Tendon tear
42. Tuberculosis	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

67. Please list any OTHER symptoms or illnesses that you have experienced in the last year.

Appendix H

Instructions for Retrospecitve Version of the PVQ

You have just been remembering your life as it was ten years before you retired. We would like you to continue remembering yourself at that age. Take a moment to think about what your priorities were, what your goals were, and what was most important to you in life at that time. Earlier, we asked you to read descriptions of people and decide how similar they were to you. We ask you now to read the same descriptions, but this time think about how much each person resembles you as you were ten years before your retirement. Put an X in the box that shows how much the person in the description is like you as you were at that age.

Appendix I

Value Change Questionnaire (VCQ)

Values can be thought of as principles in life that help to guide our behaviour. We are interested in whether you feel that there have been changes in your values over the past few years. Below are descriptions of 10 different values. Please circle the box that best indicates the extent to which the importance of each value has *changed* for you since the first time you came to Concordia to participate in this study about two years ago.

1. POWER: wealth, authority, social power.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

2. ACHIEVEMENT: success, capability, ambition, getting ahead.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

3. HEDONISM: Having fun, pleasure, enjoyment in life.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

4. STIMULATION: daring, a varied and challenging life, an exciting life.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

5. SELF-DIRECTION: creativity, curiosity, independence, choosing one's own goals.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

6. UNIVERSALISM: equality, broad-mindedness, social justice, a world at peace, environmental protection.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

7. BENEVOLENCE: helpfulness, loyalty, forgiveness, being supportive.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

8. TRADITION: respect for tradition, humbleness, accepting one's portion in life, devotion.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

9. CONFORMITY: obedience, behaving properly, honoring parents and elders, politeness.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

10. SECURITY: personal safety, national security, organization, staying healthy.

A great deal less important	Quite a bit less important	A little less important	No change	A little more important	Quite a bit more important	A great deal more important

11. Overall, do you feel that the principles that are most important to you in your own life are found in the ten sets of values that are listed above?

The values listed above:

Include **very little** of what is important to me	Include **a little** of what is most important to me	Include **some** of what is most important to me	Include **most** of what is most important to me	Include **all** of what is most important to me

Appendix J

Orientation to Happiness Measure (OHM; Peterson, Park, & Seligman, 2005)

OHM

Please use the following scale to indicate the degree to which each of the items below applies to you.

1	2	3	4	5
Very much unlike me	A little like me	Somewhat like me	Mostly like me	Very much like me

1. Regardless of what I am doing, time passes very quickly.

2. My life serves a higher purpose.

3. Life is too short to postpone the pleasures it can provide.

4. I seek out situations that challenge my skills and abilities.

5. In choosing what to do, I always take into account whether it will benefit other people.

6. Whether at work or play, I am usually "in a zone" and not conscious of myself.

7. I am always very absorbed in what I do.

8. I go out of my way to feel euphoric.

9. In choosing what to do, I always take into account whether I can lose myself in it.

10. I am rarely distracted by what is going on around me.

11. I have a responsibility to make the world a better place.

12. My life has a lasting meaning.

13. In choosing what to do, I always take into account whether it will be pleasurable.

14. What I do matters to society.

15. I agree with this statement: "Life is short — eat dessert first."

16. I love to do things that excite my senses.

17. I have spent a lot of time thinking about what life means and how I fit into its big picture.

18. For me, the good life is the pleasurable life.

Appendix K

Stressful Life Events (SLE; Sarason, Johnson, & Siegel, 1982)

SLE

Throughout our lives we experience events that have both positive and negative impacts on our physical, emotional, and psychological well-being. We are interested in learning about the stresses that have occurred in your life since January 01, 2000.

Please place a check mark in the box next to each category which applies to you since January 01, 2000. Then **briefly describe** the stressor and **indicate when** it occurred. Finally, **rate the degree** of stress. There is additional space at the bottom of the list for stressors that do not fit into the existing categories.

Stressor	When?	Degree of Stress Slight......................Extreme				
☐ Relationship with spouse/partner		1	2	3	4	5
☐ Relationship with child(ren)		1	2	3	4	5
☐ Personal illness		1	2	3	4	5
☐ Illness of family member		1	2	3	4	5
☐ Death of someone close to you		1	2	3	4	5
☐ Work-related problems		1	2	3	4	5
☐ Financial problems		1	2	3	4	5
☐ Moving		1	2	3	4	5
☐		1	2	3	4	5
☐		1	2	3	4	5
☐		1	2	3	4	5
☐		1	2	3	4	5
☐		1	2	3	4	5

Appendix L

Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984; 1991)

|BIDR

Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

1	2	3	4	5	6	7
NOT TRUE			SOMEWHAT TRUE			VERY TRUE

1. My first impressions of people usually turn out to be right.

2. It would be hard for me to break any of my bad habits.

3. I don't care to know what people really think of me.

4. I have not always been honest with myself.

5. I always know why I like things.

6. When my emotions are aroused, it biases my thinking.

7. Once I've made up my mind, other people can seldom change my opinion.

8. I am not a safe driver when I exceed the speed limit.

9. I am fully in control of my own fate.

10. It's hard for me to shut off a disturbing thought.

11. I never regret my decisions.

12. I sometimes lose out on things because I can't make up my mind soon enough.

13. The reason I vote is because my vote can make a difference.

14. My parents were not always fair when they punished me.

15. I am a completely rational person.

16. I rarely appreciate criticism.

17. I am very confident of my judgements.

18. I have sometimes doubted my ability as a lover.

19. It's all right with me if some people happen to dislike me.

20. I don't always know the reasons why I do the things I do.

1	2	3	4	5	6	7
NOT TRUE			SOMEWHAT TRUE			VERY TRUE

_____ 21. I sometimes tell lies if I have to.

_____ 22. I never cover up my mistakes.

_____ 23. There have been occasions when I have taken advantage of someone.

_____ 24. I never swear.

_____ 25. I sometimes try to get even rather than forgive and forget.

_____ 26. I always obey laws, even if I'm unlikely to get caught.

_____ 27. I have said something bad about a friend behind his or her back.

_____ 28. When I hear people talking privately, I avoid listening.

_____ 29. I have received too much change from a salesperson without telling him or her.

_____ 30. I always declare everything at customs.

_____ 31. When I was young I sometimes stole things.

_____ 32. I have never dropped litter on the street.

_____ 33. I sometimes drive faster than the speed limit.

_____ 34. I never read sexy books or magazines.

_____ 35. I have done things that I don't tell other people about.

_____ 36. I never take things that don't belong to me.

_____ 37. I have taken sick-leave from work or school even though I wasn't really sick.

_____ 38. I have never damaged a library book or store merchandise without reporting it.

_____ 39. I have some pretty awful habits.

_____ 40. I don't gossip about other people's business.

Appendix M

Selection, Optimization and Compensation (SOC; Baltes, Baltes, Freund, & Lang, 1999)

|SOC

We are interested in learning about how you decide which things in life are important for you and how you go about accomplishing what you want in life.

In the following, we present examples of two different ways people might behave. Imagine there are two people talking about what they would do in a particular situation. We would like you to decide which person is most similar to you – in other words, which one behaves most like the way you probably would.

Now think about your life overall, including how things are going, think about your goals – that is, both things you want to improve and things that you are satisfied with and want to maintain.

To which person are you most similar? (Blacken the corresponding circle)

1.	Person A ○	When things don't work the way they used to, I look for other ways to achieve them.
	Person B ○	When things don't work the way they used to, I accept things the way they are.

To which person are you most similar?

2.	Person A ○	When something doesn't work as well as usual, I don't spend much time thinking about it.
	Person B ○	When something doesn't work as well as usual, I look at how others do it.

To which person are you most similar?

3.	Person A ○	When I can no longer do something in my usual way, I think about what, exactly, I am able to do under the circumstances.
	Person B ○	When I can no longer do something in my usual way, I don't think long about it.

To which person are you most similar?

4.	Person A ○	When I want to get ahead, only I myself know the best way to do it.
	Person B ○	When I want to get ahead, I also look at how others do it who succeed.

To which person are you most similar?

5.	Person A ○	Even when I really consider what I want in life, I wait and see what happens instead of committing myself to just one or two particular goals.
	Person B ○	When I think about what I want in life, I commit myself to one or two important goals.

To which person are you most similar?

6.	Person A	○	I think about exactly how I can best realize my plans.
	Person B	○	I don't think long about how to realize my plans, I just try it.

To which person are you most similar?

7.	Person A	○	I am always working on several goals at once.
	Person B	○	I always focus on the one most important goal at a given time.

To which person are you most similar?

8.	Person A	○	When I can't do something as well as I used to, then I ask someone else to do it for me.
	Person B	○	When I can't do something as well as I used to, I accept the change.

To which person are you most similar?

9.	Person A	○	When I can't carry on as I used to, I direct my attention, like usual, to all my goals.
	Person B	○	When I can't carry on as I used to, I direct my attention to my most important goal.

To which person are you most similar?

10.	Person A	○	When things don't work so well, I pursue my most important goal first.
	Person B	○	When things don't go so well, I leave it at that.

To which person are you most similar?

11.	Person A	○	I prefer to wait for a while and see if things will work out by themselves.
	Person B	○	I make every effort to achieve a given goal.

To which person are you most similar?

12.	Person A	○	I consider exactly what is important for me.
	Person B	○	I take things as they come and carry on from there.